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# GROUNDING

How ICAO failed to tackle aviation and climate change and what should happen now



ICAO Triennial Assembly, Montreal  
September - October 2010

**Grounded:  
How ICAO failed to tackle aviation and climate change and what should happen now**

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# Part 1

## The 37<sup>th</sup> ICAO Assembly

### Introduction

Aviation is responsible for 4.9% of man-made climate change. In 1997 the parties to the Kyoto Protocol agreed that greenhouse gas (GHG) emissions from international aviation should be 'limited' or 'reduced' by Annex 1 (developed) countries) working through ICAO. In the thirteen years since Kyoto, emissions from aviation have grown faster than any other mode of transport and are expected to continue to grow in the future. If unmitigated, aviation emissions are expected to double or triple by 2050, putting efforts to keep global warming below two degrees at risk.

Over the same period, the International Civil Aviation Organisation (ICAO) and its member states have failed to deliver or support any mandatory policies to deliver emissions stabilisation or reductions. Instead the Organisation and its members have collectively attempted to close the door, one by one, on almost every conceivable mandatory policy measure for reducing greenhouse gas emissions from the sector. ICAO now favours 'aspirational' goals instead of binding measures, offsetting of excess emissions in other industries (but not before 2020), reliance at an unspecified point in the future on unproven biofuels and avoidance of any action affecting industry growth. None of these goals will result in emissions from the aviation sector going down.

The ICAO Triennial Assembly will meet in Montreal at the end of September 2010 to consider once again what to do about the sector's role in climate change.

Little has changed since the last Assembly in 2007 except that political disagreements have deepened between developed and developing countries and between developed countries themselves over the need for collective action, what action to take, and who should act.

The Assembly is caught between recognition by some countries that much greater ambition from ICAO is required and others that the growth of aviation particularly in the fast-growing developing world must not be constrained.

Any options that might lead to specific obligations on Members are being ruled out while developing countries continue to insist on different treatment, following the UN Climate Change Convention principle of common but differentiated responsibilities (CBDR).

ICAO is failing to fulfil its obligations under Kyoto as well as its responsibilities to future generations. ICAO and the aviation industry claim to be in the lead on climate change. But on the contrary, they are grounded without a credible flight plan.

## The 37<sup>th</sup> ICAO Assembly - What is wrong with the proposals before the Assembly?

### Carbon Neutral Growth (CNG)

The concept of allowing emissions to continue to grow unabated and then be offset after a certain point originated within IATA, the airline industry's global representation. It claims to reflect a concern to give airlines from developing countries the opportunity to continue to grow their industries unconstrained by environmental concerns.

CNG from 2020 would, it is said, also allow time for new more fuel efficient aircraft to come into service. However the concept merely amounts to allowing aviation emissions to grow unhindered while other sectors are cutting emissions. Aviation need take no action until 2020 – 23 years after Kyoto - and the only action proposed is to offset emissions above 2020 levels.

The Kyoto Protocol calls for aviation emissions to be *limited* and *reduced*. Offsetting does not reduce aviation emissions. Moreover the quality and additionality of many offsetting programmes is questionable. In-sector reductions from technical, operational and market-based measures are needed from the aviation industry with access to offsets being limited to ensure a level of in-sector reductions

### ICAO's Lost Decade

- 2001 - Reaffirmed opposition to fuel taxes, showing preference for the use of charges. In 2004 asked Member States not to apply charges until at least 2007.
- 2001 - Ruled out the possibility of establishing GHG emission standards for aircraft.
- 2001 - Opposed the application of closed emission trading schemes for aviation.
- 2004 - Dismissed any possibility of establishing a global emissions trading scheme for aviation, instead endorsing the inclusion of aviation in existing emission trading schemes (for example, the EU ETS).
- 2004 - Imposed three-year moratorium on GHG emission charges (although it continues to say that taxes are even worse)
- 2007 - Assembly threatens to block the possibility for countries (i.e. the EU) to include foreign carriers into their emissions trading schemes. EU countries dissent.
- 2007 – Formation of ICAO Group on International Aviation and Climate Change (GIACC), to develop non-binding aspirational goals as a framework of measures that member states might adopt.
- 2008/9 - No consensus reached in the GIACC. Some members criticise the 'programme of action' for not addressing Kyoto 2.2 i.e. by not focusing on emission reductions. Short term 'aspirational' 2% annual efficiency improvement goal to 2012 agreed.
- 2009 - High Level Meeting (HLM) extends 2% efficiency goal to 2020 admitting it won't result in net reductions in CO2 from aviation sector as a whole. ICAO's Conference on Aviation and Alternative Fuels endorsed the use of sustainable drop-in fuels for aviation and adopted a global framework for their development.
- 2010 Committee on Aviation Environmental Protection (CAEP 8) finally reverses 2001 decision, agrees to begin work on a new aircraft CO2 standard.

