International Civil Aviation Organization

WORKING PAPER

ASSEMBLY — 36TH SESSION

EXECUTIVE COMMITTEE

Agenda Item 17: Environmental Protection

TOWARDS A CARBON NEUTRAL AND EVENTUALLY CARBON FREE INDUSTRY

(Presented by the International Air Transport Association)

EXECUTIVE SUMMARY

Notwithstanding the remarkable environmental progress that has been achieved, aviation's carbon footprint continues to grow. IATA's vision is to put aviation on a gradual path towards carbon neutral growth and, eventually, a zero-carbon future. In order to do this, a number of policy actions require immediate attention in the areas of technology, aircraft operations, infrastructure and economic measures. IATA calls on ICAO to further assert global leadership and take all necessary measures to facilitate and accelerate additional progress in these areas.

Action: The Assembly is invited to:
a) support technology initiatives for the short-, medium-, and long term and promote the stable regulatory framework that is required for long-term investments;
b) urge contracting States to increase and coordinate their investments in R & D, including urgent development of alternative aviation fuels;
c) urge the Council to develop with industry ICAO regional action plans to remove existing infrastructure inefficiencies and harmonise global airspace management;
d) call on contracting States to implement timely infrastructure improvements, in harmony with the ICAO Global Air Navigation Plan;
e) confirm the environmental leadership of ICAO, in particular on aviation climate change matters, and to urge the Council to take all necessary measures to exercise this leadership;
f) endorse the ICAO emissions trading guidance, with the principle that coverage of airlines from various States be only on the basis of mutual consent.

Strategic Objective:	This working paper relates to Strategic Objective C - Environmental Protection - Minimize the adverse effect of global civil aviation on the environment
Financial implications:	Not Applicable
References:	Not Applicable

1.   INTRODUCTION

1.1   Environment is at the top of aviation's agenda. Alongside safety and security, environmental responsibility must be a core promise aviation makes to the 2.2 billion people who fly each year.

1.2   Aviation has an enviable track record of improving its environmental performance, starting long before the emergence of climate change concerns. Over the last 40 years, noise has decreased by 75%, CO_2 intensity by 70%, and hydrocarbon emissions and soot have been dramatically reduced, while the NO_x certification standards for aircraft have been increasingly tightened.

1.3   According to the most recent estimates from the UN Intergovernmental Panel on Climate Change (IPCC), aviation's carbon footprint is 2% of global CO_2 emissions from fossil fuels, while its overall contribution to climate change is estimated to be 3% of the man-made total.

2.   IATA POLICY

2.1   Air travel is expanding at about 5% per year on a worldwide basis. But the current growth of aviation CO_2 emissions is about half that rate, as a result of technological improvements and constant fleet modernisation, infrastructure improvements and gains in operational efficiency. IATA's policy to further decouple CO_2 emissions from traffic growth rests on four pillars:

- Foster the development and deployment of technology as one of the main drivers of progress. Joint solutions must be found with manufacturers and governments, to enable accelerated use of new technologies, including alternative fuels, in a financially sustainable manner.

- Encourage and assist airlines in further adopting best practices to operate their aircraft as efficiently as possible. IATA's own work on fuel-efficient operations and route optimisation has identified potential savings up to 15 million tonnes of CO_2 emissions each year.

- Promote the implementation of efficient infrastructure. Constraints—whether from insufficient runway capacity or inefficient air traffic management (ATM) procedures—add up to 12% to fuel inefficiencies and CO_2 emissions, according to the IPCC.

- Avoid governmental measures that do not serve to improve environmental performance, including punitive taxes and charges. Instead, positive economic measures should be preferred over punitive ones to stimulate innovation and accelerate technological research, development and deployment.

Emissions trading may have a role to play, but only as part of a package of measures involving technology, operations and infrastructure. It must be voluntary, and thus not imposed on States by other individual States or regional groupings. Further, it should be open to trading with other industries and developed globally through ICAO in order to minimise competitive distortions. Last but not least, it should be combined with voluntary carbon offset programmes that meet ICAO minimum standards, so that emissions that have been offset voluntarily are not charged a second time through ETS.

