

## Emissions Containment Policy – 2008

### EMISSIONS CONTAINMENT POLICY - UPDATE

#### Reducing the Climate Change Impact of Aviation

*In July 2005 the industry suggested that the Commission should engage in a more comprehensive dialogue on how the impact of aviation on the environment could be reduced. We believed then, as we believe now, that only an encompassing strategy can achieve the desired result of delivering tangible benefits for the environment, without jeopardizing the equally important objective to maintain mobility for Europe's citizens. In our letter dated 7<sup>th</sup> July 2005, we proposed an Industry Emissions Containment Policy which contains an action plan based upon technological progress, infrastructural improvements, operational measures and economic instruments.*

*Significant progress has been achieved since 2005 in creating a public awareness of the issues at stake, and in developing regulatory initiatives to reflect the public perception that, for aviation to be sustainable, its impact on the environment must be contained.*

*The Commission has rightly identified the absence of a true "Single Sky" in Europe as causing circuitous routings and unnecessary fuel burn, thereby increasing the impact aviation has on the environment. This also creates delays and imposes costs for the European economy and its airline sector. The Commission's Communication of December 2007, the High Level Group Report's specific recommendations, and the soon to be published draft regulatory proposals for a Single Sky 2<sup>nd</sup> package will undoubtedly act as a catalyst towards the rapid implementation of the necessary organisational, technological and strategic measures for the environmental and economic benefits of a Single Sky to materialise as of 2013.*

*As regards technology, the last few years have seen continued progress and the opening up of new avenues in fuel and materials development. Already trials are being conducted to evaluate the use of biofuel in place of traditional kerosene. Aside from the research into sources of energy, the multi-stakeholder initiative ACARE (Advisory Council for Aeronautical Research in Europe) has developed ambitious goals for products entering service by 2020, with an objective of a 50% reduction in CO<sub>2</sub> per passenger-km compared to aircraft in service in 2000. Modern aircraft gradually being introduced, such as the A380, A350 and B787 will in the coming years reduce the average fuel consumption to about 3 litres per passenger/100 km, i.e. 25% less CO<sub>2</sub> than the present worldwide average. In the longer-term perspective, the international aviation industry has set itself the goal of emissions-free commercial aircraft by 2050.*

*Individual European airlines, in addition to contributing to the research programmes, have stepped up their internal awareness campaigns to implement operational measures to reduce CO<sub>2</sub> through optimised procedures.*

*The technological, infrastructural and operational measures have effectively decoupled growth of traffic from the growth rate of emissions. The airline sector is keen to continue to provide for safe and reliable transport of passengers and cargo on an increasing scale, in response to public demand, while at the same time delivering on its commitment to minimising its impact on the environment.*

*In the past three years, the European airline sector has also engaged in a proactive approach with the Commission on the development of design elements for the inclusion of aviation in its Emissions Trading Scheme. We expect such a scheme to reflect that aviation contributes, in absolute terms, just 2% of global CO<sub>2</sub> emissions. Moreover, aviation has for the time being no alternative energy and any restriction on its activity would have serious implications for the social and economic benefits which the industry delivers.*

*The recently announced Commission's Energy Package is a sign of courageous political leadership, which nonetheless appears to have lost sight of the need for acceptability by third party States. Moreover, by proposing 100% auctioning of permits by 2020, the Commission has effectively subscribed to a dogma without prior impact assessment. There remain substantial risks that European airlines would be placed at a disadvantage vis-à-vis their global competitors, that they might be subject to commercial and political retaliation, and that traffic might divert to non-European routings, with no consequent benefit to the environment.*

*We maintain that the EU can best demonstrate its added value for the European citizen if all stakeholders – Member States, industry and the EU institutions – share the objectives, as well as the means to achieve them. Progress in the past few years achieving both environmental and economic goals was achieved precisely because of intense dialogue amongst all stakeholders. We seek to reinvigorate the dialogue by providing you with a holistic overview of the pertinent aspects of a sustainable aviation policy.*

*Ulrich Schulte-Strathaus  
Secretary General  
Association of European Airlines*

## Introduction

In July 2005, the European aviation industry published its Emissions Containment Policy, an all-encompassing strategy which, if followed by industry, stakeholders and regulators alike, will allow the aviation sector to bridge the gap between its past achievements and its future environmental targets.

