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**“Tinkering at the Edges”: The UNFCCC, ICAO and the Struggle to
Address the Aviation Emissions Problem**



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Aviation and Climate Change - Law & Policy is a collaborative effort of the firm of Condon & Forsyth LLP, Attorneys at Law, and The Hodgkinson Group, Aviation and Climate Change Advisors, to address and analyze current topics related to the issue of aviation and climate change.

Each edition aims to familiarize the reader with important climate change issues facing the aviation industry, serving as a resource for comprehensive analysis of potential solutions. It is not a legal opinion and neither provides legal advice for any purpose nor creates the existence of an attorney-client relationship.

Previous editions have covered topics including: incorporation of the aviation industry into the EU's existing ETS; Australia's proposed ETS; industry and governmental action response to climate change; significant EU ETS deadlines and reporting requirements to incorporate the aviation industry; a discussion of sectoral agreements emphasizing those proposed by the aviation industry; an update on global negotiations seeking to achieve a successor agreement to the Kyoto Protocol; and, climate change-related issues affecting the insurance industry. *See page 15 for links to previous editions of Aviation and Climate Change - Law & Policy.*



This edition of the Newsletter aims to summarize the current international legal framework for addressing climate change, as well as the outcomes of the climate change conference held in Cancun, Mexico, in November-December 2010. This edition also provides a brief update on EU and US initiatives regarding climate change.

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“Tinkering at the Edges”: The UNFCCC, ICAO and the Struggle to Address the Aviation Emissions Problem

This article sets out a summary of the international climate change legal framework, with reference to provisions which deal with aviation and the outcomes of the climate change conference held in Cancun, Mexico, in November-December 2010 (which representatives of Condon & Forsyth and The Hodgkinson Group attended). After an examination of International Civil Aviation Organization (ICAO) and International Air Transport Association (IATA) initiatives, this article argues that:

- The United Nations Framework Convention on Climate Change (UNFCCC) process is unlikely to result in significant progress; and
- Despite their comprehensive, commendable and continuing efforts, neither ICAO, charged under the Kyoto Protocol to the UNFCCC with limiting or reducing emissions from aviation, nor IATA, the organisation of the world's airlines, is likely to achieve results in controlling the aviation emissions problem (based on action taken so far in controlling greenhouse gas (GHG) emissions on a worldwide basis).

This newsletter suggests that any “solution” to the aviation emissions problem may more likely lie not with ICAO or IATA but, rather, with individual airlines or small groups (“collaborations”) of airlines, as well as manufacturers, based on regional or common interests. Put another way, it argues that a “bottom-up” rather than a “top-down” approach may offer more prospect of concrete action.

Introduction: 2°C

While there is no international consensus on what levels of climate change might be defined as “dangerous,” there is widespread support for containing the rise in global temperature to 2°C above

pre-industrial levels; 139 parties to the UNFCCC have adopted this global warming limit. Even with temperature rises of less than 2°C, however, impacts can be significant, and beyond 2°C, “the possibilities for adaptation of society and ecosystems rapidly decline”¹ A growing number of studies indicate that, in a world that has overshoot the 2°C limit, unprecedented challenges lie ahead.

There are many uncertainties in the detail of climate science, but there is a clear consensus on the 2°C number. It’s the line in the sand that scientists have drawn. And while it is often difficult to foster agreement between the governments of China, India, the United States and the EU, those governments all agree on 2°.

It was said before the UN Climate Change Conference in Cancun, Mexico, in December of last year that there was a real risk of that conference producing a weak compromise which could not prevent “dangerous” climate change. Also, many scientists said (and say) that the current international climate policy context is far from favourable in terms of addressing the climate change problem. The Cancun Climate Change Conference is assessed below after our brief summary of the international climate change legal and regulatory framework.

The International Climate Change Legal Framework

The international climate change regime consists of the UNFCCC and the Kyoto Protocol (“Kyoto”) to the UNFCCC. The UNFCCC provides a framework for future action and cooperation by states on climate change; Kyoto places quantifiable obligations upon states to decrease their levels of GHG emissions.