### **Market-Based Measures (MBM)**

Market-based measures (MBMs) offer the greatest potential to offset and reduce aviation emissions growth in the short-to-medium term in a cost-effective manner through a combination of in-sector reductions and open trading with other sectors.

ICAO principles of equal treatment must be upheld to avoid market distortions while the UN Climate change principle of common but differentiated responsibilities can be respected by allocating revenues from any instrument to developing countries for adaptation and mitigation of climate change.

ICAO has debated MBMs for over a decade. It is now time for action not more debate. ICAO in 2004 endorsed the inclusion of emissions trading in existing schemes. But renewed insistence on 'mutual agreement' has now been proposed by Canada, the United States and Mexico. It is a thinly-disguised delay tactic. A number of proposed methodologies are available, there is no need to continue to debate further options. What is needed is for ICAO to consider and take decisions on an appropriate market-based mechanism. The International Maritime Organisation (ICAO's shipping counterpart) proved this year that where there is a will, there is a way; an expert group worked over the summer to produce an in depth comparative analysis of the various proposals available to shipping including estimates of in and out-of-sector abatement forecasts and costs for 2030. More seems to have been achieved by the IMO in three months than by ICAO in a decade.

### **Fuel Efficiency Standards and 'Aspirations'**

The average fuel efficiency of new aircraft actually improved 1.5% per annum between 1960 and 2008, a rate comparable to the rate of improvement in other transport modes. However the average fuel efficiency improvement of new aircraft since 2000 has been flat, having improved only modestly since 1990. The primary driver of the drop-off in improvement in fuel efficiency appears to be slow technology deployment due to a lack of new designs, combined with the practice of devoting efficiency gains to increased aircraft performance (e.g. range and speed) rather than to reducing emissions over a constant mission<sup>1</sup>. These findings have not been challenged by the industry. But airlines and industry bodies continue to boast fuel efficiency improvements of up to 70% over recent decades, arguing that this demonstrates standards are not necessary as fuel is a high percentage of operating costs thus ensuring all measures are taken to maximize fuel efficiency.

The ICAO Committee on Aviation Environmental Protection (CAEP)'s work on a CO<sub>2</sub> standard is now underway and must be accelerated. Critically, aircraft manufacturers must come fully on board with the process, not fail to as in 2001 (See box: 'ICAO's Lost Decade'). A robust CO<sub>2</sub> standard can help close the gap between manufacturers' plans and aviation's technological potential. Efficiency standards will affect new aircraft coming into the world fleet and thus have a gradual impact over time. They don't replace market-based instruments which are designed to provide the market incentive for airlines to start now to reduce emissions across their entire operations. Standards and market based instruments are complementary.

ICAO's aspirational goal of a 2% annual improvement in global fleet fuel efficiency is not an emissions reduction target. Nor is it a measure addressing emissions reductions as overall emissions growth is forecast to continue to outpace the 2% improvement by a considerable margin. It is a measure of performance, but as ICAO

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<sup>1</sup> <http://www.theicct.org/2010/03/trends-aircraft-efficiency/>

has agreed that no obligations should apply to any individual member state, it amounts to an unenforceable goal merely reflecting business-as-usual efficiency improvements due to fleet renewal. Extending this aspiration out to 2020 makes no difference.