Since then, the debate has moved on. The European Commission published its communication on the inclusion of aviation into the EU Emissions Trading Scheme in September 2005, and its draft Directive on 20 December 2006. After the European Parliament First Reading, the Council of Environment Ministers reached a political agreement on 20 November 2007. The draft Directive is now going through the rest of the legislative process; in parallel, in January 2008, the Commission issued a Communication on Europe's Climate Change Opportunity, including a proposal for an enhanced Emissions Trading Scheme, covering all major industrial emitters including aviation.

As a consequence, the political debate on aviation's environmental performance has narrowed down to discussions around emissions trading in particular and market-based instruments in general. This is, we believe, to the detriment of a holistic approach, which alone would allow reconciling environmental concerns with the protection of European mobility and welfare. The Renewed Lisbon Growth and Jobs Strategy encompasses both economic and climate change goals, and both can and should be addressed in a balanced way.

This concern prompted the industry to review their Emissions Containment Policy, with the objective of:

- Taking stock of the progress achieved in reducing aviation's carbon footprint,
- Identifying further areas for progress and actions that remain to be taken,
- and renew our call to European regulators and legislators to address the areas over which the air transport sector has little or no control, but on which it depends to reduce its carbon footprint, such as a speedy implementation of the Single European Sky.

This proposed policy is based upon four pillars: technological progress, infrastructure improvements, operational measures and market-based instruments. Aviation is taking its environmental responsibilities very seriously – in 10 years, the European industry has reduced its emissions by 17.5% per passenger/km, and is committed to continuously improve on this performance. However, huge investments are required to do this. Market-based instruments should bridge the gap between technological, infrastructural and operational achievements on the one hand, and ultimate targets on the other, by rewarding environmentally-efficient operators and achieving the best cost-efficiency of measures adopted to maximize their environmental benefit.

The air transport industry is a responsible, irreplaceable contributor to its well-being of society. More than 7.5 million European citizens' jobs depend on air transport. Isolated and peripheral regions are connected; business and employment opportunities are created; important industries and sectors heavily reliant on air transport connectivity are supported, for example the

tourism sector; 8% of European GDP is generated; Europe's social and political cohesion is ensured thanks to the mobility afforded by air transport.

The Emissions Containment Policy goes far beyond the debate between the industry and its regulators. It is in the interest of European citizens that an optimal balance between environmental responsibility, economic progress and social development is maintained.

## Technological progress – Pillar 1

Throughout the history of air transport, technological developments have constantly opened new avenues of performance and efficiency. Aviation's reliance on fossil fuels has put a premium on fuel efficiency with each succeeding generation of airframes and engines, which has translated, thanks to the funds invested by operators, into a steady decrease in CO<sub>2</sub> emissions per unit of capacity. This trend has been accelerated with the focus on cost efficiency driven by the liberalisation of air transport from the late 1970s onwards.

Consequently, emissions growth has become decoupled from market growth. The popular misperception that aviation is the 'fastest-growing' source of CO<sub>2</sub> emissions fails to take account of this. However, it is essential that these improving trends be maintained. The Advisory Council for Aerospace Research in Europe (ACARE) estimates that a further 40 to 45% improvement in fuel emissions can stem from improvements in airframe design and construction and in engine technology.