UNFCCC



The UNFCCC – the foundation of international cooperative efforts dealing with climate change – does not establish legally binding limits on GHG emissions for states that are party to it. Rather, parties commit to mitigate climate change “with the aim of returning individually or jointly to their 1990 levels ... [of] anthropogenic emissions’ of GHGs” (Article 4.2(b)). UNFCCC Article 2 provides, in part, that:

[T]he ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve ... stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

The principle of “common but differentiated responsibilities and respective capabilities” is a continuing theme throughout the UNFCCC; developed state parties are required to “take the lead in combating climate change and the adverse effects thereof” (Article 3.1).

A detailed list of commitments is contained in the UNFCCC, some of which apply to all parties, and others which apply only to developed countries and other parties included in Annex I. Developed state parties must:

Adopt national policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs. These policies and measures will demonstrate that developed countries are taking the lead in modifying longer-term trends in anthropogenic emissions ... (Article 4.2(a)).

The UNFCCC entered into force on 21 March 1994. The Convention has been ratified by 194 states as of 1 March 2011, including Australia and the United States.²

Kyoto

Kyoto provides a legal framework that addresses global climate change by placing quantifiable obligations upon states to decrease their levels of GHG emissions. It is the world's primary climate change agreement and represents the culmination of international efforts to date to address the climate change problem.

Parties to Kyoto are divided into two groups – Annex I and Non-Annex I – or, for the most part, developed and developing states. Unlike the UNFCCC, Kyoto does set legally binding limits on developed state parties' anthropogenic emissions of greenhouse gases and does so for the first commitment period from 2008 to 2012. In achieving these binding limits, the parties must implement policies and measures in accordance with their particular circumstances. Certain market-based “flexibility mechanisms” (including international emissions trading) are provided to achieve emissions reductions. The EU ETS is a market-based approach for all EU states.

There are no specific further commitment periods beyond 2012. Instead, post-2012 commitments were to be established through negotiation at meetings such as Copenhagen (2009), Cancun (2010) – both unsuccessful in this regard – and Durban (2011).

Article 3 of Kyoto provides that developed state parties shall:

Individually or jointly, ensure that their aggregate anthropogenic carbon dioxide equivalent emissions of the greenhouse gases listed in Annex A do not exceed their assigned amounts, calculated pursuant to their quantified emission limitation and reduction commitments inscribed in Annex B ... with a view to reducing their overall emissions of such gases by at least 5 percent below 1990 levels in the commitment period 2008 to 2012.

There are no Article 3 commitments for developing state parties.

Kyoto entered into force on 16 February 2005. One hundred ninety three countries, including Australia (but excluding the United States), have either ratified, acceded to, approved or accepted the Protocol as at 1 March 2011.³ The Kyoto Protocol will expire at the end of 2012.

Aviation

Article 2(2) of Kyoto provides that:

The Parties included in Annex I [essentially developed state parties] shall pursue limitation or reduction of emissions of greenhouse gases not controlled by the Montreal Protocol from aviation ... working through the International Civil Aviation Organization

Copenhagen, December 2009

The climate change conference held in Copenhagen from 7 to 19 December 2009 included the 15th Conference of the Parties (COP 15) to the UNFCCC and the 5th Conference of the Parties serving as the Meeting of the Parties to Kyoto (COP/MOP 5).⁴ It also included (a) the 10th session of the Ad Hoc Working Group on Further Commitments for Annex I parties [developed state parties] under Kyoto (AWG-KP 10); and (b) the 8th session of the Ad Hoc Working Group on Long-Term Cooperative Action under the UNFCCC (AWG-LCA 8). The former was established in 2005 under Kyoto Article 3.9 and considers emissions reduction commitments of developed state parties for commitment periods subsequent to the first 2008-2012 commitment period; the latter was established in Bali in 2007 at COP 13 and COP/MOP 3 to focus on key elements of long-term cooperation: mitigation; adaptation; finance; technology; and capacity building.