### **Reliance on Biofuels**

In asking ICAO Member States to endorse work to develop aviation biofuels and an infrastructure to support them, the Secretariat's paper to the Assembly (A37 WP 262) notes that the main future challenges are regulatory and financial. Certification is however not the issue. It is the *sustainability* of aviation biofuels that counts. ICAO's biofuels plans also seem to be a substitute for urgent action on emissions mitigation.

Recent science shows most biofuels are more likely to increase rather than reduce emissions primarily because of the impact of land use change<sup>2</sup>. Aviation industry efforts are focused on developing the so-called "second" and "third generation" biofuels for potential use in aircraft, which supposedly do not compete with food production. The reality is less rosy. Both the climate impacts and the food-fuel competition issue are essentially about the land on which crops are grown and whether that land can also be used for food production. The July 2008 review by the Renewable Fuels Agency – "The Gallagher Review of the Indirect Effects of Biofuel Production" concluded that 'second generation biofuels using feedstock grown on existing agricultural land may cause greater net land-use change than first generation biofuels that also produce co-products that avoid land use. Biofuels and synthetic fuels also have similar tailpipe emissions as fossil fuels. They won't reduce non-CO<sub>2</sub> impacts.

Aviation biofuels will need to satisfy sustainability criteria – yet to be decided – before they can be deployed – at least in the EU. T&E calculates that just to satisfy today's aviation fuel needs from biofuels alone would require up to 80% of the EU's arable land.

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<sup>2</sup> [www.transportenvironment.org/Publications/prep\\_hand\\_out/lid/522](http://www.transportenvironment.org/Publications/prep_hand_out/lid/522)



## What ICAO Member States should agree at this year's Assembly

- Set a global cap on aviation emissions based on 1990 levels (the Kyoto base year). Set the cap at least at minus 40% to keep global warming below 2 degrees
- Do not put a lid on regional initiatives such as the inclusion of aviation into the EU ETS
- Agree by 2011 a binding global market based instrument e.g. emissions trading or a global kerosene charge/tax. Such measures are intended to incentivise mitigation actions, not to recycle funds to industry.
- UNFCCC objectives can be satisfied by allocating revenues to developing countries for climate change adaptation and mitigation, and by exempting routes from and to the poorest developing countries, for example the 121 ICAO Member States which account for the last 2.5% of total aviation emissions.
- Accelerate work on a meaningful CO2 standard for all new aircraft, not by type, that goes significantly beyond business as usual.
- Factor in reduced speed as an effective mitigation measure for new aircraft.
- Develop detailed mitigation forecasts of technical, operational, regulatory and market measures and associated abatement costs.
- Accelerate research on non CO2 effects of aviation – i.e. from cruise NOx, contrails and cirrus cloud formation, and develop a market based instrument to address these effects.
- Strengthen national and regional mitigation efforts e.g. taxes, charges, and other market-based instruments pending global agreement.
- Step up Air Traffic Management (ATM) improvement measures.
- R&D investment only for measures to improve aircraft fuel efficiency

## What Industry should do

The aviation industry plays a central role in ICAO's work and needs to apply the same innovative energy to tackling climate change that it has to the expansion of aviation into a global industry over the past 50 years.

- Embrace genuine action on aviation climate change to reduce emissions within the sector. The industry's future is at stake.
- Participate fully in the work to develop a CO<sub>2</sub> standard.
- Endorse regional mitigation schemes such as the EU Emissions Trading Scheme, as a practical way to reach a global regime
- As the most climate intensive transport mode, accept the urgency of meeting aviation's external costs through taxes, charges, and market instruments..
- Rather than defend them, recognise that hidden subsidies only worsen the adverse effects of aviation on climate change by inducing artificial demand for air travel.
- Adopt a quantified level of in-sector mitigation.

## Part 2

# ICAO's History of Failure on Climate Change

### Aviation and climate change

Emissions from aviation are a significant contributor to climate change. The total impact of aviation on man-made climate change is 4.9%<sup>3</sup>.

But a lower figure of two per cent, often quoted by the aviation industry<sup>4</sup>, applies only to Carbon Dioxide (CO<sub>2</sub>) emissions and refers to 1992 data.

