

The control of aviation emissions reaches a critical juncture as Copenhagen draws near

With less than six months to the crucial UNFCCC summit in Copenhagen and calls by world leaders for international aviation to be included in a post-Kyoto Agreement, there is a need to distill the number of proposals that have been put forward and gauge their potential to offer a satisfactory outcome to the challenge that has so far proved elusive. *Chris Lyle* provides a comparative analysis of evolving positions in ICAO, IATA and other groupings in the context of the December meeting, along with a review of the draft negotiating texts for Copenhagen related to international aviation, and outlines some next steps.

The control of emissions of greenhouse gases (GHGs) from aviation is at a critical juncture. Under the Kyoto Protocol, targets for the reduction of GHGs were established only for the Annex I Parties (industrialized countries). Even these targets apply only to emissions from domestic aviation and exclude those from international aviation. Thus only emissions from some 22% of world air transport are covered by Kyoto – further reduced to less than 5% in practice since the Protocol was not ratified by the United States.

Ongoing improvements in technology, operations and infrastructure have produced significant improvements in the intensity of carbon-based fuel consumption before and during the life of Kyoto. But growth in air traffic has continued to exceed these improvements by a sizeable margin, a condition which is likely to continue for the foreseeable future without a paradigm shift in policy and practice, notably to establish targets and to incorporate economic instruments for mitigation of aviation emissions at a global level.

States in various regions have been developing economic instruments to mitigate GHG emissions, for example through cap-and-trade, or emissions trading schemes (ETS), and carbon taxes. A European-wide ETS has been in effect since 2005, and from 2012 will encompass air carrier operations to, from and within Europe (by both European and other air carriers). Several national or regional cap-and-trade schemes are in evolution or mooted in North America and Asia/Pacific. The United Kingdom has imposed an Air Passenger Duty, ostensibly for environmental reasons, since 1994. A number of other States around the world are considering or proposing various types of levies on air transport with a view to mitigation of emissions.

The prospect of a potentially duplicative and conflicting patchwork of taxes, duties and cap-and-trade schemes, including some elements without demonstrated environmental benefit, is of considerable concern. Also, in the absence of a global solution, traffic flow may be diverted to or via less costly carbon-levied points – such ‘carbon leakage’ distortions are environmentally unhelpful.

A post-Kyoto agreement is expected to be reached by the UNFCCC at its annual Conference of the Parties meeting in Copenhagen in December 2009 (COP/15) and intensive negotiations as to the structure, scope and content of such an agreement are well under way.

ICAO and IATA goals

Under Article 2, paragraph 2 of the Kyoto Protocol, Annex I Parties are committed to pursue limitation or reduction of GHGs from international aviation, “working through ICAO”. In addition

to ongoing technical work by its Committee on Aviation Environmental Protection, in 2007 ICAO established a high-level Group on International Aviation and Climate Change (GIACC) to develop strategy. The ICAO Council reviewed the final outcome of the work of GIACC in June 2009 and agreed a Programme of Action that included the following:

- A strategy for efforts to achieve ‘global aspirational goals’ of improvements in average fuel efficiency of international aviation operations at the rate of 2% per annum, in three time period tranches (base year undefined): (i) to 2012 (when the Kyoto Protocol targets expire); (ii) to 2020 (when the post-Kyoto agreement targets are expected to expire); and (iii) from 2021 to 2050.
- No attribution of specific obligations to States, but adoption of a basket of emissions reduction measures developed by GIACC, from which States may pick and choose.

IATA has been developing a set of three sequential goals for all commercial operations by all air carriers (international and domestic, IATA or not, excluding business and general aviation) which was completed at IATA’s Annual General Meeting in June 2009 as follows:

- an average annual improvement in fuel efficiency of 1.5% from 2009 to 2020;
- carbon-neutral growth from 2020; and
- an absolute reduction of 50% in carbon emissions by 2050, relative to 2005 levels.