The sole result of the Copenhagen climate change conference – a conference “marked by bitter divisions, confusion and setbacks”⁵ – was the Copenhagen Accord, a two and a half page political agreement negotiated directly by heads of state and one not based on the draft negotiation texts prepared by the Ad Hoc Working Groups. The main elements of the Accord were an “aspirational” agreement:

That deep cuts in global emissions are required ... with a view to reduce global emissions so as to hold the increase in global temperature below 2 degrees Celsius, and to take action to meet this objective ... on the basis of equity (Article 2)

and an agreement on the part of developed state parties to commit to emissions reduction targets for 2020, such mitigation pledges to be submitted by the end of January 2010. Under this “portfolio of domestic commitments” approach, “each nation commits and registers to abide by its domestic climate commitments, whether those are in the form of laws or regulations or multi-year development plans”.⁶ These mitigation provisions for developed state parties were:

Widely seen as ‘clearly weak’ and ‘a step backwards from the Kyoto Protocol.’ Developed countries do not commit themselves to legally-binding emission reductions. Similarly, there is no quantification of a long-term global goal for emission reductions, or specific timing for global emissions to peak. Instead, the agreement suggests a bottom-up approach whereby developed and developing countries submit their pledges for information purposes to the Convention⁷

COP 15 and COP/MOP 5 only “take note” of the Accord; it is a political agreement, with no reference to it being a “legally binding instrument.” While “the [A]ccord ultimately won formal recognition despite the lack of full consensus,” many participants questioned “the prospects for significant further progress within a fully global, procedurally bound UN process” (see endnote 5).

Concern on the part of developed states at Copenhagen that any outcome address developing as well as developed state party emissions (an issue which had been brewing for some time) reflected a basic shift in global climate change negotiations. Developed states have become increasingly insistent on addressing emissions from developing state parties as well as those from developed state parties.



UPCOMING EVENTS

Conference of the Parties to the UNFCCC and the Meeting of the Parties to the Kyoto Protocol: COP17/MOP 7

The Government of South Africa announced that the 17th session of the Conference of the Parties to the UNFCCC (COP 17) and the seventh Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (COP/MOP 7) will take place 28 November – 9 December 2011 in Durban, South Africa.

The announcement was made on 29 November 2010, at the Cancun Climate Change Conference. South Africa also announced the launch of the host country website for the 2011 Climate Change Conference.

<http://www.cop17durban.com>



Cancun, November-December 2010



Cancun was the 16th meeting of the Conference of the Parties to the UNFCCC (COP 16) and the 6th meeting of the Meeting of the Parties (MOP) to Kyoto. There were also, as usual, four subsidiary meetings, the most important for our purposes being the 13th session of the Ad Hoc Working Group on Long-Term Cooperative Action under the UNFCCC (AWG-LCA 13) and the 15th session of the Ad Hoc Working Group on Further Commitments for Annex I Parties (developed state parties) under Kyoto (AWG-KP 15).⁸ Despite their best efforts, neither of these Working Groups was able to achieve significant outcomes in Copenhagen.

In outline, the Cancun Agreements import in large measure the main elements of the Copenhagen Accord into the UNFCCC (again, the Copenhagen Accord had no formal standing in the UN process). They include the mitigation targets and actions pledged under the Accord, marking the first time all major economies have pledged explicit actions under the UNFCCC. As the Pew Center has noted:

Agreement in Cancun hinged on finding a way to finesse for now the more difficult questions of if, when, and in what form countries will make binding commitments. In particular, the deal had to strike a balance between developing country demands for a new round of developed country targets under the Kyoto Protocol and the refusal of Japan and others to be boxed in. The final outcome leaves all options on the table and sets no clear path toward a binding agreement.⁹

Like the Copenhagen Accord, the Conference decision sets a goal of limiting average global warming to below 2 degrees Celsius above pre-industrial levels, and calls for periodic review to consider strengthening this long-term goal, including to 1.5 degrees.

At Cancun no agreement was reached on a long-term global emission reduction goal (*i.e.*, for 2050) or for a peaking year for global emissions. Failure to agree on these matters was due to:

Continued developing country concerns about what a global target might mean for their economic development due to future emission limitation or reduction responsibilities ... and ... the ongoing deadlock over post-2012 emission targets for developed countries.¹⁰

It is unclear how, or whether, the UNFCCC process will progress beyond Cancun. In one view (the optimistic view):

The operational decisions initiate a focused phase of institution-building that mobilizes resources and strengthens transparency, building confidence toward a future binding agreement But having deferred on their demands for new binding commitments, and with the Kyoto targets expiring in just two years, some countries are now looking to force the issue at next year's conference in South Africa.¹¹

It seems unlikely that, for the present, major emitters – developed or developing – will enter binding agreements to reduce emissions. As Todd Stern, the US United States Special Envoy for Climate Change, states:

[T]he core issue is the struggle between those who want to continue the Kyoto paradigm of an absolute separation between developed and developing countries, with only developed countries shouldering commitments to reduce emissions; and those who believe we can only address climate change with all major economies accepting responsibilities ... the thing that unsettles some countries about the Copenhagen Accord is that it represents a breach in the firewall between developed and major developing countries.