This is precisely where efforts are being focused at the moment, both at individual and community level. The aviation industry currently invests up to 14% of its annual turnover in Research & Technology Development (R&TD). At the community level, useful instruments have been established since the early 1980s such as the Framework Programmes, sponsored by the European Commission, and allocating funds on perceived priorities. In the latest round in this exercise (FP7, 2007-2013) the funding for aeronautics projects has grown to close on €4bn, representing 50% of the total invested amount as companies are asked to ensure the other half of the expenditure.

In order to ensure a consistent use of these financial sources, there is a need for the establishment of clear and realistic targets, defined in consultation with the relevant stakeholders. Various Joint Technology Initiatives (JTIs) on environmental measures for aviation, such as the newly-launched CLEAN SKY, respond to this need by setting long-term, ambitious goals and priorities and by establishing, through the definition of a Strategic Research Agenda (SRA), a clear timeframe for programme investments. In this particular case, the following goals have been fixed for the 2020 horizon:

- 50% reduction of CO<sub>2</sub> emissions through drastic reduction of fuel consumption
- 80% reduction of NO<sub>x</sub> emissions
- 50% reduction of external noise.

Technology must be considered as an important means to an end, rather than an end in itself. Measures must be taken that ensure R&TD can be translated into concrete products and systems that benefit the industry and ultimately the customer. To this end, particular attention needs to be paid to any transition phase needed to pass from one system to another, and community funding must cover this lapse of time as well, an element that often lacked in the past.

Technological development aimed at delivering greener solutions is following a dual path of improvement and innovation. Today, airframe and engine manufacturers are investing significant resources on projects of varying degrees of maturity, such as bio- or synthetic fuel, fuel cell, solar or hydrogen-powered engines and the use of composite materials, and promising results have already been realised. Nevertheless, these developments should not obscure the fact that, in contrast to industries such as electricity and other energy producers, no real alternative to the traditional turbofan engines is to be expected in the foreseeable future.

#### **The European aviation industry urges Member States and the Commission:**

- to encourage research as a fundamental enabler of improved environmental performance;
- to promote the technological progress on emissions and noise that will ensure long-term sustainability;
- to maintain their political support for, and their financial investment in, R&TD in partnership with the aviation industry, so as to meet the objectives of the ACARE Strategic Research Agenda;
- to ensure that R&TD is translated into real products and systems, and to pay particular attention to transition phases;
- to develop instruments to ensure that new technologies reach the market without unnecessary delay.

#### **Additional sources of information**

Advisory Council for Aeronautics Research in Europe:

<http://www.acare4europe.com>

The CLEANSKY Joint Technology Initiative:

<http://www.cleansky.eu>

The 7<sup>th</sup> Framework Programme:

<http://cordis.europa.eu/en/home.html>

## **Infrastructure improvements – Pillar 2**

### **1 – Air Traffic Management**

The 1999 Intergovernmental Panel on Climate Change report indicated that improvements in Air Traffic Management (ATM) and other operational procedures could reduce aviation fuel burn by between 8% and 18%.

The greatest reductions (6-12%) would come from ATM improvements. All engine emissions would be reduced as consequence of lower fuel burn.

European Air Traffic Management, in particular, is highly fragmented with 36 Air Navigation Service Providers and 67 Area Control Centres to control the airspace of the Eurocontrol

Member States. Tackling this fragmentation and other inefficiencies of today's European Air Traffic Management would reduce emissions by up to 12 million tonnes of CO<sub>2</sub> each year.

A second package to the Single European Sky legislation based on the July 2007 recommendations of the Commission's High Level Group, together with the SESAR programme as its technical/operational complement, is expected to bring significant environmental benefits.

More efficient routings will greatly reduce environmental impact; this should be achieved thanks to a political commitment by 2010 to implement by 2012 Functional Airspace Blocks, which meet key performance objectives for safety, flight efficiency, cost efficiency and capacity.

A key feature, requiring commitment at the highest EU government levels, will be an improvement in civil/military coordination in ATM in order to avoid that airspace is blocked for civil traffic when not needed for military purposes. This requires enhanced interoperability between civil and military ATM systems with more predictability about the availability of military airspace.