Emissions from aviation are growing faster than any other mode of transport. CO<sub>2</sub> emissions from EU international aviation increased by 110% between 1990 and 2008. Meanwhile other sectors have reduced emissions. If unmitigated, aviation emissions are expected to double or triple by 2050, putting efforts to keep global warming below 2 degrees at risk.

Aviation has by far the greatest climate impact of any transport mode, whether measured per passenger kilometre, per tonne kilometre, per € spent, or per hour travelled.. Put another way, an airline ticket is one of the most environmentally-damaging goods money can buy.

CO<sub>2</sub> emissions are directly linked to fuel consumption. Every litre of jet fuel (kerosene) burnt leads to 2.5 kg of CO<sub>2</sub> emitted in the air. But today's passenger aircraft are no more fuel-efficient than those that flew half a century ago. When it says fuel efficiency has improved by 70%, the aviation industry is referring to the jet era (since the 1960s). But propeller-driven passenger planes such as the Lockheed Super Constellation were as efficient as typical aircraft flying today<sup>5</sup>.

The growth of aviation has been subsidised every step of the way. Each and every segment of the aviation industry including manufacturers, airlines and airports is subsidised and enjoys major tax exemptions (notably the lack of VAT on airline tickets in Europe and the absence of taxes on kerosene worldwide.).

### The role of ICAO

Established by the so-called Chicago Convention of 1944, the International Civil Aviation Organization (ICAO), an agency of the United Nations, has an important role in the coordination and standardisation of international air transport in fields including air navigation, safety and operating procedures.

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<sup>3</sup> Aviation and global climate change in the 21st century, David Lee et al, Atmospheric Environment, July 2009, [tinyurl.com/opk8nc](http://tinyurl.com/opk8nc)

<sup>4</sup> [iata.org/pressroom/facts\\_figures/fact\\_sheets/Pages/Environment.aspx](http://iata.org/pressroom/facts_figures/fact_sheets/Pages/Environment.aspx)

<sup>5</sup> Fuel efficiency of commercial aircraft: An overview of historical and future trends, Peeters et. al, Dutch National Aerospace Laboratory (NLR), 2005 [www.transportenvironment.org/Publications/prep\\_hand\\_out/lid/398](http://www.transportenvironment.org/Publications/prep_hand_out/lid/398)

The Chicago Convention was negotiated 'in order that international aviation may be developed in a safe and orderly manner'. Environmental protection is not to be found in the latest version of the convention. But the ICAO website states that it is: "fully engaged to achieve a global solution to address emissions from international civil aviation."<sup>6</sup>

ICAO standards are legally-binding once member states have adopted them in national law, but in the area of climate change virtually all of ICAOs work has been in the form of resolutions or 'guidance' to states. These are not legally binding, but form an important cornerstone of regional and national aviation policy. Rather than 'go it alone' states tend to work within ICAO guidance.

## The Kyoto Protocol: responsibility handed to ICAO

The Kyoto Protocol on Climate Change contains provisions for reducing greenhouse gas emissions from aviation, although it treats the sector in a different way to other sources, and proposes different approaches for international and domestic aviation.

Domestic aviation emissions are included in national targets for developed countries that call for an overall reduction in total emissions from all sources of 5.2 per cent for the period 2008-2012 (compared with 1990 levels).

Emissions from international aviation are addressed separately, according to the provisions of Article 2.2:

*"Parties included in Annex 1 shall pursue limitation or reduction of emissions of greenhouse gases...from aviation and marine bunker fuels, working through the International Civil Aviation Organization and the International Maritime Organization, respectively".*

Unlike other sectors, responsibility for cutting international aviation emissions was not given to individual countries (parties). Instead reductions should be achieved by Annex 1 Parties working through international bodies that regulate these modes of transport – ICAO for aviation and IMO for maritime transport.

## Thirteen years after Kyoto: no action

In the years since the Kyoto Protocol was signed, ICAO has failed to deliver any mandatory policies to deliver emissions stabilisation or reductions. Instead the Organisation has attempted to close doors, one by one, on almost all conceivable policy measures for reducing greenhouse gas emissions from the sector. It is a devastating record.

The following chapters give an overview of the key decisions or non-decisions that ICAO has taken with regard to aviation and climate change over the last decade.