It says, in effect, that solving the problem requires commitments by countries responsible for 80% or more of global emissions, not 45%.



Stern concludes:

If we keep our eye on this core objective, the imperative of bringing all major emitters into a regime of climate commitments is clear. There is simply no other way to head off the coming crisis. As I have said before – just do the math. Developing countries account for around 52% of emissions, now, and are projected to account for approximately 66% by 2030. They will produce some 97% in the growth of emissions between now and 2030, with some 50% of such growth coming from China alone.¹²

Specific Developed (Annex 1) State Responses after Cancun

Japan, Russia and Canada have said they will not extend emissions cuts beyond 31 December 2012 unless all major emitters sign up to a binding deal.¹³ The United States never ratified Kyoto, arguing it would cost United States jobs and wrongly omitted binding goals for emerging nations. So, at the end of next year, it is possible that, for the United States, Japan, Russia, Canada, China and India, no binding emissions reduction targets will exist.

As the Climate Group notes:

[T]he rejection by Japan, Russia and Canada of any further Kyoto commitments indicates that the likelihood of a comprehensive and environmentally effective post-2012 Kyoto outcome is diminishing. The EU and other industrialised Kyoto parties, such as Australia, are likely to find it difficult to justify to domestic audiences further Kyoto commitments in the absence of these three key countries. As the continuation of the [Kyoto] Protocol remains [important] ... for developing countries, the future of Kyoto will remain a flash point for disagreement ... throughout 2011.¹⁴

The current UNFCCC negotiating process – it seems to be acknowledged – is unlikely to make significant progress unless something changes in the positions of the United States and China or in the relationship between developed and developing countries. Moreover, even if a deal were possible among the “large” emitters, the UNFCCC’s consensus decision-making model allows a relatively small group of countries to block agreement (as they did in Copenhagen).

A “Regime Complex”?

One alternative approach:

To moving forward would be to split the climate change problem up into different pieces and address ... the pieces in more specialised forums [this happens already with aviation] ... more progress may be

possible in specialized forums, which have long traditions of cooperation, than in the UNFCCC.¹⁵



As Daniel Bodansky notes,

Since an agreement among the major emitters is unlikely anytime soon, we should seek progress where we can, through whatever means and in any forums that are available.¹⁶

Robert Keohane and David Victor – after stating that “[t]here is no integrated, comprehensive regime governing efforts to limit the extent of climate change,” propose a “climate change regime complex” – a loosely coupled set of specific regimes. They say that efforts to “build an effective, legitimate, and adaptable comprehensive regime are unlikely to succeed” and argue that a climate change regime complex has advantages in terms of adaptability and flexibility, characteristics which are:

Particularly important in an environment of high uncertainty, such as in the case of climate change where the most demanding international commitments are interdependent yet governments vary widely in their interest and ability to implement such commitments.¹⁷

It’s an argument put forward by others – a group from the London School of Economics and Political Science and Keele University, for example, refers to a “building blocks approach” which develops different elements of climate governance in an incremental fashion and embeds them in an international framework.¹⁸

And perhaps momentum favours a “bottom-up” outcome. Cancun might suggest a shift away from a top-down, “Kyoto-style” architecture for international climate action, to a more bottom-up approach. What such an approach by airlines could look like is set out below, after analyses of efforts by ICAO and IATA to address the aviation emissions problem.

At Cancun the executive director of the Air Transport Action Group (ATAG) stated that, as a result of the Cancun conference, ICAO is now “clearly in the driving seat in terms of addressing [aviation] emissions.”¹⁹ (ATAG is a group of international aviation organizations and businesses including aircraft manufacturers, operators, airports and airline associations.)

37th Session of the ICAO Assembly, September – October 2010, Montreal: “Remarkable accomplishment” or lack of action?

As noted earlier in this newsletter, the UN international climate change framework charges developed state parties to Kyoto, working through ICAO, with pursuing limitation or reduction of greenhouse gas emissions from aviation (Kyoto Article 2(2)).