IATA has a separate goal of using 10% alternative fuels by 2017 and assumes a 6% mix of second generation biofuels by 2020 (these biofuels are anticipated to reduce GHGs by some 80% compared with carbon-based fuel based on full life-cycle assessment). ICAO has yet to incorporate the increasing significance of biofuels into the strategic equation (although it is very active at the technical level in the testing and promotion of alternatives to carbon-based fuels).

IATA’s goal of carbon-neutral growth from 2020 recognizes that it may be somewhat speculative to assume today that technology, operations and infrastructure will produce the necessary improvements in fuel efficiency and assumes the purchase of carbon credits as may be required (these would, of course, become scarcer and more expensive as time goes on). ICAO has not been able to reach agreement on market-based measures or carbon-neutral growth, despite intensive examination of these issues over a number of years.

Proposed mechanisms

As to the inclusion of international aviation under a post-Kyoto agreement, ICAO has taken no public position, while IATA has called for a global sectoral approach under which aviation’s emissions would be capped and accounted for globally, not by States. The primary focus of a global approach would be on international aviation but any proposals would be adaptable to include domestic aviation through an opt-in system for States. Aviation emissions would be treated as an indivisible sector total and not apportioned to individual States, although an approach might be crafted specific to the various types of aviation markets, where the same requirements apply to all operators competing in the same market, but different requirements apply to different markets.

The Association of European Airlines (AEA) – which feels its members will bear the brunt of the application, and hence potential disadvantage, of the European ETS to airlines – has also called for a global sectoral approach in any post-Kyoto multilateral agreement on climate change. Under the AEA proposal, countries would be grouped into three ‘Blocs’ according to the maturity of their aviation markets (a number of criteria being put forward to determine the level of maturity). There would be differentiated target setting for the three Blocs, but equal treatment of all air carriers operating within the same Bloc.

For Bloc A there would be a fixed emissions reduction target for carbon-neutral growth, namely stabilization of aviation emissions at 2005 levels by 2020. For Bloc B there would be a relative target of energy intensity, namely fuel efficiency. For Bloc C there would be neither absolute nor relative targets but an obligation to monitor, report and verify operators’ emissions. For traffic between two Blocs there would be application of the lower target to all carriers, regardless of nationality.

A specially formed Aviation Global Deal Group (AGD Group) – Air France-KLM, BAA, British Airways, Cathay Pacific, Finnair, Qatar Airways, Virgin Atlantic, Virgin Blue and The Climate Group – has also called for a global sectoral approach. There would be global emissions reduction targets, with indicative scenarios ranging from 0 to 20% by 2020 and 50 to 80% by 2050, compared with 2005. The aviation sector would be integrated within the overall climate framework with open access to global carbon markets from 2012, and a UN body administering the system.

Individual carriers would be given, and/or would purchase through auction, allowances (as in the case of the EU ETS) and would surrender these in proportion to the annual carbon content of their annual fuel purchases. Revenues generated from the auctioning of allowances would be used for climate change initiatives in developing countries. Like IATA, the AGD Group suggests that, should they so wish, countries could choose to transfer their domestic aviation emission allowances into the international inventory.

The Air Transport Association of America (ATA) has made a commitment to achieve at least a 30% improvement in fuel efficiency from 2005 levels by 2025. The ATA does not feel that aviation would fit into a cap-and-trade system as established for the broader economy, and does not support the AGD Group proposal on the grounds it does not direct funding back into aviation.

The group of Least Developed Countries in the UNFCCC has taken a different (or complementary) tack in proposing an International Air Passenger Adaptation Levy. Collection would be universal, collected by airlines at the point of ticket sale and all revenues, except for administrative costs incurred by the airlines, would be directed to the Adaptation Fund set up by the Kyoto Protocol. A much broader-sourced World Climate Fund has recently been proposed in the UNFCCC by Mexico, whereby contributions would be made by States, determined by criteria such as GHG emissions, population and GDP; the concept has been publicly supported by many States and was endorsed at the recent G8 meeting in Italy.