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<sup>6</sup> [www.icao.int/Act\\_Global/](http://www.icao.int/Act_Global/)

## ICAO post Kyoto

In 1996, a year before the Kyoto agreement, ICAO had requested that the IPCC should prepare a report on the atmospheric impact of aircraft engine emissions. The report entitled *Aviation and the Global Atmosphere*, the first by the IPCC for a specific industrial sector, was prepared in collaboration with the Scientific Assessment Panel to the Montreal Protocol and was published in 1999. Its main conclusions, were that:

- Aviation passenger traffic had grown at nearly 9% per annum since 1960 and was projected to grow at 5% per annum between 1990 and 2015;
- Aircraft accounted for 2% of anthropogenic CO<sub>2</sub> emissions in 1992
- aircraft emit gases and particles which alter the atmospheric concentration of greenhouse gases, trigger the formation of condensation trails and may increase cirrus clouds, all of which contribute to climate change;
- aircraft were estimated (in the base year 1992) to contribute about 3.5 per cent of the total radiative forcing (a measure of change in climate) by all human activities and this percentage, which excludes the effects of possible changes in cirrus clouds, is projected to grow; although improvements in aircraft and engine technology and the efficiency of the air traffic system will bring environmental benefits, they will not fully offset the effects of the increased emissions resulting from the projected growth in aviation.

Policy options identified to reduce emission further included more stringent engine regulations, the removal of subsidies and incentives that have negative environmental consequences, environmental levies (charges and taxes), emissions trading, and voluntary agreements. It was noted that ICAO had already started work to assess the need for aircraft emission standards at cruise altitude to complement existing NO<sub>x</sub> LTO (landing and take-off) standards;

The 32nd Session of the Assembly of ICAO; held in September 1998, underlined the importance of ICAO's responsibilities under Kyoto and requested the Council, through CAEP, to study policy options to limit aviation GHG taking into account the findings of the 1999 IPCC Report and report back to the Assembly at its next session three years later. ICAO's Committee on Aviation Environment Protection, the CAEP, duly established that year three working groups to consider different aspects of aircraft engine emissions; the further development of technology and related worldwide standards; the reduction of fuel burn through improved operational measures and exploration of the potential role of market based options. ICAO reported to COP 4 in November of that year that following agreement on a higher LTO NO<sub>x</sub> stringency, CAEP would study a new emissions parameter to cover climb and cruise emissions and include CO<sub>2</sub> as well as NO<sub>x</sub>. It also told COP 4 that market based measures e.g. emissions related levies (charges or taxes) and emissions trading were also being considered.

## Fuel taxes

Fuel taxes are one of the principal market based options and an extremely powerful and first best tool for reducing energy consumption, oil dependence and thus GHG. However they occupy a special position in international aviation. The Chicago Convention which established ICAO, prohibits the taxing on arrival of fuel already on board an aircraft. This prohibition, taken to avoid the dangers of double taxation, was widely extended by Governments in subsequent years to a general tax exemption for

fuel on international flights. The prohibition was further enshrined in a very large number of bilateral aviation agreements.

In 1996, a year before Kyoto, the ICAO Council adopted a Resolution that “*strongly recommends that any environmental levies on air transport which States may introduce should be in the form of charges rather than taxes*”. This resolution was endorsed at ICAO’s 33<sup>rd</sup> Assembly in September 2001, which “*Recognized the continuing validity of Council’s Resolution of 9 December 1996 regarding emission-related levies*”. In ICAO’s view taxes were levies to raise general national and local government revenues to be applied for non-aviation purposes whereas charges were seen as levies to defray the costs of providing facilities and services for civil aviation. ICAO’s 2001 decision was important *and* effectively killed the possibility of developing further work on the use of kerosene taxation as an instrument to internalise the external costs of international aviation, including its impacts on climate change. A few countries maintain taxes on *domestic* aviation fuel – e.g. the USA. Most countries also exempt aviation ticket taxes and aircraft purchases from VAT. Even so, many airlines saw fit to impose a fuel surcharge during the oil price spike of recent years.