At the 37th Session of the ICAO Assembly, held in Montreal in September and October 2010, the meeting, “reaffirming ICAO’s leadership role,” adopted “a comprehensive resolution to reduce the impact of aviation emissions on climate change.” In his article entitled, *Outcome of the 37th Session of the ICAO Assembly*, Ruwantissa Abeyratne describes this resolution as “providing a roadmap for action through 2050” for the 193 member states of ICAO and “solidifying [ICAO’s] ... global influence.”²⁰ For Abeyratne the resolution is a “remarkable accomplishment.”²¹ ICAO described its work at the 37th Session of the ICAO Assembly as “historic”, “providing a roadmap for action through 2050” and “[s]olidifying its global influence.”²²



It's difficult, however, to match these words with any actual ICAO action, let alone being in the "driving seat" regarding addressing aviation emissions. After noting that international aviation "is well known as representing a significant and growing source of emissions" – and I note that aviation's emissions are *increasing* against a background of *decreasing* emissions from many other industry sectors – Abeyratne also states that the Council of ICAO has "unprecedentedly failed to reach consensus on a comprehensive approach to aviation and climate change."²³

He characterises the Assembly resolution as one which calls on ICAO to:

- Continue to study policy options to limit or reduce the environmental impact of aircraft engine emissions;
- Develop concrete proposals and provide advice as soon as possible to the UNFCCC; and
- Continue to cooperate with organisations involved in policy-making in the aviation field.²⁴

Putting aside questions as to whether these actions (continuing to study, developing proposals and continuing to cooperate) constitute a "remarkable accomplishment," Abeyratne concludes as follows:

The ... resolution ... *suggested* [emphasis added] that States ... work through ICAO to achieve a global annual average fuel efficiency improvement of 2% until 2020 and an aspirational global fuel efficiency improvement of 2% per annum from 2021 to 2050 ... [while] taking into account the special circumstances and respective capabilities of developing countries²⁵

Given these aspirational or merely "suggestive" targets it is perhaps worth noting that not only are emissions from air travel increasing significantly in absolute terms but, against a background of emissions reductions from many other sources, their relative rate of increase is even greater. Put another way:

If the [recommended] reductions in carbon dioxide emissions from ground-level activities ... are achieved, and the growth in air transport projected by the IPCC materialises, then air travel will become one of the major sources of anthropogenic climate change by 2050.²⁶

And a 2010 report from the International Centre for Trade and Sustainable Development provides that:

Aviation has by far the greatest climate impact of any mode of transport, whether measured per passenger kilometre, per tonne kilometre ... , per dollar spent, or per hour traveled. There are two ways to measure the climate impact of aviation; the first is based only on CO₂ emissions while the second takes non-CO₂ effects into account. The latter, called the multiplier effect, suggests that it is highly likely that the net impact of non-CO₂ effects – particularly contrails and other induced cloud formation – increases the global warming impact of aviation beyond that suggested by CO₂ emission alone. Although the precise scale of the additional impact is unclear and there are considerable scientific uncertainties yet to be resolved, the current consensus is that the climatic impact of aviation emissions is double (and according to the IPCC up to four times) that of its CO₂ emissions alone. This implies that aviation is responsible for 4.9 percent of the climate change impact attributable to human activities.²⁷

A report in *Nature Reports Climate Change* two years ago reported that, as the fastest-growing source of GHG emissions worldwide, aviation "will account for up to five percent of global warming by 2050 ... yet it is glaringly exempt from the Kyoto Protocol."²⁸ ICAO has been charged with addressing airline emissions since early 2005. Its proposed aspirational or suggestive targets for airlines are set out above.

Finally, there also exists the curiosity of ICAO continuing to emphasise the principle of "common but differentiated responsibilities and respective capabilities" at a point when the principle within the UNFCCC appears in danger of collapse (Abeyratne's third point on cooperation with organizations involved with policy making).