SESAR is developing the technical/operational complement to the Single European Sky. It is expected to greatly enhance the safety and capacity of the ATM system while reducing unit cost and environmental impact. It is essential that SESAR delivers quick wins (including early benefits from an environmental point of view) otherwise the aviation industry support will wane. Last but not least, SESAR should be fully interoperable with other worldwide ATM systems to ensure a seamless global ATM system.

#### **The European aviation industry urges Member States and the Commission:**

- to support the need for a second package of Single European Sky legislation based on the recommendations of the EC High Level Group Report and in close cooperation with the aviation industry. In particular, to support the need for independent economic regulation of monopoly ATM services with performance target-setting at European level;
- to commit by 2010 to implement by 2012 Functional Airspace Blocks which meet key performance objectives for safety, flight efficiency (with consequent environmental benefits), cost efficiency and capacity;
- to commit to drastically improve civil/military coordination in ATM to avoid that airspace is blocked for civil traffic even when not needed for military purposes;
- to ensure that SESAR delivers quick wins.

#### **Additional sources of information**

The AEA Vision of the Single European Sky (SES):

[http://www.aea.be/assets/documents/positions/AEA\\_ATM\\_Strategy\\_April07.pdf](http://www.aea.be/assets/documents/positions/AEA_ATM_Strategy_April07.pdf)

AEA Secretary General presentation in the European Commission Conference "Towards a More Performing European Aviation System"

[http://files.aea.be/Speeches/USS-Pres-Sin-Sky-EUR\[1\].pdf](http://files.aea.be/Speeches/USS-Pres-Sin-Sky-EUR[1].pdf)

AEA Position Paper on SESAR Joint Undertaking Governance:

<http://www.aea.be/assets/documents/positions/PPSesar051107.pdf>

## **2 – Airport Capacity**

Inadequate airport capacity produces inefficiencies which have a measurable impact on CO<sub>2</sub> production. Aircraft queuing on a taxiway awaiting departure or flying a holding pattern awaiting landing clearance directly contribute to greenhouse gas emissions.

Many airlines rely on the hub and spoke system to maximise the efficiency of their network, i.e. to minimise their emissions. Through a combination of interlocking schedules and fleet management, a broad array of city-pairs can be served with a limited number of aircraft and selection of routes, and products can be 'right-sized' to individual city markets. Competing hub-and-spoke systems bring customer choice and further intensify the drive for efficiency.

Anticipating the lack of available capacity years ago, airlines have been inventive and proactive in adapting their business models, allocating specific aircraft size to specific routes and markets. Also, with regard to operational integrity, lead times, efficiency and technical performance, airlines have managed, maximised and optimised available capacity and maintained a high level of service quality. Not to mention the following of strict slot allocation procedures at congested airports and absorbing significant increases of airport charges without having alternative capacity to turn to. Now, the list of options is running out.

Congestion remains of prime concern to the sustainability of European aviation. We are on the verge of a major problem at European airports due to the growing gap between available airport capacity and market demand. The consequences of this 'capacity crunch' are that hub airports will not be able to grow and therefore access to hub airports from the regions and the periphery is likely to be diminished. Facilitation of new infrastructure is badly needed. If there is insufficient capacity, operations are less efficient and emissions are increased.

When developing harmonised methodology tools to design and assess airport capacity, different local conditions should be taken into account, e.g. gateways to Europe, gateways to capitals and accessibility to the regions. From an environmental as well as capacity and market demand point of view individually adapted solutions rather than 'one size fits all' remedies should be supported.

Numerous benefits are to be found when linking capacity with the environment. Noise and pollution constraints can be managed better within a limited area, provided that appropriate land-use planning and control measures are in place. Concentration also aids the provision of viable local rail services and public transportation by generating a critical mass of demand.