The Council did request that CAEP continue its work on the application of an en route levy or a fuel levy to address global emissions. The IPCC in 1999 had noted an OECD study suggesting that a levy increasing aviation fuel prices by 5% a year could reduce emissions at least 30% by 2020. Another study estimated that the effect of an environmental charge on civil aviation in Europe could reduce the rate of growth of emissions by approximately 50%.

## Emissions standards for aircraft

CAEP, at its 5<sup>th</sup> meeting in January 2001, endorsed continuing methodological work on calculating emissions in the climb and cruise phases of flight but decided not to pursue the possibility of developing a cruise engine efficiency parameter that would have provided the basis for an ICAO aircraft standard limiting carbon dioxide. CAEP concluded that a standard would be very difficult in view of the great diversity of operations and noted that market pressures already ensured that aircraft are very fuel efficient. “*While this work has not reached the stage where specific recommendations could be made, the conclusion was reached that CAEP should not pursue further the possibility of developing a carbon dioxide standard*”. Even though the discussion about technical measures was still at an early stage, CAEP 5 decided to rule out the possibility of establishing CO<sub>2</sub> emissions standards for aircraft.

In March 2001 the ICAO Council endorsed the CAEP 5 recommendations. This decision notwithstanding, CAEP 6 in February 2004 found the political will to agree on a tightening of aviation NO<sub>x</sub> landing and take-off (LTO) emission standards for new aircraft from 2008. The action on LTO NO<sub>x</sub> was intended to improve air quality around airports. For current generation engines, LTO NO<sub>x</sub> emissions bear a positive relationship to cruise NO<sub>x</sub> emissions (which induce ozone and deplete methane, both greenhouse gases) so the measure although never intended to address GHG would have some climate impact. But the 12% increase in stringency over the existing standard was disappointingly low and attracted much criticism. By this time also, patience with ICAO was running out. The EU’s Environment Commissioner had already complained about ICAO’s disappointingly slow progress on GHG.

## Operational measures

CAEP 5 also endorsed guidance material for ICAO to publish on ways to minimize fuel use and reduce emissions. Two workshops were held on the subject. CAEP 5 also endorsed a methodology for estimating fuel savings and reducing emissions using new SATNAV technology. ICAO's 35<sup>th</sup> Assembly in 2004 recognised the progress on fuel use issues and "requests the Council to continue to develop the necessary tools to assess the benefits associated with ATM improvements and to promote the use of the operational measures.

The 35<sup>th</sup> ICAO Assembly in October 2004 also returned to the question of environmental charges and taxes. It reconfirmed the ICAO Council's 1996 decision to recommend charges rather than taxes but then resolved to amend Assembly Resolution A33-7 and urged "*Contracting States to refrain from unilateral implementation of greenhouse gas emissions charges prior to the next regular session of the Assembly in 2007, where this matter will be considered and discussed again*". The Assembly was effectively ruling out the use of the policy instrument that it once *preferred to taxes*, for the next three years. Just prior to the Assembly, the European Parliament passed a resolution criticizing the amendment as unacceptable and a retrograde step for ICAO which would undermine the organisation's credibility, The Parliament called on ICAO urgently to implement an open emissions trading scheme and to develop emissions related levies.

Between 2004 and 2007, ICAO did not discuss GHG emission charges, focusing instead on guidance for States on Local Air Quality emissions charges. From the perspective of the fight against global warming, this represented a loss of three years.

## Market-based options

Given the recognition in the IPCC Study *Aviation and the Global Atmosphere* that improvements in aircraft and engine technology and the efficiency of the air traffic system would not fully offset the effects of the increased emissions resulting from the projected growth in aviation, ICAO's working group on market based options assessed a comprehensive range of potential measures, including fuel and en-route levies, emissions trading and voluntary programmes, all of which would target CO<sub>2</sub> emissions.

As regards emissions trading for aviation, the conclusion of these discussions was that "*a closed emissions trading system does not show cost benefit results to justify further consideration*". The application of a separate emissions trading scheme for aviation entities only was effectively ruled out by this report. CAEP 5 in January 2001 had however clearly endorsed "*that an open emissions trading system is a cost-effective solution for CO<sub>2</sub> emission reductions in the long term*". 'ICAO would play a leadership role particularly regarding proposals for caps' read CAEP's report to SBSTA. As a consequence of this CAEP 5 work, the 33<sup>rd</sup> Assembly resolution in September 2001 "*Endorses the development of an open emissions trading system for international aviation*" and "*Requests the Council to develop as a matter of priority the guidelines for open emissions trading for international aviation*".

