Aviation after Copenhagen: ICAO must now develop a bold strategic vision

Now that the dust has settled on the UNFCCC COP 15 meeting in Copenhagen, it is worth stepping back from the fray to take a strategic look at the implications for aviation, writes *Chris Lyle*.

Industry has tried to put a positive spin on the result, perhaps bearing in mind that no action means that the basic provisions of the Kyoto Protocol remain in place, with international aviation having no emissions targets, no carbon pricing or new taxes on revenues, and continuing reference only to Annex I (industrialized) countries pursuing emissions limitations through ICAO. At the same time, industry did not achieve some of the key goals it set for a post-Kyoto framework, notably treatment of aviation as a sector and access of the sector under UNFCCC provisions to the Clean Development Mechanism, Joint Implementation and Emissions Trading.

ICAO's aims for Copenhagen were less defined but there was a notable lack of progress towards reconciliation of the divergence between the UNFCCC principle of Common But Differentiated Responsibilities (CBDR) amongst countries and principles in aviation's Chicago Convention of non-discrimination amongst operators.

ICAO has stressed that it will continue its work on action to combat climate change, with focus now on its triennial Assembly Session in September/October and a submission to COP 16 in Mexico in November/December. ICAO has recently initiated development of a Global Framework for Aviation Alternative Fuels and its Committee on Aviation Environmental Protection (CAEP) is starting to develop CO2 (fuel efficiency) standards/metrics for aircraft. At the policy level, ICAO is carrying the process forward to its Assembly through development of a draft Resolution by an informal group of DGCA's and industry ('Friends of the President'). However, on the key issue of economic instruments – given the absence of resolution of the CBDR issue, the more general 'Catch-22' of awaiting UNFCCC guidance, the changing world geo-political structure and the prevailing political ambience after Copenhagen – it is difficult to conceive of game-changing progress in the next few months.

The inclusion of industry in ICAO's new group is recognition of the increasingly vigorous role played by the aviation industry, led by IATA, which in 2009 seized the initiative and set its own schema:

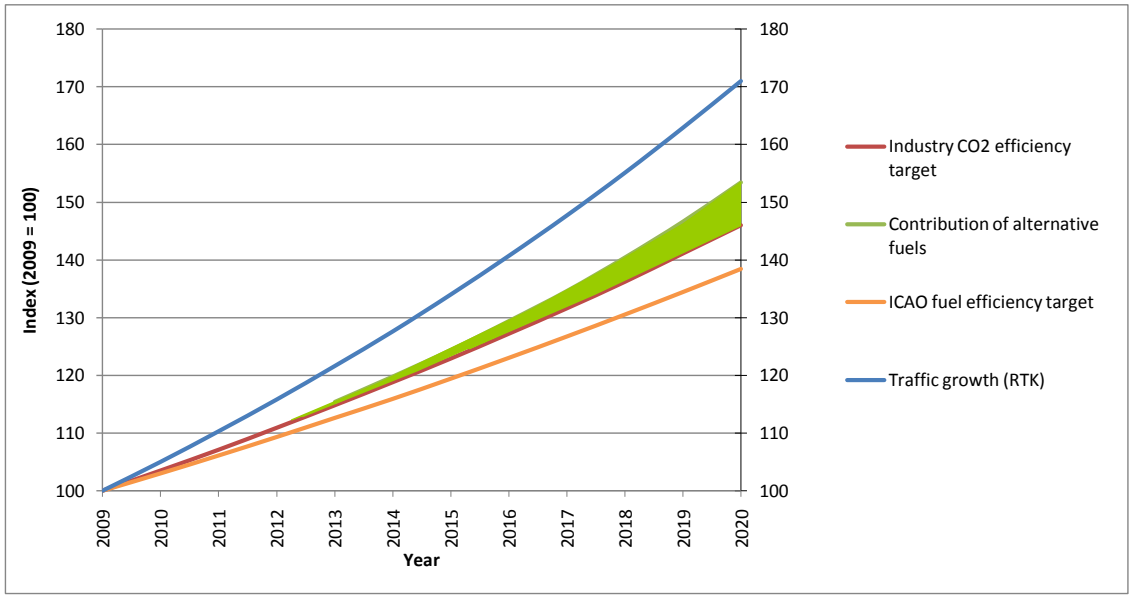
- a collective target to improve CO2 efficiency by an average of 1.5% per annum through 2020 on the basis of CO2 emissions per revenue tonne kilometre (RTK);
- a mid-term target to stabilize net CO2 emissions from aviation from 2020 onward (carbon-neutral growth); and
- a long-term aspirational goal to reduce aviation net carbon emissions by 50% in 2050, compared to 2005.