Also, it is a requirement of the environmental debate that projects on co-modality should be supported, such as the requirement to always foresee a train station in every new airport infrastructure project. Liberalization should support cooperation between transport modes. It would significantly enhance the connectivity options for the travelling public as a seamless system of modes of transportation would become a reality.

#### **The European aviation industry urges Member States and the Commission:**

- to acknowledge that the capacity crunch is a threat to European sustainability, not merely a problem at national level;
- to initiate a European vision and identify a long-term strategy with airport capacity expansion as key objective, and to clearly indicate the benefits can be found when linking capacity with the environment;
- to promote projects designed to enhance voluntary co-operation between the different modes of transport;
- to sensitise the public to the problem of the capacity shortage, make clear that it will affect the public's flexibility and transport options;

- to simplify and harmonise the procedures for planning of infrastructure and land use planning at national level.

### Operational measures – Pillar 3

If technological progress and infrastructure improvements promise to deliver significant benefits in emissions efficiency, there remains a further avenue of opportunity in the way aircraft are operated. 'Operational Measures' covers a multitude of actions undertaken by aircraft operators to improve their procedures in order to reduce the impact of their emissions.

The measures themselves overlap with both technology and infrastructure. A typical example is the use of continuous descent approaches into airports, which call on the operational skills and training of both pilots and controllers, but which generate substantial fuel and CO<sub>2</sub> savings.

Another particular focus is on minimising fuel burn during taxiing by improving operational procedures on the ground. Further benefits can be realised through rigorously pursuing weight reduction measures and seeking fuel efficiency through enhanced maintenance procedures.

Most of the measures under review are detailed in ICAO Circular 303 'Operational Opportunities to Minimise Fuel Use and Reduce Emissions'. While it is self-evident that airlines should seek to operate as efficiently as possible the Emissions Containment Policy should nevertheless proactively promote, and encourage airlines to share, best practice. National and European regulators should formally acknowledge this and support the industry's efforts, and lift restrictions that could affect such best practice, with due regard to maintaining the highest levels of safety.

#### **The European aviation industry urges Member States and the Commission:**

- to promote the wide dissemination of ICAO Circular 303, so as to encourage good operational practices;
- to actively support the implementation of environmentally effective procedures as standards at an international level, through ICAO;
- to recognise and reward the industry's efforts.

#### **Additional sources of information**

ICAO Circular 303:

<http://icaodsu.openface.ca/documentItemView.ch2?ID=9514>

IATA Fuel conservation through aircraft maintenance:

[http://www.iata.org/NR/ContentConnector/CS2000/Siteinterface/sites/whatwedo/file/Fuel\\_Conse rvation\\_through\\_Aircraft\\_Maintenance.pdf](http://www.iata.org/NR/ContentConnector/CS2000/Siteinterface/sites/whatwedo/file/Fuel_Conse rvation_through_Aircraft_Maintenance.pdf)

### Market-based instruments – Pillar 4

Market-based instruments make up the fourth pillar of the industry's Emissions Containment Policy. As such, they should be considered in conjunction with the other three pillars, amplifying and building on the achievements of technology, infrastructure and operations. Economic instruments should be carefully assessed to quantify their economic impact, social costs and environmental benefit, before they are implemented. They should especially take into account



the need to preserve the competitiveness of the European aviation industry in an increasingly competitive world civil aviation market.

### **Emissions trading**

As a complement to the infrastructural, technological and operational measures depicted above, AEA recognises the industry has consistently accepted that a sensible emissions trading scheme has the potential to ensure that environmental protection is both sustainable and balanced with economic and social development.

Contrary to a tax, the principal consequence of which is to provide revenue for national treasuries, an Emissions Trading Scheme (ETS) should allow airlines to buy surplus permits from other industries, thereby contributing to a general decrease in industry pollution whilst enabling airlines to grow. By buying the permits required to meet traffic demand, airlines would effectively operate on a carbon neutral basis.