Some stakeholders and countries at the 33<sup>rd</sup> Assembly expressed the view that any solution to be adopted should be as global as possible, this being the dominant view



within the aviation industry. However, in discussions at CAEP 6 in February 2004, it was agreed that an aviation-specific emissions trading system based on a new legal instrument under ICAO's authority "...seemed sufficiently unattractive that it should not be pursued further".

In practice with this decision the possibility of applying emissions trading as a global solution was discarded. Instead, the 35<sup>th</sup> ICAO Assembly in September 2004 endorsed "voluntary trading systems that interested Contracting States and international organizations might propose" and stated that "ICAO would provide guidance for use by Contracting States, as appropriate, to incorporate emissions from international aviation into Contracting States' emissions trading schemes consistent with the UNFCCC process." (Resolution 35-5) This statement was the basis for the European Commission's proposal, put forward in December 2006, to include aviation in the EU Emissions Trading Scheme.

Between 2004 and 2007 an ICAO task force prepared written guidance for member states on aviation and emissions trading i.e. a non-binding document designed to help contracting States wishing to include aviation in their emissions trading schemes. At CAEP 7 in February 2007 there was broad agreement on the document except for one critical point; the ability of a contracting state to include any carrier, regardless of its nationality, in an emissions trading scheme. Some States, including the US, insisted that foreign carriers could only be included by mutual agreement – a provision, which, if agreed, would necessitate forging new bilateral agreements with all states involved in each and every scheme. The alternative, favoured by the EU, was to allow the state to mandate participation of foreign carriers in the absence of mutual agreement.

This mutual agreement clause was to create enormous controversy and an enduring rift when ICAO's 36<sup>th</sup> Assembly considered the issue in September 2007. The Assembly voted to endorse the US supported approach of signing separate mutual agreements before including foreign carriers in emission trading schemes. But the EU together with Norway, Switzerland and Turkey entered a reservation which signalled they would ignore the provision. The vote marked a further blow to ICAO's purported lead role in tackling aviation climate change as its insistence on mutual agreement effectively rendered national or regional trading schemes unworkable or discriminatory - or both. Although a response to this dispute, the EU reservation covered the entire section on market-based measures in the Assembly resolution. This effectively meant that the EU did not recognize the validity of the continued moratorium on the application of GHG charges for aviation.

In its subsequent work programme (2007-10), CAEP established a new task force on market-based measures. However, in regard to GHG emissions, it was confined to looking at how various emissions trading schemes may link, developing a report on the role of offsetting, and updating the report on voluntary action by the industry.

## Group on International Aviation Climate Change (GIACC)

The 37<sup>th</sup> ICAO Assembly also took a decision to form a new group of 15 experts with balanced representation from each region to draw up a program of action for ICAO to address climate change – the Group on International Aviation Climate Change (GIACC). With COP 15 (Copenhagen, December 2009) on the horizon, ICAO had effectively taken responsibility for climate change issues away from its environment committee, the CAEP, to a group of experts meeting behind closed doors. GIACC's



remit was to develop a plan by mid-2009 which would be put to a High Level meeting of ICAO that October, and to the Council, to endorse as ICAO's future climate change plan for presentation to COP 15. Expectations of the GIACC were modest considering the Assembly's guidance to draw up non-binding "aspirational goals" that would constitute framework guidance on measures States might adopt.

GIACC 3 in February 2009 produced plenty of dissension but no agreement beyond a short term fuel efficiency goal of an 'indicative' 2% per annum up to 2012 which later became GIACC's principle recommendation. The Task Group on Market-based measures reported that 'no consensus has been identified on a specific strategy for addressing emissions from international civil aviation'. Two of the potential voluntary measures the Group had considered, were fuel taxes and emissions charges, which the IPCC had identified back in 1999 as having 'the potential to reduce aircraft emissions by providing further incentives to develop and purchase low emission technology, improve operational efficiency and reduce demand via higher fares'.

