

A single European sky would save over
12 million tonnes of CO₂ annually.

A sustainable vision for the aviation industry

PHILIPPE ROCHAT
DIRECTOR, AVIATION ENVIRONMENT,
INTERNATIONAL AIR TRANSPORT ASSOCIATION



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Air transport provides many benefits around the world including job and wealth creation and unprecedented global mobility. The challenge for the industry is to keep such benefits while eliminating any negative climate change impacts. The International Air Transport Association's vision of the future is for carbon neutral growth in the medium term and of zero carbon emissions technology development within 50 years. To achieve this, however, development in the four areas of technology, operations, infrastructure and economic measures, will be vital.

AIR TRANSPORT: GOOD OR BAD?

Air transport is an important catalyst for globalisation and world economic growth. The industry contributes to sustainable development by facilitating tourism and trade, generating economic growth, creating jobs and increasing tax revenues. For example, a US\$350 million investment in aviation infrastructure and services in Kenya boosted long term GDP by 0.4 per cent per annum. Air transport often serves as the only means of transportation to remote areas, thus promoting social inclusion. It facilitates the delivery of emergency and humanitarian aid relief and the swift delivery of medical supplies, as well as organs for transplantation.

In Africa, the role of air transport is especially important given the absence of effective ground transport networks and the continent enjoyed an 8.6 per cent growth in passenger traffic in 2006,

against a global average of just five per cent. Air transport generates 470,000 jobs and US\$11.3 billion in economic activity across Africa.

The benefits of air transport are indisputable but the industry is coming under increasing pressure over its environmental impact. The arguments are numerous: aviation is a major contributor to global warming; it is the fastest growing source of greenhouse gas (GHG) emissions; flying is destroying the planet. So what is the truth?

The IPCC, winners of the 2007 Nobel Peace Prize, estimates the level of global CO₂ emissions from aviation at two per cent, with a total climate change impact of three per cent. This includes not only commercial traffic, but also general aviation and military flights. These figures have remained largely unchanged over the past two decades, despite the growth in air traffic. Projecting forward to 2050, the IPCC has aviation at three per cent of global CO₂ emissions and five/six per cent of climate change impact. Aviation is but a small part of the big problem of climate change.

BALANCING ACT

Despite these figures, aviation's carbon footprint is growing and that is politically unacceptable for any industry. The challenge for aviation is to keep its many benefits, such as unprecedented global mobility supporting 32 million jobs and US\$3.5 trillion worth of economic activity, while eliminating its negative impacts.

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In September 2007, government leaders responsible for civil aviation gathered for the Triennial Assembly of the International Civil Aviation Organization (ICAO). Environment was the hot topic of the week with all 190 ICAO contracting states reaffirming ICAO's leadership on aviation and environment by endorsing a comprehensive strategy on climate change, and embracing the International Air Transport Association's (IATA) 25 per cent goal to improve fuel efficiency by 2020.

Unilateral European proposals to include aviation into its emissions trading scheme have put economic measures at the centre of the political debate, partially fuelled by the upcoming Kyoto deadlines. The solution is not to return to the days when flying was reserved for the well off by making it artificially expensive with even more taxes. Punitive economic measures, such as emissions trading will not have a big impact on aviation's environmental performance. With 28 per cent of costs coming directly from fuel, the airline industry is the most incentivised in the world to keep fuel consumption low. Positive measures, such as tax credits to encourage faster refueling or grants to fund alternative fuel research, would deliver better results.

If emissions trading is to be imposed on airlines, it must be effective and ICAO has promised to work towards a global emissions trading scheme that states could implement on a mutual consent basis.

A VISION FOR AVIATION

The industry is pushing governments for much loftier goals. In June 2007, IATA proposed a vision for the industry to aim for carbon neutral growth in the medium term and to develop zero carbon emissions technology within 50 years. Aircraft manufacturers, engine makers, fuel suppliers and airlines will all be involved in making this goal a reality. A goal that is definitely possible from an industry that went from the Wright Brothers to the jet age in just five decades. The critical question is how to turn the vision into reality?

The first step will be for aviation to decouple carbon emissions from traffic growth, to stop its carbon emissions from growing in absolute terms. The second step must see aviation further reduce its remaining carbon emissions to eventually become a totally carbon emissions free transport mode. To achieve this, IATA has challenged the industry to build and operate a commercial airliner that produces no net carbon emissions within the next 50 years.

Although complete solutions do not exist today, some of the building blocks, ie materials and designs, alternative energy sources, advanced IT solutions, are already taking shape. IATA is confident that with a commitment from all parties, and with ICAO leadership, this vision can be made reality. The vision is built on four pillars.

1: TECHNOLOGY

Technology is a main driver of progress. It is the only way to zero emissions. Quite simply we need to build better planes and more efficient engines powered by non carbon sources. Some potential building blocks already exist: solar power, hydrogen cells and biofuel. Accelerated development of alternative fuels and more advanced technology for airframe, engine and air traffic management is absolutely essential.