A number of other bodies have made contributions to the evolution of global policy regarding reduction of GHG emissions from international aviation. A group of aviation environmental NGOs – under the umbrella of the International Council for Sustainable Aviation, ICSA – is calling

for a reduction in bunker GHG emissions (that is from international aviation and international shipping) of at least 40% below 1990 levels by 2020 and at least 80% levels by 2050.

Aviation and shipping would have access to the global carbon markets, but the right to buy permits from outside the sector(s) would be conditional on a given quantity of reductions having been achieved within the sector(s). There would be exemptions for routes to and from least developed countries that altogether do not exceed 2% of the relevant emissions, and differentiated allocation of revenues amongst countries.

There is a plethora of studies by other bodies regarding the reduction of GHGs which give specific treatment to aviation. Those by the World Economic Forum, the World Travel and Tourism Council and the World Tourism Organization are of particular interest because, in addition to considering the transport sector as a 'cluster', they treat travel and tourism in an integrated manner, illustrating the symbiosis between the two sectors and the need for each to be reflected in policy regarding the other.

The EU ETS and the industry proposals all relate to one primary GHG only, namely CO₂, while the UNFCCC encompasses several GHGs. Current scientific evidence suggests that aviation's non-CO₂ effects in relation to basic CO₂ effects are well above the average multiplier or ratio for all man-made emissions. The non-CO₂ impact for aviation might be addressed by integration into CO₂-based policy frameworks through conversion to CO₂ equivalents or by the use of a multiplier to gross up the CO₂ impact to cover both CO₂ and non-CO₂ effects. However, at present there remain difficulties in assessing accurately the non-CO₂ climate impacts from aviation at high altitude.

There are also differences in the relative impact of individual non-CO₂ GHGs between aviation and man-made emissions at large (and, in the case of aviation, there are GHGs not covered by the Kyoto Protocol, which ultimately may prove more significant than some included in the Protocol, for example contrail-induced cirrus). Thus aviation may warrant transitional arrangements from initial inclusion of CO₂ only to coverage of climate impacts of all aviation emissions once there is a clear scientific basis for this, a position supported by the AGD Group and accepted by IATA.

Some guiding principles

In moving forward there are some fundamental points which need to be accommodated if a global framework is to be achieved:

- the modalities of 'sectoral treatment';
- application of the UNFCCC principle of Common But Differentiated Responsibilities (CBDR) amongst countries (and reconciliation of the divergence between CBDR and principles in aviation's Chicago Convention of non-discrimination amongst operators, a subject which was discussed in an earlier [GreenAir Commentary on 'Kyoto vs Chicago'](#));
- open access for air transport to global carbon markets such as Kyoto's Clean Development Mechanism and Emissions Trading, to be counted as compliance against any target for the sector (this is not available at present for air transport under the Protocol);

- avoidance of air transport and tourism market distortion, and minimization of carbon leakage through rerouting of air services;
- non-duplication of levies;
- earmarking of revenues; and
- effective performance monitoring, appropriate indicators, targets, reporting methods and auditing processes.

How do the various proposals above measure up against these points?

Sectoral treatment is available under UNFCCC provisions. Air transport's GHG emissions are comparable to those of Australia or France in the case of international emissions and to Canada or the United Kingdom in the case of total. Hence, if aviation, a high-tech industry, were to 'be treated as a country' it would be equivalent to an Annex I Party. However, treatment as an indivisible Annex I Party would clearly be unacceptable to the developing countries, whether they have airlines or not. Hence differentiation would still be required. China and the G77 group of developing countries are on record as stating that sectoral efforts may contribute to, but should not replace, legally-binding mitigation commitments by Annex I countries.

The traditional application of CBDR in the UNFCCC has been to establish different requirements for different countries (notably between Annex I and non-Annex I countries). However, the Convention does not preclude alternative forms of differentiation in future agreements. The sectoral approach as propounded by the AGD Group is predicated on such an alternative interpretation of the application of CBDR, namely that all airlines would be subject to the basic provisions, but that a preferential share of revenues would be allocated to developing countries. To make this acceptable to developing countries, they would need firm assurances built in to the agreement that the up-front levies paid by their carriers would be returned with substantial add-ons.

