



INTERNATIONAL CIVIL AVIATION ORGANIZATION

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## ASSEMBLY – 35TH SESSION

### EXECUTIVE COMMITTEE

#### Agenda Item 15: Environmental protection

#### ADDRESSING THE ENVIRONMENTAL IMPACT OF AIRCRAFT ENGINE EMISSIONS

(Presented by Canada, Mexico and the United States)

#### SUMMARY

This paper summarizes the progress made towards addressing the environmental impact of aircraft engine emissions, and recommends an approach for future action.

#### 1 BACKGROUND

1.1 In 2001, ICAO's 33<sup>rd</sup> Assembly Resolution (A33-7), Appendix I, gave the Council a mandate to “develop guidance for States on the application of market-based measures aimed at reducing or limiting the environmental impact of aircraft engine emissions, particularly with respect to mitigating the impact of aviation on climate change....” Further, A33-7 encourages the Council to “evaluate the costs and benefits of the various measures with the goal of addressing aircraft engine emissions in the most cost-effective manner....”

1.2 Market-based measures are policy tools that are designed to achieve environmental goals at a lower cost and in a more flexible manner than traditional regulatory measures. In particular, the Committee of Aviation Environmental Protection (CAEP) has been studying the application of market-based measures to CO<sub>2</sub> emissions reductions. CAEP has been looking at three basic options: voluntary measures, open emissions trading, and emissions charges.

1.3 Good progress has been made. At the 6th meeting of the Committee on Aviation Environmental Protection (CAEP), a model agreement, with associated guidance, was approved on voluntary measures to reduce emissions of carbon dioxide (CO<sub>2</sub>) from aviation. Only in the area of CO<sub>2</sub> emissions charges was CAEP unable to reach consensus.

1.4 Analysis presented showed that emission charges were up to 40 times more expensive than emissions trading for meeting the same targets. Further that 70% of the realized reductions would be through reduced demand. There is, at present, no commonly accepted means to accurately assess the damage costs associated with CO<sub>2</sub> in general, let alone climate change associated with specific aircraft engine emissions. A CAEP review of CO<sub>2</sub> damage costs found opinions ranged from \$2 to \$127 per tonne. This wide range of estimates reflects the major uncertainties of both scientific understanding and economic assumptions.

1.5 At CAEP6, there were significant concerns about the lack of resolution of a number of serious legal, policy, and administrative issues and corresponding lack of guidance. There remain fundamental disagreements among ICAO experts on a number of issues including:

- a) The environmental objective or cost basis for a CO<sub>2</sub> charge aimed at addressing climate change.
- b) The applicability of a CO<sub>2</sub> emissions charge on international flights of aircraft from a different State.
- c) How to determine the relative contribution of air traffic control and airport operations as well as government airspace requirements for any GHG emission charge.
- d) How to deal with existing charges, taxes, and subsidies in setting any new CO<sub>2</sub> charge.
- e) How to deal with the potential discriminatory aspects of only placing a CO<sub>2</sub> charge on aviation (versus other modes of transport) or only some countries.

1.6 Given the tremendous number of concerns, aviation experts from every region of the world, save one, stated their belief that they have not yet resolved the fundamental issues nor developed the necessary guidance on emission charges. The matter was referred back to ICAO Council for further guidance. ICAO Council accepted the view of the majority of its members to amend the wording in Appendix I of Assembly Resolution A33-7 to, inter alia, strongly discourage States from applying CO<sub>2</sub>-related charges.

## 2 ICAO ASSEMBLY PROGRESS ON GREENHOUSE GAS EMISSIONS

2.1 At ICAO's 33<sup>rd</sup> Assembly in October 2001, all participating ICAO Member States adopted Resolution A33-7, which expressed the unanimous consensus of the worldwide aviation community on both aircraft noise and gaseous emissions.

2.2 The Assembly, in recognizing the work ongoing to explore policy options to limit or reduce the environmental impact of aircraft emissions, requested the Council to place special emphasis on the use of technical solutions while continuing to consider market-based measures and continuing to promote the use of operational measures.