3.   **THE WAY FORWARD TO CARBON NEUTRAL GROWTH AND ZERO EMISSIONS**

3.1   Notwithstanding the remarkable progress that has been achieved, aviation's carbon footprint is growing. While the overall projected growth in emissions may be relatively modest, aviation and other global industries have a responsibility for being as **environmentally** efficient as possible. IATA considers climate change a serious issue and is determined to be part of the solution. The future requires that we adopt a common and proactive strategic approach.

3.2   Every strategy starts with a vision: IATA's vision for the industry is to achieve zero carbon emissions. In other words, to put aviation on a gradual **path** towards carbon neutral growth and a zero-carbon future and to build and operate a commercial airliner within the next fifty years that produces no net CO_2 emissions.

3.3   In aviation, fifty years is a realistic time frame to achieve great things. Man first flew in 1903.   Fifty years later we had global networks and welcomed the jet age. By the 1970s we had supersonic travel and jumbo-jets. Today we can fly non-stop to anywhere in the world. Turning bold visions into reality has long been the industry's trademark.

3.4   Nobody has all the answers or the technology today to make the vision of zero carbon emissions a reality in the near term. But the building blocks for a carbon-free future are already taking shape. A solar powered aircraft is being built. Fuel cell technology will take flight in 2008. Jet fuel from biomass will soon become a reality. These pioneering efforts push technology into uncharted territory and lay the foundation for tomorrow's solutions.

3.5   In order to accelerate civil aviation's progress towards carbon neutral growth and a zero-carbon future, a number of policy actions require immediate attention.

3.6   **Technology**

3.6.1   The accelerated development and deployment of new alternative fuel, airframe, engine and ATM technologies is an indispensable element of a proactive strategy towards zero emissions. A progressive approach with the ultimate objective of building and operating a commercial airliner within the next fifty years that produces no net CO_2 emissions, requires that opportunities be exploited in the following areas:

- Enhancements and modifications of the existing in-service fleet (short term);
- Renewal of the existing fleet with latest technology aircraft (medium term);
- Development of cleaner alternative fuels (medium and long term); and
- Development of radical new technologies and aircraft designs (long term).

3.6.2   IATA has initiated high-level discussions with manufacturers and fuel suppliers in order to join forces and agree on orientation and action. A stable regulatory framework with clear, long-term goals, is necessary to avoid disruption and constantly changing priorities in the middle of costly R&D process aimed at achieving substantial additional reductions in greenhouse gas emissions.

3.6.3   IATA therefore invites ICAO to (a) support and contribute to industry technology initiatives for the short-, medium-, and long term, for example through the development of fuel performance indicators and metrics, specifications for alternative fuels and medium- and long term technology goals for engine fuel burn and CO_2 emissions, and (b) promote a stable regulatory

environment with a predictable investment horizon, based on a technology road map to be developed jointly by manufacturers, suppliers, airlines and regulators around the world.

3.6.4   IATA also invites ICAO to urge contracting States to reverse the halving of government funding for R&D that has occurred since the 1980s and to increase and coordinate their investments in technology R&D, including the urgent development of cleaner alternative fuels.

3.7   **Infrastructure**

3.7.1   Infrastructure improvements present a major opportunity for fuel and emission reductions in the near term. According to the IPCC, up to 12% of global aviation CO_2 emissions are the result of airspace and airport inefficiencies. It is therefore vital for governments and infrastructure providers to eliminate inefficiencies and harmonise global airspace management.

3.7.2   Modern aircraft are already fully equipped to take full benefit from new and advanced ATM technologies. Significant gains could therefore result from the effective implementation of the Single European Sky, the NextGen Air Transport System in the U.S. and other regional initiatives that provide more flexible airspace access. The latter is particularly important in Asia. In light of increasing traffic demand, early action is urgently needed to avoid massive airspace gridlock before too long.