The same would apply to the Adaptation Levy proposal from the Least Developed Countries, unless there is some kind of exemption applied in the case of routes to and from certain countries. There is also the question, which arises with the United Kingdom's Air Passenger Duty as well, of coverage of freight as well as passengers. Of some interest in this context is the concept being developed in the shipping world of an International Emission Reduction Scheme, whereby ships would be charged for their emissions based on where they unload their cargo, with exemptions in developing countries.

Proposals for concerted multi-country levies on international passengers or flights in the past, for example as a source of funding for UN peacekeeping operations, have not met with widespread success through lack of broad political will, lack of demonstrated cost-relatedness or benefit, competitive and legal issues. A French initiative for a tax on airline tickets to finance the global fund to combat Aids, tuberculosis and malaria has achieved significant income but, not being mandatory, is applied by relatively few countries.

Exemption of aviation fuel from taxation is built into the vast majority of the air services agreements which regulate international air transport. Other taxes on aviation, such as the French scheme and the proposed Adaptation Levy, are discouraged by (non-binding) ICAO recommendations but are not usually legally proscribed through provisions in air services agreements.

The IATA concept of the sectoral approach and the more specific AEA proposal are closer to the traditional application of CBDR given the differentiated target setting for different 'Blocs' (although there may be quibbles in relation to the Chicago Convention as to whether an airline's association with a Bloc is separate from its nationality).

In the absence of elaboration, the AEA proposal does raise questions as to how to deal with, for example, airlines from neighbouring countries falling into different Blocs according to the level of maturity of the national aviation market. AEA acknowledges that "there should be a certain degree of homogeneity in order to minimize both discrimination and risk of carbon leakage". In the 'Kyoto vs Chicago' Commentary article referred to above and in a Discussion Paper for the World Tourism Organization, the AEA 'three tier' concept was effectively taken further through application of CBDR by means of a route classification – which would remove any conflict with the Chicago Convention but which might be somewhat more complex to operate and administer.

The issue of administration and enforcement of a global sectoral approach is another key question. It is States that are ultimately Members of the UNFCCC (and of ICAO) and it is difficult to conceive of what action might be taken against a target-failing or miscreant aviation sector unless air carriers are individually identified and linked back with the State of their principal place of business – something which would become a necessity if the option of including domestic aviation were to be taken. The AGD Group has proposed a central UN body, either existing or new, to administer the system, allocating emissions allowances directly to individual airlines through both auctioning and free allocation. IATA has stated that the body chosen to administer a sectoral approach for aviation should be one that can most efficiently and cost-effectively undertake that administration and if this were not to be ICAO, then ICAO must still have a supervisory or other appropriate role.

The legal authority of ICAO decisions is limited though, deriving from their moral or political value in expressing a collective view of States (only ratification of the Chicago Convention leads to a treaty obligation). However, one possibility offered by use of the ICAO medium is the prospect of public auditing, with individual States potentially applying sanctions in the case of non-compliance, as is the case with aviation safety and security. Such a process may not, of course, be politically acceptable given that even under the much broader scope of the Kyoto Protocol, while the targets are in theory legally binding, the penalty for missing them is in practice simply 'naming and shaming'.

As regards the principle of avoiding carbon leakage, with reference to the AEA proposal, the comments above on CBDR are relevant. The AGD Group proposal for basing surrender of fuel allowances on fuel purchases could possibly lead to some re-routing or bunkering of fuel between domestic and international operations should differences between the costs warrant, although the AGD Group has suggested that domestic operations might optionally be subject to the same policy framework as international.

Avoidance of duplication means that an air carrier should only pay once for its emissions from either international or domestic aviation. Thus a global scheme for aviation would require adjustments in the EU ETS and possibly some reconsideration of application of national policy regarding levies on aviation.

