A SUSTAINABLE FLIGHTPATH TOWARDS REDUCING EMISSIONS

Air transport is a catalyst for growth, a vital conduit for world trade and a major global employer. Nearly 7 million jobs and $2.2 trillion in global GDP is supported by aviation. Over 35% of world trade by value travels by air and industries in all countries rely on the speed and efficiency of aviation to provide the goods and services required for modern life. Over half of all tourists travel to their destinations by air and the industry provides vital lifelines to remote communities and small island states all over the world.

With these benefits, however, comes an environmental impact. Last year, air travel emitted 676 million tonnes of CO₂, or around 2% of the global total. While the aviation sector recognises the growing and urgent need for society to address the global challenge of climate change, it also emphasises that aviation plays a vital role in promoting sustainable development and should remain safe, affordable and accessible in order to ensure mobility on an equitable basis to all sectors of society.

The United Nations’ specialised agency for aviation, the International Civil Aviation Organization (ICAO) must continue to play a leading role in these efforts.

In October 2010, governments at ICAO reached a global agreement to address international aviation emissions, formulating global targets for the sector, along with a set of principles for the use of economic measures, while taking into account the specific needs of developed and developing countries. Since then, ICAO has made excellent progress in a number of areas by bringing together States, industry and civil society representatives:

- **Aircraft CO₂ standard.** This work has already identified a formula for assessing aircraft efficiency, with further work taking place to determine the most appropriate standards to be put in place.
- **Market-based measures (MBMs) for aviation.** Significant progress has been made on identifying a potential MBM framework for dealing with aviation emissions, in addition to three options for a single global mechanism, namely: a carbon offsetting mechanism; a carbon offsetting mechanism with a revenue component; and a global emissions trading scheme.
- **State action plans.** ICAO States with a minimum share of global traffic will prepare action plans documenting, amongst other things, what actions are being undertaken (together with national industries) to reduce emissions from aviation.

The aviation industry is fully supportive of each of these processes and is actively assisting as needed. It is the industry’s hope that most of these actions can be finalised by the 38th ICAO Assembly in September 2013, in spite of the significant political challenges. COP18 in Doha presents an opportunity to build on the success of the work being undertaken at ICAO by supporting that process and further strengthening cooperation between governments and the aviation sector to jointly address the climate change challenge.

**CARBON-NEUTRAL GROWTH TO BE ACHIEVED FROM 2020**

In 2008, airlines, manufacturers, air navigation service providers and airports came together in Geneva and signed a commitment to a pathway to carbon-neutral growth. In the short-term, between 2010 and 2020, aviation is committed to improve its fuel efficiency by an average of 1.5% per year, representing a further efficiency gain of 17% by 2020 or 2.2 billion tonnes of CO₂ savings. This commitment was re-affirmed and expanded in the industry’s declaration on sustainable growth signed at the 2012 Aviation & Environment Summit, a copy of which can be found in this position paper.

Carbon-neutral growth (CNG2020) means that net CO₂ emissions from aviation would peak in 2020, stabilise and then decline after that, while accommodating increased air transport demand. The industry will then work towards a target of halving net CO₂ emissions by 2050, based on 2005 emissions. The aviation sector is determined to be part of the solution but insists it cannot be held responsible for more than its fair share of emissions. To achieve these targets, a multi-faceted approach is required with a strong commitment from all aviation stakeholders: aircraft operators, manufacturers, fuel suppliers, airports, air navigation service providers, as well as governments, working together through the four pillars of the aviation industry strategy outlined below.

Of the four pillars, technology has by far the best prospects for reducing...
We believe that our commitments to work in partnership with governments, other industries and civil society will deliver an efficient aviation sector, fit to meet the needs and provide the services required by the world economy. We strongly encourage others to join us in this endeavour.

Aviation emissions. The industry is making great advances in technology such as: revolutionary new aircraft designs; new composite lightweight materials; radical new engine advances; and the development of sustainable alternative jet fuels which could reduce CO₂ emissions 80%, on a full carbon life-cycle basis. The sector is primarily focusing on biofuels from second generation sources such as algae, non-food crops and waste biomass.

These fuels can be produced sustainably to minimise impacts on food crops and fresh water usage. Over 1,500 passenger flights so far have clearly demonstrated that the use of biofuel from these sources as ‘drop-in’ fuels is safe and technically sound. Biofuels can be blended with existing jet fuel in increasing quantities as they become available.

Improved operational practices, including reduced auxiliary power unit usage, more efficient flight procedures, and weight reduction measures, could achieve further reductions in CO₂ emissions.