However, the effectiveness of the system, and its acceptability to non-EU operators, will depend on its design and its scope. A well-designed ETS should avoid distortions to competition, minimise administrative burdens and deliver solid environmental gains.

The AEA believes that a 'cap and trade' ETS should respect the following key design elements:

- a reasonable cap to take into account the high abatement costs of the aviation sector;
- a baseline as close as possible to each trading period, so as to include the most recent traffic developments;
- emissions coverage limited to CO<sub>2</sub> as it is the only Greenhouse Gas emitted by aircraft;
- no need for a multiplier factor, as non-CO<sub>2</sub> effects are to be dealt with separately;
- widest possible access to the other sectors' market in an open ETS as well as full use of credits from Clean Development Mechanisms (CDM) and Joint Implementation (JI);
- no allocation by auction; a minimal level of auctioning might be contemplated, to cover the administrative costs of ETS related to civil aviation;
- benchmarking based on Available Tonne Kilometre (ATK) + 200 km to ensure fair treatment for the different business models;
- and last but not least, acceptance of the scheme by third countries to avoid international disputes.

As the legislative process unfolds, the AEA is committed to contribute to a well-designed, workable, efficient and attractive scheme, compatible with developments in progress within ICAO, which could be endorsed by the international community and could then serve as a model.

### **Taxes and charges**

Taxes that have an environmental objective are explicitly aimed at modifying demand for air transport – in other words, pricing passengers out of the market. Taxes clearly deliver additional revenue for governments, but with no guarantee that this revenue will be used for environmental objectives. By attacking the customer base, taxation makes it more difficult for airlines to fund

the new technologies and the research that provide the best prospects for emissions abatement.

It is a widely-held belief that aviation is inadequately taxed in comparison to other transport modes. On the contrary, this view fails to acknowledge that aviation pays its own way, in contrast to roads and road traffic management, which are publicly funded, and railways, which are in receipt of massive public subsidy. Airlines pay for their airport infrastructure and their traffic management: they are – substantially – net contributors to public funds.

Finally, any measure which disproportionately affects European airlines would severely distort competition vis-à-vis their international rivals. Traffic would be diverted rather than suppressed – thereby cancelling, on a global level, any environmental benefit that could be realised. If European airlines were not to lose passengers to their international competitors, they would have to absorb the costs of the tax themselves rather than add it to the ticket price, again reducing their ability to invest in the fleet renewal and other technological advances which is where the real environmental benefits lie.

**The AEA therefore urges the European Parliament, the Council and the Commission:**

- to recognise aviation's important contribution to Europe's economy, growth, employment, political and social cohesion, and take decisions accordingly;
- to consider market-based instruments as an indissociable part of a comprehensive approach to reduce aviation's impact on the environment, encompassing technological progress, infrastructure in the air and on the ground, and operational measures;
- to consider that a well-designed ETS appears to be a more promising option than taxes and charges;
- to propose a well-designed cap-and-trade ETS, taking fully into account the international dimension and compatible with ongoing work within ICAO;
- to reject the principle of full auctioning, as this would transform the ETS into a blunt fiscal instrument;
- to support the AEA's proposed design elements, as mentioned above, in order to achieve a coherent, workable and sensible aviation ETS;
- to strive for global agreement to achieve the best environmental benefits, whilst avoiding carbon leakage, traffic deviation and distortions of competition.

**Additional sources of information**

AEA Position on the Inclusion of Aviation into the ETS (Feb 08):

[http://www.aea.be/assets/documents/positions/PP\\_ETTS\\_17October07.pdf](http://www.aea.be/assets/documents/positions/PP_ETTS_17October07.pdf)

Analysis of the EC Proposal to Include Aviation Activities in the ETS (June 07):

[http://files.aea.be/downloads/impact\\_assessment.pdf](http://files.aea.be/downloads/impact_assessment.pdf).

Facts, figures and case studies on the aviation sector's environmental performance:

[www.enviro.aero](http://www.enviro.aero)