2.3 Appendix H to A33-7 covers the issue of the environmental impact of gaseous emissions on the atmosphere. In Appendix H, the Assembly recognized that while the effects of some types of aircraft emissions are well understood, the effects of others are not. It further identified a number of key areas of scientific uncertainty that limit the ability to project aviation impacts on climate and ozone.

2.4 Appendix I to A33-7 contains guidance on developing market-based options regarding aircraft engine emissions. These options include voluntary measures, emissions trading, and levies. The Assembly was clear that although aviation should bear the cost of the pollution that it is responsible for, it must be done without distorting international trade and investment. It goes on to say that charges should be based on the costs of mitigating the environmental impact of aviation, but only to the extent that costs can be properly identified and directly attributed to air transport. Finally in A33-7, the Assembly encouraged States, when considering market-based measures, to take into account the interests of all parties concerned, to evaluate the costs and benefits of the various measures with the goal of addressing aircraft engine emissions in the most cost-effective manner.

### 3 CAEP PROGRESS ON GREENHOUSE GAS EMISSIONS

3.1 A template giving basic guidance and structure to a possible voluntary arrangement to reduce CO<sub>2</sub> emissions has been developed and agreed upon. CAEP decided that it should explore how this template might be used as the basis for a voluntary agreement, possibly based on operational measures, in the future work program.

3.2 The CAEP 6 meeting agreed that further study should be carried out to develop guidance of options involving a trading scheme consistent with either countries obligations under the UNFCCC process or a voluntary trading scheme.

3.3 ICAO has published Circular 303, AN/176, *Operational Opportunities to Minimize Fuel Use and Reduce Emissions*, that is a compilation of best practices used throughout the industry to reduce aviation emissions. This could provide a basis for exploring how a set of best practices could be incorporated into voluntary agreements for future emissions reductions.

### 4. RESPONSIBILITY OF ICAO MEMBER STATES

4.1 Climate change and the scientific and environmental issues involved remains a major subject of research and debate within the scientific and environmental communities. Dealing with the challenges of this complex scientific, economic, and legal issue with a multitude of interactions and impacts across so many nations- both today and far into the future- presents ICAO's Contracting States a substantial challenge on many fronts.

4.2 Nearly every ICAO Contracting State has agreed through the UNFCCC mechanisms to the need to take constructive action to "anticipate, prevent, or minimize the causes of climate change and mitigate its adverse impacts." However, they have also affirmed that in adopting policies and measures to deal with climate change, they should "ensure global benefits at the lowest possible cost."

4.3 In the face of this significant set of challenges, ICAO's Contracting States have adopted a comprehensive program to consider carefully, develop guidance for and implement as appropriate, a set of technical, operational and market-based options to limit or reduce the environmental impact of aircraft emissions. As noted in section 2, considerable progress has been made.

4.4 ICAO Contracting States contemplating actions to reduce aviation emissions should do so in a way that supports ICAO's goal to achieve maximum compatibility between the safe, economically effective, non-distorted and orderly development of civil aviation and the quality of the environment. Signatories to the Chicago Convention agreed to work to ensure the safe and orderly growth of international civil aviation throughout the world.

4.5 Despite agreement on the language in A33-7, there are some ICAO member States that are pursuing emissions related charges. This is unfortunate because there is little evidence that the issues have been adequately defined in terms of problem identification, review of alternative measures, or that the actions proposed represent, as described in A33-7, the most cost-effective approach.

**5 ACTION BY THE ASSEMBLY**

5.1 The Assembly is invited to:

- a) Support the continued development of guidance for voluntary measures and open emissions trading to mitigate aviation's climate change impact.
- b) Encourage the Council to continue the development and implementation of operational opportunities to minimize fuel use and reduce emissions.
- c) Support Assembly Resolution A33-7 as amended in working paper 76.
- d) Encourage the Council to undertake further study to resolve the outstanding legal, policy and economic issues with respect of CO<sub>2</sub> charges.
- e) Encourage States who wish to pursue CO<sub>2</sub> charges to enter into, on a voluntary basis, agreements with like-minded States on a reciprocal basis.
- f) Not support implementation of CO<sub>2</sub> charges, at this time, as existing ICAO guidance is not sufficient and the approach has not been shown to date to be cost-effective.

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