Infrastructure improvements present a major opportunity for CO₂ reductions in the near term. Initial estimates by the IPCC indicated 12% inefficiency in global air transport infrastructure. Since then, 4% efficiencies have already been achieved. Full implementation of more efficient air traffic management and airport infrastructure could provide substantial emissions reductions through implementation of measures such as the Single European Sky and the Next Generation air traffic management system in the USA.

While efforts from the first three pillars will go a long way to achieving the goal of carbon-neutral growth from 2020, the aviation sector will need to turn to the fourth pillar — smart economic measures — to close the gap.

A GLOBAL APPROACH FOR AVIATION

Aviation is the ultimate global activity: it provides an interconnected network of air services spanning the entire globe, with aircraft — and their emissions — crossing continents and national jurisdictions on a daily basis. Even flights that are purely within a State’s boundaries can have implications for international aviation, as domestic flights often serve as critical feeders for the international network. To avoid a patchwork of overlapping and potentially conflicting national and regional policies, a framework for addressing CO₂

**MAPPING OUT THE INDUSTRY COMMITMENTS**

1. Improve fleet fuel efficiency by 1.5% per year from now until 2020
2. Cap net emissions from 2020 through carbon neutral growth
3. By 2050, net aviation carbon emissions will be half of what they were in 2005

(Schematic, indicative diagram only)
emissions from aviation must be developed at a global level.

Further, although aviation is a relatively homogeneous sector in terms of technology and efficiency levels, it is also a highly competitive, R&D-intensive sector, largely characterised by low entry barriers, thin revenue margins and a high exposure to external shocks.

Policy measures applied in other sectors may not necessarily translate to aviation. While the aviation sector has many characteristics that make the development of policy mechanisms to further reduce emissions more challenging than for other fossil fuel consuming sectors, it has an unparalleled record of CO2 efficiency improvements.

Recognising the specific nature of the aviation sector, governments at the 37th ICAO Assembly (October 2010) demonstrated that multilateral collaborative action by all States through a global approach under ICAO is the most appropriate mechanism to effectively address international aviation emissions.

To be effective, however, efforts to limit or reduce CO2 emissions from aviation should address all parts of the aviation supply chain. In addition to aircraft operators, this includes, for example, aircraft manufacturers, fuel suppliers, air navigation service providers and airports, who directly influence aviation's environmental performance through the design and deployment of the products and services they supply.

Lastly, governments have a responsibility to establish the right legal and fiscal frameworks to facilitate and increase investment in cost-effective CO2 emissions reduction measures, including new aircraft and engine technologies, more efficient air traffic management infrastructure and low-carbon sustainable alternative jet fuels, and to enable the full and unrestricted access of the aviation sector to the global carbon market and use of available mitigation measures outside the sector.

**PROPOSED TARGETS AND GUIDING PRINCIPLES**

ICAO is the appropriate United Nations body for setting and administering aviation-specific standards and targets to further address aviation greenhouse gas emissions. Following adoption of the groundbreaking ICAO Assembly Resolution of October 2010, the aviation sector urges governments to support ICAO in the further development and implementation of this agreement.

In addition to the principles already agreed by governments at ICAO (see box next page), it is recommended that further work should reflect the following targets and guiding principles:

**Targets** – In line with aspirational goals already under discussion in ICAO, a mid-term target to stabilise net CO2 emissions from aviation from 2020 onward (carbon-neutral growth), subject to critical aviation infrastructure and technology advances achieved by the industry and government, should be adopted. A long-term aspirational goal would be to reduce aviation net carbon emissions by 50% in 2050, compared to 2005 levels.

**Accounting for aviation emissions** – Aviation CO2 emissions should be accounted for in a dedicated global emissions inventory for the sector. It is essential that emissions from aviation are accounted for only once, whether from domestic or international activities and that any market-based measures addressing aviation emissions are not duplicative. Above all, fair competition must be ensured between aircraft operating on the same routes.

**Individual carrier responsibilities** – Responsibility for meeting the collective industry CNG 2020 target should take into account early actions taken by carriers, the maturity of aviation markets and the special needs of developing countries. Each carrier has the option to decide what measures to use to reduce and/or mitigate its CO2 emissions to meet its target, including fleet renewal, retrofits, operational improvements, sustainable alternative fuels, as well as certified carbon credits and potentially any tradable allowances obtained from the carbon markets.

**Geographic coverage** – Due to the global, interconnected nature of air transport, governments are encouraged to equally apply the parameters of a global framework to both domestic and international aviation emissions, without distinction.