The aviation industry succeeded in having included on GIACC's agenda the concept of carbon neutral growth say from 2025 but not at the expense of industry growth.

Biofuels also emerged as a potential saviour. ICAO held a well-publicised conference on the topic just prior to Copenhagen and CAEP undertook to estimate future emissions based on various uptake scenarios even though biofuels are yet to be certified for use in aviation and none are available in commercial quantities. Various proposals remained on the table regarding mitigation measures for GIACC to consider at its final meeting but no consensus was reached.. Declarations of the need for a global sectoral approach along with maintenance of ICAO's lead role could not conceal failure.

The clash between ICAO's principle of equal treatment of operators and the need to respect common but differentiated responsibilities espoused in the UNFCCC had pervaded all discussions. The Measures Working Group summed up a further dilemma by observing that international aviation does not fit neatly into a model where the developed world has the most advanced industry; some of the largest airlines with the most modern fleets were based in the developing world.

The principal industry bodies IATA and ATAG enjoyed close access to the GIACC and sought to limit measures to voluntary application. IATA's submission to GIACC4 finally came out in support of a global sectoral approach to be managed by ICAO that would be non-discriminatory and universally applicable. Measures could include emissions trading, carbon funds, offsets or other similar mechanisms as long as they were implemented globally, 'on the basis of consensus'. and providing full and open access to the global carbon market. Only CO<sub>2</sub> emissions should be addressed; action on NO<sub>x</sub>, contrails and high altitude emissions needed to await further research. IATA also promised mid-term fuel efficiency improvements of 1.5% per annum while 'striving' to achieve carbon neutral growth for aviation by 2020 to 2025 using biofuels.

Several influential airlines (the Aviation Global Deal Group) had already broken ranks and called in February 2009 for a global sectoral deal on aviation including a cap on emissions and market-based measures such as carbon trading.

A group of scientists including three from the IPCC 4<sup>th</sup> Report panel, produced a report in April 2009 which updated aviation's climate impacts based on the most recent work. The radiative forcing (a metric of climate change) from aviation in 2007 was put at 4.9% of global radiative forcing. IATA was still citing in its submission to

GIACC 4 that aviation's share of global CO<sub>2</sub> emissions was 2% - the figure from IPCC1999 it has so regularly quoted.

## High Level Meeting and Copenhagen

ICAO's High Level Meeting was convened in September 2009 to adopt aviation's climate change blueprint for presentation to Copenhagen. It agreed to take the small step of extending the GIACC's 2% annual fleet fuel efficiency aspirational goal out to 2020. But there was no consensus on further ambition or for more concrete action on market-based instruments. The one significant proposal taken up from GIACC was to recommend that CAEP start work on an aircraft standard for new aircraft types – in effect reversing Council's decision not to proceed with such work back in 2001.

The failure of Copenhagen itself to agree action on bunker fuel measures or indeed even to mention aviation and shipping emissions in the Copenhagen Accord took the pressure off – fortunately perhaps - given ICAO's embarrassingly stilted defence of its record at the Conference itself. IATA had already brought the AGD group of airlines into line at its own annual gathering in September in order to project a united (lowest common-denominator) industry position that stressed that any action must be global and include domestic emissions as well. Debate at Copenhagen emphasised the clear divide between developing country arguments that only developed countries needed to take action on the climate – consistent they argued with the UN Principle of Common but Differentiated Responsibilities – and the Chicago Convention principle of equal treatment which has always guided ICAO's work.

CAEP 8 in February 2010 duly agreed that work should start on a CO<sub>2</sub> standard for new aircraft thus avoiding the potential situation where manufacturers delay the development of new aircraft types to avert regulation.

In subsequent months the President of the Council held closed door consultations among Directors General of Civil Aviation to prepare positions and draft resolutions for the 37<sup>th</sup> Assembly. This closed door approach to climate change, evident also in the work of the GIACC, stands in marked contrast to the open committee procedures observed by ICAO's shipping counterpart, the IMO in its climate change and environmental protection work.