Subsequently, ICAO adopted a goal of annual average fuel efficiency improvement of 2% until 2020 and an aspirational global fuel efficiency improvement rate of 2% per annum from 2021 to 2050, calculated on the basis of volume of fuel used per RTK.

The implications of these goals merit analysis.

First and foremost, they have to be placed in the context of traffic growth. Manufacturers and ICAO are in agreement that, despite the current economic environment and security concerns, the long-term fundamentals remain strong. A consensus prediction is for global RTK growth at an average of 5% per

annum for the foreseeable future (marginally higher for international and marginally lower for domestic, marginally higher for freight traffic and marginally lower for passenger traffic). This global growth is shown through 2020 by the dark blue line in the graph below.



Global Traffic Growth and Emissions Targets, 2009-2020. Sources: Airbus, Boeing, ICAO, IATA (with ACI, CANSO and ICCAIA)

The industry CO2 efficiency target, after traffic growth, is shown by the red line and the ICAO fuel efficiency goal by the orange line. 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 by IATA to reduce GHGs by some 80% compared with carbon-based fuel based on full life-cycle assessment). An estimate of the increasing impact of this is shown by the shaded green area in the figure. IATA's fuel efficiency goal (excluding the biofuel effect) represents an increase in absolute fuel consumption of some 53% over 2009. In practice, this is 'business as usual', after fuel intensity improvements driven by costs and concern regarding security of supply, primarily from new aircraft in the fleet and, to a lesser extent, infrastructure and operational measures.

The industry aspirational goal of carbon-neutral growth from 2020 reflects recognition that technology, operations and infrastructure will not produce the necessary improvements in CO2 efficiency and assumes the purchase of carbon credits as may be required. However, the whole concept of carbon credits at the global level was called into question during the Copenhagen process and international aviation remains excluded from the UNFCCC trading mechanisms. The aviation industry may therefore need to equate its desire to be treated as a sector with getting its own house in order without calling upon external subsidy.

The industry goals are considered optimistic by some. For example, a report by the United Kingdom Committee on Climate Change last December found that the aviation industry's technological and operational fuel efficiency gains are unlikely to average more than 0.8% a year until 2050 and foresaw a only a 10% take-up of sustainable aviation biofuels in 2050.

It is also worth noting that the "industry" for which goals have been established does not as yet encompass most non-scheduled operators or low cost carriers (LCCs), which together currently represent an estimated 18% of global RTKs, according to ICAO. The market share of LCCs alone is about 15% and is steadily increasing. At the same time the average length of haul of LCCs tends to be shorter than that for network carriers, producing higher *per capita* emissions, and is also more susceptible to transfer of passengers to alternative modes of transport.

ICAO has yet to provide definition on the means by which its own aspirational goals might be achieved. It is difficult to see how ICAO intervention in technology, operations and infrastructure would augment the industry goals, which themselves anticipate governmental action, for example, on air traffic control. ICAO apparently recognizes that it may be premature to incorporate the increasing significance of alternative fuels into the strategic equation.

A traffic growth rate of 5% per annum carried through to 2050, along with the current fuel efficiency improvements of 1% per annum and a high-end estimate reduction of 80% in CO2 emissions through use of alternative fuels would still result in aviation CO2 levels similar to those of today. Hence, if significant reductions are to be achieved there needs to be a breakthrough in new technology – some of today's aircraft as well as most of aircraft entering into service between now and 2020, or their variants, are likely to still be around in 2050.

Radically new aircraft types – such as blended wing-body, open-rotor, hydrogen fuel cell powered, solar-assisted – exist at present only in drawing board outline and heavy investment in research is required soon if they are to have a major and timely impact. This will not be not easy to achieve in the light of the current state of the world economy and aviation industry as well as the increasing reluctance of governments to provide investment subsidy.