As for earmarking, the position of the air transport industry generally is not only that revenues raised from, for example, levies or auction of carbon allowances be channeled entirely into climate change mitigation projects, but that these projects should be kept within the sector. Other bodies have taken a broader view of what defines the target, for example travel and tourism, travel and business, and greening the economy as a whole. In this regard, it will be important to look at the pros and cons of a sectoral agreement for aviation in the context of broader revenue-generating schemes such as the World Climate Fund proposed by Mexico. Ultimately, the goal should be to determine the most cost-effective way of reducing GHG emissions irrespective of sector, while at the same time maintaining an incentive for improvement in every sector.

Negotiating texts for Copenhagen

Negotiating texts for a post-Kyoto agreement were required to be filed six months in advance of the Copenhagen meeting and hence are now on the table. In the case of treatment of international aviation they range widely in content and hence, given the negotiations to follow, many options remain open in practice.

Many developed countries support the inclusion in a post-Kyoto agreement of both global reduction targets and access to global carbon markets for international aviation.

Australia has proposed direct setting by the UNFCCC of a collective sectoral reduction target to be pursued by all Parties. The Parties would commence negotiations on a global sectoral agreement to address international aviation emissions in 2010 with a view to concluding by COP/17 in 2011, "taking into account work already done in ICAO". The Australian proposal seems to be gathering support from a number of developed countries, although some would like to see a more substantive role for ICAO, for example the European Union would like a sectoral agreement to be developed through the agency. Developing countries are likely to have strong reservations on this approach unless the principle of CBDR is specifically defined and pre-enshrined in the sectoral agreement negotiations.

The existing Kyoto Protocol text, with alternative application to all Parties (a position taken by Japan, amongst others) or just Annex I Parties (that is *status quo*), has been filed. *Status quo* is not acceptable for many developed countries given the limited results from ICAO to date, but is a fallback option for many developing countries in that it could ensure the exemption of their airlines from any kind of target.

The concept of international levies on air transport has been put forward, with an option that they would not apply to journeys originating in or destined for Least Developed Countries.

What next?

A final framework for implementation of a global GHG emissions reduction programme for aviation awaits the broad context to be established in Copenhagen in December. In particular, decisions are awaited on the form of differentiation, for example between (i) industrialized

countries (current Annex I); (ii) emerging countries; (iii) developing countries generally; and (iv) developing island and least developed countries. Associated with this is the treatment of the different classifications, for example the concept of differing targets (absolute or intensity-based) and/or exemptions. The approach to financing, for example the Adaptation Levy and World Climate Fund proposals, will also be critical.

At the same time, the evolution seems to have reached sufficient maturity for an aviation framework to be taken forward to Copenhagen and for consolidation of an outline and targets for an implementing programme. This could be done by a critical review and, to the extent possible, harmonization of the various ideas on the table with a view to proposing:

- language regarding aviation for a post-Kyoto Agreement; and
- principles, programme and timetable for establishment a sectoral agreement including CBDR (for report back to UNFCCC at COP/16 and 17).

If progress is to be achieved, there is a need to break out of the 'silos' of the various parties and develop the framework in a more open and inclusive manner, beyond regions and narrow sectors. Consolidation of a roadmap could perhaps be achieved by a small group of invited 'gurus' from the various organizations and countries identified above, along with additional representation of emerging, developing and least developed countries – all from either the private or the public sector – and of other markets, for example leisure carriers, low cost carriers, tour operators and tourism administrations.

Opportunities to assess and present progress are at: (i) the continued pre-Copenhagen negotiating sessions to be held in Bangkok (28 September to 9 October) and in Barcelona (2 to 6 November) at which presentations in side events are possible; (ii) the UN Climate Change Summit in New York (22 September); and (iii) a High-Level Meeting on International Aviation and Climate Change which ICAO has convened in Montreal (7 to 9 October) "to review the Programme of Action recommended by the Group on International Aviation and Climate Change".

Availability of a concise text for discussion on the margins of each of these meetings might well add value to the process.

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