“The Most Ambitious Targets of Any Global Industry?” Action from IATA

IATA has indicated that:



[A]lthough the natural greenhouse effect is vital for human existence, many scientists believe that additional warming linked to human activity may cause our climate to change irreversibly. However scientists disagree over the amount, probability and nature of these changes There is also disagreement over aviation's contribution to climate change.²⁹

Notwithstanding the qualified nature of this statement, IATA has a “four-pillar” strategy to address the climate impacts of aviation with a focus on (a) technological advancements; (b) operational measures; (c) infrastructure; and (d) air traffic management enhancements. Its aim – which it seeks to accomplish through its member airlines – is to achieve a cap on aviation CO₂ emissions from 2020; an average improvement in fuel efficiency of 1.5% per year from 2009 to 2020; and a reduction in CO₂ emissions of 50% by 2050, relative to 2005 levels.³⁰

IATA views these targets as “the most ambitious of any global industry.”³¹

The IATA targets and approach, however, face significant challenges as evidenced from studies and reports from the world’s leading universities and research organisations. For example, the Pew Center reported in January 2011 that:

[A]ircraft fuel consumption and GHG emissions can be reduced by, 1) aerodynamic improvements to the airframe that increase its lift-to-drag ratio, 2) material substitution and design changes that reduce the empty weight of the aircraft, and, 3) increased engine efficiency, both in thermodynamics and propulsion. Past reductions in the energy intensity of air travel by all these means and by increased load factors (number of passengers per plane) have been truly impressive: energy use per passenger mile today is less than one-third of what it was in 1970 However, there is evidence that the rate of efficiency improvement in new aircraft has slowed over the past two decades.³²

A 2010 report from the International Centre for Trade and Sustainable Development states a similar view:



[N]ew aircraft efficiency has improved substantially in only two of the last five decades, and stagnated in recent years. On average, fuel efficiency has remained flat on a seat-km basis and improved only 0.29 percent annually on a ton-km basis since 2000. Adaptations to airplane design such as adding winglets have delivered only marginal improvements in efficiency.³³

In terms of engines and airframes, the Pew Center proposes:

Retrofitting new wing tip designs could bring a 3 to 5 percent reduction, while engine retrofits (including advanced heat-resistant materials, better turbine and fan blade designs, and more efficient energy management) could provide a 1 to 2 percent reduction. In response to the high fuel prices of 2008, many aircraft are already equipped with raked or blended wingtips Airlines consider other near-term technologies to be too complex for retrofit, but implementable on updated versions of current production aircraft. These options include the use of composite primary structures to reduce structural wing weight by 20 percent, increased use of advanced lightweight alloys, and active load alleviation. While . . . IATA

provides no estimate of the combined effectiveness of these technologies, their benefit should be at least as great as the benefits of the retrofit technologies

The potential of advanced technologies applied to the next generation of new aircraft before 2020 was estimated to be a reduction of 25 to 35 percent. New designs introduced after 2020 were judged to have the potential to lower emissions by 25 to 50 percent via energy efficiency improvements (all relative to the base aircraft).³⁴

And with regard to operational efficiency, ICAO:

Has estimated that air traffic management improvements should be able to reduce fuel use and GHG emissions by 5 percent by 2015 In the longer run, savings of 5 to 10 percent should be achievable These goals are intended to be achievable despite continued increases in air travel.³⁵

Alternative fuels are discussed in the final section below.

“Why Can’t Airlines Become More Agile?” Not Top-Down but Bottom-Up Action by Individual Airlines or Airline Collaborations

Perhaps, with regard to taking action to address the aviation emissions problem – a problem which the world’s primary climate change agreement delegates to ICAO – it might be better to start small. ICAO regrettably has not been able to make significant progress but its resolve to continue to study, to develop proposals and to cooperate has endured since state parties signed up to Kyoto last decade. IATA’s approach may also be facing some significant obstacles, as discussed above.

The UNFCCC experience, on display most recently at Cancun, demonstrates the difficulty, if not the impossibility, of more than 190 countries trying to negotiate and ratify a global climate change agreement – within a framework in which developed and developing state parties have “common but differentiated responsibilities and respective capabilities,” a framework which is on the verge of collapse (yet one to which ICAO must adhere).

Indeed, it appears unlikely that state parties will be able to ratify an agreement before the 2012 end of Kyoto’s first commitment period, and “stopping the gap” between the end of 2012 and the start of a new agreement – or agreeing on a second commitment period – would require amendments to Kyoto.