IATA, manufacturers and fuel suppliers are jointly working on an action plan focusing on short, medium and long term measures. In the short term, the potential exists to realise emissions reductions by identifying and applying product enhancements and modifications for the current fleet. Airlines are investing billions of dollars in new, more fuel-efficient aircraft. In the past four decades, fuel efficiency increased 70 per cent and will improve a further 25 per cent by 2020.

For the medium term, possibilities must be explored to accelerate fleet renewal and to introduce the latest technologies as early and as widely as possible. Now that the giant A380 and the Dreamliner B787 have moved from design to production, the main challenge lies with the replacement of the single aisle A320 and B737. The decisions made by Airbus and Boeing, in coordination with engine manufacturers, will have a substantial impact on aviation's future carbon footprint. Development of cleaner, alternative aviation fuels must also take priority, while for the longer term, joint initiatives should be launched to identify and develop radically new technologies and aircraft designs.

2: OPERATIONS

According to the IPCC, improved aircraft operations can save fuel and CO₂ emissions by up to six per cent. IATA is compiling industry best practices, publishing guidance material, conducting airline visits and establishing training programmes to improve existing fuel conservation measures.

In 2007, IATA updated its fuel efficiency goal. It expects airlines to improve their fuel consumption per Revenue Tonne Kilometre (RTK) by at least 25 per cent by 2020, compared to 2005 levels. This will save around 345 million tonnes of CO₂ emissions.

IATA is determined to raise environmental standards across the industry and is aiming to extend its existing fuel conservation programme to promote environmental management systems across all airlines.

3: INFRASTRUCTURE

Infrastructure improvements present a major opportunity for fuel and CO₂ reductions in the near term. By addressing airspace and airport inefficiencies, governments and infrastructure providers can eliminate up to 12 per cent of CO₂ emissions from aviation, according to the IPCC.

Unfortunately, politics often gets in the way of good common sense. Uniting Europe's skies offers the biggest single opportunity to improve aviation's environmental performance. In Europe, there are 34 different air traffic control authorities. In the US, a similar land area, there is just one. If Europe had a single European sky, travel would be more efficient with planes spending less time in the air. This alone would cut CO₂ emissions by 12 million tonnes each year. But after 15 years of talks, a single European sky is still just an idea.

The flexible use of airspace must also become a reality, especially in Asia where traffic growth is particularly strong, and in most oceanic regions where navigation, communication and surveillance should greatly benefit from satellite signals. Thanks to new technologies and procedures, new routes are being opened, including polar ones that shorten long haul flights between Asia and North America or Europe. Moreover, pilots are increasingly allowed to select the most fuel efficient routes in real time, thus avoiding unfavourable wind or other meteorological conditions.

4: ECONOMIC MEASURES

Economic measures should be used to boost the research, development and deployment of new technologies rather than as a tool to suppress demand. The use of tax credits and direct funding must be explored as incentives to drive new technology programmes.

Punitive taxes do not improve environmental performance. Emissions trading would be a more cost effective solution as part of a global package of measures including technology, operations and infrastructure improvement. But the trading system must be properly designed and implemented on a global and voluntary basis. It must also be an open trading system, allowing permit trading with other industries. Economic measures can further be used to engage airline customers in climate change initiatives through carbon-offset mechanisms.

CONCLUSION

The world's airlines, IATA's 240 members, are committed to the vision outlined here. Manufacturers, airports and air navigation service providers are aligned. All are working hard. It is now time for governments to come on board. Through ICAO, governments must set challenging but realistic targets in two important areas. First, targets must be set to improve air traffic management and eliminate unnecessary fuel burn. Then technology targets should be included in a roadmap. This will provide regulatory certainty to back major investment decisions by manufacturers and airlines.

Airlines are investing billions of dollars in more fuel-efficient aircraft.



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Author

Philippe Rochat is Director of IATA's Aviation Environment Department. As such, he supervises all activities related to emissions, sustainability and noise and is Secretary of the IATA Environment Committee. He is also Executive Director of ATAG (www.atag.org), a worldwide alliance of the many sectors of the industry. ATAG has recently launched a cross industry website www.enviro.aero with information about what the industry is doing to tackle climate change.

Philippe Rochat began his aviation career as assistant to the Director General of Civil Aviation of Switzerland, moving on to direct the commercial and financial departments of Geneva International Airport, with additional responsibility for environmental and facilitation issues. After serving as the Representative of Switzerland on the Council of the International Civil Aviation Organization (ICAO), he was elected Secretary General of ICAO and served from 1991 to 1997. Philippe Rochat has a Doctorate of Law from the University of Lausanne and teaches Air Law and Air Transport Economics at several universities.

Organisation

IATA is an international trade body, created some 60 years ago by a group of airlines. Today, IATA represents over 240 airlines comprising 94 per cent of scheduled international air traffic. The organisation also represents, leads and serves the airline industry in general.

Enquiries

Philippe Rochat, Director Aviation Environment
International Air Transport Association
Route de l'Aéroport 33
PO Box 416
1215 Geneva 15 Airport
Switzerland
Tel: +41 22 770 2670 | Fax: +41 22 770 2686
E-mail: rochatp@iata.org | Website: www.iata.org

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