**Interdependencies of measures** – The key CO2 abatement opportunities for the aviation sector are the implementation of new technologies, including low fuel burn aircraft and engine technologies, alternative fuels with reduced life-cycle CO2 emissions, and on-going improvements in operational efficiency and air traffic management systems and processes. While the aviation sector continues to explore and exploit the full range of available abatement opportunities, it is important to consider the interrelationships between the various mitigation measures. For example, some actions such as changing preferred runway usage and reducing flightpath lengths near airports can adversely affect noise management procedures. Therefore, regulators, when formulating actions to address CO2 emissions from aviation, must carefully consider and balance the overall possible impacts of such actions.

But whatever the approach, all adopted
measures should be technologically feasible, economically reasonable, socially responsible and environmentally beneficial. The aviation sector believes that ICAO is uniquely qualified to provide guidance and technical expertise to develop CO₂ mitigation measures and ensure that they do not adversely impact on other sensitive aviation areas such as noise and local air quality.

Cost-effective economic measures – Economic measures to address CO₂ emissions from aviation must be cost-effective and non-duplicative, while minimising market distortions. These measures, developed through ICAO, should be transparent, administratively simple and implemented on the basis of consensus. They should also provide full and open access to the global carbon market and recognise past and future achievements and investments in aviation fuel efficiency and in other measures to reduce aviation emissions. The aviation industry reiterates that economic measures should not impose an inappropriate economic burden on aviation. Taxes, levies and charges targeted at air transport are environmentally ineffective and severely undermine the sector’s ability to invest in further emissions reduction technology, operations and infrastructure measures.

Use of revenues – Any eventual revenues from economic measures under a global framework to address aviation emissions should be clearly earmarked for aviation and environmental purposes. Such revenues should be prioritised for re-investment in additional, cost-effective measures to further improve the emissions profile of aviation, for instance by supporting the development and deployment of more fuel-efficient aircraft, engines, infrastructure, low carbon sustainable jet fuels and investment in air traffic management technologies. Part of such revenues could be set aside for carbon offset projects within the sector.

Use of carbon market instruments – For a global approach for aviation to be effective it must have an open architecture, i.e. aviation should have unrestricted access to carbon market instruments to meet its obligations, on a par with other sectors.

Administration – Effective administration of a global framework requires implementation, management and oversight of the following processes: target setting, CO₂ monitoring and reporting, compliance and enforcement. Administration should be undertaken by the organisation(s) able to do so in the most efficient and cost-effective manner and could involve both government and industry bodies. As the designated United Nations body for international aviation, ICAO should have a central oversight role in this process. As is currently already the case with regard to aviation noise and non-CO₂ emissions, ICAO should create and maintain a robust aviation CO₂ emissions inventory, available on an equal access basis.

Special needs of developing countries – The 37th ICAO Assembly (October 2010), demonstrated the political will to recognise and accommodate States that have difficulty complying with standards or recommended practices. The relevant Assembly resolution provisions should be respected and the potential impacts of such measures on the aviation industry and markets must be kept under regular review.

RECOMMENDATIONS FOR INCLUDING AVIATION IN A GLOBAL CLIMATE CHANGE AGREEMENT

The global aviation sector recommends:
1. Aircraft CO₂ emissions should be addressed as part of any post-2020 global climate change agreement, through the International Civil Aviation Organization (ICAO).
2. Emissions from aviation should be addressed through ICAO adopting a global and comprehensive approach that does not distort competition amongst aircraft operators, and that treats aviation as one indivisible sector rather than by country.
3. Aviation emissions should be accounted for in a dedicated, global emissions inventory for the sector to reliably track progress against industry targets, avoid double counting and ensure emissions reductions are only paid for once.
4. The aviation industry can achieve carbon neutral growth from 2020 and work towards reducing aviation net carbon emissions by 50% in 2050, compared to 2005 levels. These ambitious targets are contingent upon governments providing tangible support for:
   • modernisation of air traffic management
   • aerodynamic and operations technology research and development through academic and industry partners
   • commercialisation of sustainable, second-generation biofuels for use in aviation
   • development of a multilateral market-based approach for international aviation emissions, to avoid the proliferation of and – where possible – replace existing unilateral fiscal measures.

UNILATERAL RESPONSE MEASURES ARE NOT USEFUL

The safe, orderly and efficient functioning of today’s international air transport system relies on the adoption of commonly agreed standards, rules and regulations. The use of unilateral measures, regulating foreign operators without the consent of their governments, critically undermines this foundation. It also puts aviation at risk of being caught in a web of uncoordinated, costly and ineffective measures and counter-measures imposed by governments, which will benefit no one but may harm economies and environments worldwide.
Aviation brings enormous benefits to communities and economies around the globe. It is a key enabler of economic growth, social development and tourism providing connectivity and access to markets. Air transport, currently supporting 56.6 million jobs and over $2.2 trillion of global GDP with a strong track record of fuel efficiency and CO₂ emissions savings, is a strategic contributor to sustainable development.