And there are other problems. The European Union’s Emissions Trading Scheme (the EU ETS), largely the mechanism through which EU member states meet their Kyoto targets, itself is facing problems, the latest of which are challenges to the inclusion of aviation in the scheme. ATA (Air Transport Association of America) and three United

Historical Emissions Baseline

After several delays to insure accuracy of the data, the European Commission has published the historical emissions baseline for calculating emission allocations for aircraft operators coming within the European Union (EU) Emissions Trading Scheme (ETS) as of January 2012. The published baseline is 219,476,343 tonnes of carbon dioxide (CO₂) and represents the average estimated annual emissions for 2004-2006.

The baseline was created with Eurocontrol calculations, actual fuel consumption from nearly 30 aircraft operators using a variety of aircraft, and fuel consumption from Auxiliary Power Unit (APU) use. For 2012, aircraft operators will receive a total of 212,892,052 tonnes of CO₂ emissions allowances (representing 97% of historic emissions from 2004-2006). From 2013, aircraft operators will receive a total of 208,502,524 tonnes of CO₂ emissions allowances (representing 95% of historic emissions from 2004-2006).

Of these allowances, 82% will be issued free of charge and distributed via a benchmarking process which measures each aircraft operator’s flight activity during the 2010 “Monitoring Year.” The benchmark of how many allowances each aircraft operator will receive is projected to be published in September 2011. Each aircraft operator must report to and will receive allowances from one Member State. ↓

States airlines have challenged in the Administrative Court in London the inclusion of aviation in the EU ETS, a challenge which has already been referred to the Court of Justice of the EU and which may have significant implications for the regulation of airlines' emissions.

For the time being, it may be that in the immediate future addressing the aviation emissions problem more likely lies with individual airlines or groups (or collaborations) of airlines rather than with ICAO or IATA - a "bottom-up" rather than a "top-down" approach. It is an approach which may eventually have some utility for international climate change negotiations generally. In a different context an international newspaper asked late last year why airlines could not become more agile.³⁶ An approach by individual airlines or airlines acting together – nationally or regionally, for example – may well turn out to reflect an agility and a speed not currently available at the international level in terms of addressing the aviation climate change problem.

And there are obvious areas in which such action may bear fruit. As the Pew Center notes:



[L]ike other transportation modes, aviation is depending on the development of second and third generation *biofuels* [emphasis added] to achieve low GHG impacts at low costs In the long run, aviation could conceivably be powered entirely by biofuels There are an estimated 950 million acres of marginal agricultural land in the world that would probably be suitable for these crops³⁷

Qantas, for example, is developing a biofuels target, has been in discussions with various biomass feedstock producers and refiners, and is "looking at ... native species in Australia which wouldn't compete with food [and] which would grow on marginal land in Australia."³⁸ The airline is also interested in algae and algal fuels. It announced in February 2011 that it is exploring the commercial feasibility of using jet fuel produced from algae. Qantas' Chief Executive Officer has said that "[t]he costs and environmental impacts associated with traditional jet fuel mean it is imperative that we push hard now for the commercialisation of alternative fuel sources."³⁹

Another area involves a partnership between the Federal Aviation Administration and airlines in Australia, New Zealand, Japan and Singapore to reduce the impact of aviation's emissions.



ASPIRE – the Asia and Pacific Initiative to Reduce Emissions – is moving beyond the demonstration stage with a launch in selected Pacific markets. Flight procedures identified by ASPIRE partners to help reduce fuel burn and carbon emissions are used on ASPIRE flights.⁴⁰

On 3 March 2011, key measures focusing on finalizing implementation of the Single European Sky (SES) were announced at a high-level conference held in Budapest – bringing the EU a step further towards a single European sky. Conference organizers, which included representatives of the EU institutions, Member States,

The list of airlines and their administering Member States was updated in February 2011. To receive the free allowances, operators must submit their emissions verification reports and requests for allowances to their respective Member States by March 31, 2011. Of the remaining allowances, 15% will be available through auctioning and 3% will be available as a special reserve for operators rapidly expanding their business and operators new to the market.