3.7.3   IATA urges regulators and infrastructure providers to cut current inefficiencies by half in five years, thereby removing 35 million tonnes of CO_2 each year. To achieve this, however, a paradigm shift in government policies is urgently needed. Too often, the inability to prioritise environmental concerns and governments' unwillingness to remove political obstacles frustrates much needed efficiency gains and CO_2 reductions. This is entirely incompatible with governments' own climate change and energy policies and ambitions.

3.7.4   In addition, the ICAO Global Air Navigation Plan (GANP), the elements of which were developed in partnership with the industry, must be implemented at the regional level. These include the expansion of fuel efficient procedures for arrival and departure, dissemination of Area Navigation (RNAV) and Required Navigation Performance (RNP) in all phases of flight, global implementation of RVSM and efficient airport planning.

3.7.5   ATA urges ICAO to increase efforts to eliminate inefficiencies and harmonise global airspace management by developing with industry regional action plans as a matter of priority, ensuring coordination at regional and interregional levels. At the same time, contracting States are encouraged to implement timely infrastructure improvements, in harmony with the GANP.

3.8   **Operations**

3.8.1   Airline operations must be improved through the implementation of best practices. According to the Intergovernmental Panel of Climate Change (IPCC), up to 6% of worldwide aviation CO_2 emissions can be saved through such measures.

3.8.2   In 2007 IATA member airlines adopted an ambitious goal to further improve fuel efficiency at least 25% by 2020, relative to 2005. The saving in CO_2 emissions is estimated to be about 345 million tonnes compared to if fuel efficiency would remain at the 2005 level.

3.8.3   IATA is actively supporting its airline members to improve their operational efficiency by cataloguing best practices, developing industry benchmarks and conducting on-site performance assessments. With the support of IATA, 70 airlines identified additional fuel consumption reduction potential equal to 8.5 million tons of CO_2 in 2006.

3.8.4   Further efficiency gains can be achieved by updating the fuel management regulation environment. IATA endeavours to develop, in close consultation with ICAO, a proposal for the updating of Annex 6 provisions.

3.8.5   IATA will further intensify its efforts to raise environmental standards across the industry. By extending the existing fuel conservation programme beyond aircraft operations, IATA will help implement quality Environmental Management Systems (EMS) throughout the entire airline sector.

3.9   **Economic Measures**

3.9.1   Economic measures are too often designed as punitive instruments. Governments' focus should not be on reducing demand but on stimulating innovation and boosting technological research, development and deployment. Subsidies, tax credits and direct funding should be used to drive new technology programmes. Unfortunately, as reported by the IPCC, government funding for research programmes has been flat or declining for nearly two decades and is now about half of 1980 levels. Initiatives such as the EU's Clean Sky JTI are welcome but represent only a fraction of what is needed. States should reverse this declining trend and increase their investments in R&D, including the urgent development of alternative aviation fuels.

3.9.2   Second, IATA and ICAO should work with international financial institutions to explore the feasibility of providing funding in the developing world to accelerate fleet replacement and finance the infrastructure investments that are required to benefit from clean technologies. Other innovative funding mechanisms such as venture capital investment funding to invest in early-stage clean aviation technologies should also be explored.

3.9.3   Third, economic measures can further be used to engage airline customers in climate change initiatives. In recent years, there has been a proliferation of offset-type programs developed as a means for airline customers to compensate for the emissions from their flight. However, some of these schemes operate in a largely unregulated way with little transparency to the purchaser or investor. The scientific basis for the claimed compensation of some of these programs is not established to the satisfaction of any single body that the public would judge reliable to make such an assessment. IATA therefore supports ICAO's work to develop minimum standards for calculation methods, in order to improve the transparency and integrity of aviation carbon offsets so that they are officially accounted for and recognized as such by the traveling public.

3.9.4   Finally, we urge the ICAO Assembly to endorse the ICAO emissions trading guidance, on the basis of mutual consent between States. Open emissions trading, if properly designed and implemented on a global and voluntary basis, could be a more cost-effective way of addressing aviation carbon emissions than taxes and charges.

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