Our goals and achievements to date
As leaders of the aviation industry, we signed a Declaration in 2008 committing ourselves to action on climate change. Since then we have put forward a set of ambitious goals and implemented initiatives to meet them. We are delivering already on our short-term promises for fuel efficiency of 1.5% per annum improvement through to 2020 and are firmly on track to meet our longer term commitments.

Now, we, the undersigned aviation industry companies and organisations, broaden our commitment to advancing and strengthening the interdependent pillars of sustainable development – economic growth, social development and environmental stewardship – at the local, national, regional and global levels. We will continue to:

» provide an air transport sector that is a key socio-economic contributor to the world economy and catalyst for growth, building connectivity to enhance trade, tourism, personal opportunity and mobility to all people everywhere;

» provide high value jobs, innovative partnerships with the communities we serve and investment in skills and training, whilst maintaining a high level of investment in research and development around the world; and

» demonstrate environmental leadership by delivering on our goal to cap net aircraft carbon emissions from 2020 and work to achieve our ambitious goal of a 50% reduction in net carbon emissions by 2050 compared to 2005 levels.

Our request to governments worldwide
As one of the most highly-regulated global sectors, we cannot continue to deliver these benefits alone. We commit to show leadership and work with governments to pursue our common goal of economic prosperity and sustainable development through:

1. continued investment in academic and international collaborative research for the development and implementation of new green technologies and operational practices;

2. urgent action for advancement of a highly-efficient air traffic control capacity;

3. encouraging the use of alternative renewable energy by providing appropriate policies and incentives to facilitate the timely, cost-effective and sustainable development of aviation biofuels;

4. continued development of sustainable airport infrastructure to meet the anticipated future demand for aviation services within the context of the economic, social and environmental needs of society;

5. providing a positive regulatory environment that encourages aviation development as part of a broader government economic growth policy, co-ordinated across national borders; and

6. urging governments to reach agreement at the International Civil Aviation Organization (ICAO) for a global framework for reduction of emissions from aircraft operations using technology development, efficient operations and infrastructure, and the use of international multilateral market-based measures to address any remaining emissions gap.

We believe that our commitments to work in partnership with governments, other industries and civil society will deliver an efficient aviation sector, fit to meet the needs and provide the services required by the world economy.

We strongly encourage others to join us in this endeavour.
The guiding principles for the design and implementation of market-based measures (MBMs) for international aviation, adopted at the 37th ICAO Assembly, Resolution 37-19:

a) MBMs should support sustainable development of the international aviation sector;
b) MBMs should support the mitigation of GHG emissions from international aviation;
c) MBMs should contribute towards achieving global aspirational goals;
d) MBMs should be transparent and administratively simple;
e) MBMs should be cost-effective;
f) MBMs should not be duplicative and international aviation CO2 emissions should be accounted for only once;
g) MBMs should minimise carbon leakage and market distortions;
h) MBMs should ensure the fair treatment of the international aviation sector in relation to other sectors;
i) MBMs should recognise past and future achievements and investments in aviation fuel efficiency and in other measures to reduce aviation emissions;
j) MBMs should not impose inappropriate economic burden on international aviation;
k) MBMs should facilitate appropriate access to all carbon markets;
l) MBMs should be assessed in relation to various measures on the basis of performance measured in terms of CO2 emissions reductions or avoidance, where appropriate;
m) MBMs should include de minimis provisions;
n) where revenues are generated from MBMs, it is strongly recommended that they should be applied in the first instance to mitigating the environmental impact of aircraft engine emissions, including mitigation and adaptation, as well as assistance to and support for developing States; and
o) where emissions reductions are achieved through MBMs, they should be identified in States’ emissions reporting.

This paper was developed by the following organisations, representing the combined global commercial aviation sector, and coordinated by the Air Transport Action Group:

- Airports Council International, representing over 1600 airports serving 95% of the world’s passengers.
- Civil Air Navigation Services Organisation, representing 76 air navigation service providers, serving over 85% of global air traffic.
- International Air Transport Association, representing 240 airlines, comprising 84% of global air traffic.
- International Coordinating Council of Aerospace Industries Associations, representing global commercial aircraft and engine manufacturers.

Facts and figures on aviation’s global economic and social benefits can be found at www.aviationbenefitsbeyondborders.org

Facts and figures on aviation’s global efforts to reduce emissions can be found at www.enviro.aero