The bottom line is that the cost to the industry will be approximately \$1.95 billion in 2012 (based upon the current carbon price of approximately 15 euros per CO2 tonne), with the cost to be allocated among the airlines operating into and out of EU countries. This cost will continue to increase as the cap tightens to 95% in 2013 and as fuel consumption increases before airlines derive significant benefits from their investments in measures to reduce CO2 emissions over the long run. 📌

air transport authorities and services, discussed, drafted and ultimately approved the “Budapest Charter on the Implementation of the Single European Sky” – a “roadmap” incorporating all phases of flights, with an airport to airport or a “gate-to-gate” approach.⁴¹

The Budapest Charter sets forth steps for Member States to complete functional airspace blocks by 4 December 2012. “Functional Airspace Blocks” – or FABs – through which Member States “collectively re-design and rationalize their airspace” are often thought to be a solution to sky capacity issues since they would allow more economical and environment-friendly operation as well as improve safety of the skies.⁴² It is hoped that the SES measures developed in Budapest will cut costs for passengers and companies and reduce the aviation industry’s impact on the environment. The EU estimates that SES should lead to annual savings of 500,000 tons of CO₂, 150,000 tons of fuel and €200 million in fuel burn and flight time.



Also at the Budapest Conference, the EU and United States signed not only a Memorandum of Cooperation to promote civil aviation research and developments, but also a first annex which addresses cooperative activities within their own air traffic modernization programs: SESAR (Single European Sky ATM Research) and its American counterpart, NextGen. Such cooperation would reduce costs by avoiding duplication of systems and equipment on aircraft, and streamline global air traffic safety.

Conclusion:

While a sectoral approach with uniform goals and regulations for the entire aviation industry may be preferable, it is conceivable that a bottom-up approach by the airlines and groups of airlines may be a better solution in the immediate future than different regions setting overlapping requirements that might amount to duplicative taxation such as EU ETS.

Further, plans, collaborations and research such as those described that work from the bottom-up could achieve effective airline-based solutions to the climate change problem until such time as the joint efforts of the various regulatory bodies and industry organizations will enable states and their airline operators to proceed in a more collusive and effective manner.

House Votes to Divest US EPA of Its Ability to Regulate GHG

A US House of Representatives subcommittee to the Energy and Commerce Committee (ECC) has voted to divest the US Environmental Protection Agency (EPA) of its ability to regulate GHGs. The vote, viewed as partisan-based, is supported by certain hardliner beliefs that climate science is unproven and untrustworthy. Taken in relation to the Energy Tax Prevention Act, the vote, if passed as legislation, would overturn the EPA’s finding that GHGs pose a threat to the public health and environment with the result that the EPA would no longer be able to regulate GHGs.



A similar Bill has been introduced in the US Senate. Should such legislation be passed, US President Barack Obama has vowed to veto it. The subcommittee vote is illustrative of the continuing inability of politicians to come together on bipartisan legislation to regulate GHGs. Fearing that the EPA will take over with its authority under the Clean Air Act based upon the US Supreme Court’s finding that GHGs are a “pollutant” in *Massachusetts v. EPA*, 549 U.S. 497 (2007), the committee hardliners have stepped in to attempt to halt further EPA action. For more information on the vote and its implications, see Broder, J., *House Panel Votes to Strip E.P.A. of Power to Regulate Greenhouse Gases*, N.Y. Times, Mar. 19, 2011; see also Opinion, *Carbon and Democracy*, WSJ, Mar. 15, 2011. 📌

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Editors

Stephen R. Stegich - Partner
 Condon & Forsyth LLP
 212.894.6710
sstegich@condonlaw.com

Roderick D. Margo - Partner
 Condon & Forsyth LLP
 310.557.2030
rmargo@condonlaw.com

Marshall S. Turner - Partner
 Condon & Forsyth LLP
 212.894.6750
mturner@condonlaw.com

Laura A. McGinn - Associate
 Condon & Forsyth LLP
 212.894.6748
lmcginn@condonlaw.com

David Hodgkinson - Principal
 The Hodgkinson Group
 +61 402 824 832
d.hodgkinson@hodgkinsongroup.com

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Contact Us For More Information

CONDON & FORSYTH LLP

Attorneys at Law
www.condonlaw.com

7 Times Square, New York, N.Y. 10036
(tele: 212.490.9100)

1901 Avenue of the Stars, Suite 850, Los Angeles, C.A. 90067
(tele: 310.557.2030)

THE HODGKINSON GROUP

Aviation & Climate Change Advisors
www.hodgkinsongroup.com

P.O.Box 3229, Broadway Nedlands LPO, Crawley WA 6009
Australia
(tele: +61 402 824 832)