Resolving key issues

On the policy front, there are several key issues which still need to be resolved.

Should aviation emissions somehow be incorporated in national inventories or should they be treated on a sectoral basis? Despite industry claims that the concept of sectoral treatment for aviation was advanced at Copenhagen, this is by no means a done deal. 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. Tourism and trade entities have expressed concern that sectoral treatment of aviation will result in non-differentiated commitments, failing to recognize special needs, for example, of developing and long-haul tourism destination countries. The industry sectoral approach encompasses domestic aviation on grounds of interconnectivity with international, but also as a means of seeking exemption from potentially more demanding and stringent domestic legislation. However, there would appear to be no buy-in by States on the inclusion of domestic aviation since they would lose control of the ability to make trade-offs amongst various economic sectors – ultimately efforts and resources need to focus on those that will yield maximum environmental benefit/cost. Also ICAO's mandate is related to international operations.

Should these emissions be subject to targets by all Parties, by just Annex I Parties, or by some other partitioning consistent with CBDR? This issue is probably moot against the industry collective target of improving CO2 efficiency by an average of 1.5% per annum from 2009 through 2020, since this is an

extension of 'business as usual'. The ICAO goal would, however, probably imply a need for application of some form of economic instrument, in which case the new world order with emerging economies flexing their muscles would almost certainly predicate some form of CBDR.

Does international aviation need access to global carbon markets? This would depend on the nature of economic instrument applied. There are of course existing voluntary carbon trading markets other than those of Kyoto – for example the Chicago Climate Exchange and its affiliates in Europe, Australia, Canada, China and India – on which airlines are free to trade. Airlines will be subject to the EU Emissions Trading Scheme (EU ETS) from 2012. So access to the relevant Kyoto mechanisms is not essential, even if it would be advantageous for both the industry and global comity.

Should ICAO continue to be the 'delegated authority'? There is an emerging consensus after Copenhagen that the whole issue of climate change is too complex and disparate to be treated on a 'one size fits all' basis, and that it should be managed in 'bite-sized pieces'. International aviation might be considered as a 'bite-sized piece' but it is difficult to detach from other sectors as regards economic instruments and carbon charging in particular, and ICAO continues to face legal difficulties with CBDR. There is also concern that ICAO has become subservient to industry, with the financial bottom line always trumping environmental considerations in the crunch. There is no doubt that ICAO has to continue to play a key role, notably on the technical front. ICAO could also be a focal point regarding appropriate metrics, targets, performance monitoring, reporting methods and auditing processes. However, even here ICAO faces the same policy issues as emerged at Copenhagen, exemplified by a current struggle to establish a useful new data collection on fuel consumption and on the contribution of alternative fuels, against the insistence of some States, which do not wish third parties formally to measure their progress on reducing GHG emissions. Furthermore, ICAO has no implementation authority, which is the responsibility of States, and most of ICAO's decisions are not legally binding. If a comprehensive, legally-binding instrument related to aviation does not emerge from the UNFCCC process, ICAO could develop one, but this is likely to be a costly and time-consuming process, which may ultimately not succeed.

What scope of greenhouse gases should be encompassed? The EU ETS and the industry and ICAO goals at present all relate to one primary GHG only, namely CO2, while the UNFCCC encompasses several GHGs. Current scientific evidence suggests that aviation's non-CO2 impacts in relation to basic CO2 effects are well above the average multiplier or ratio for all man-made emissions. There are also differences in the relative impact of individual non-CO2 GHGs between aviation and man-made emissions at large. Also, 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. ICAO is well-placed to deal with, or at least advise on, such arrangements.

Cutting to the chase

Failure to achieve a global framework for aviation produces the prospect of a potentially duplicative and conflicting patchwork of taxes, duties and cap-and-trade schemes, including some elements without demonstrated environmental benefit.

There is also the probability of potentially long-drawn out, expensive and costly legal actions. The Air Transport Association of America and three US airlines filed suit in a UK court last December seeking to block the inclusion of non-European operators in implementation of Europe's ETS.

The United Kingdom has imposed an Air Passenger Duty since 1994, ostensibly for environmental reasons, and Ireland introduced a similar tax in March 2009. A number of other States around the world are considering or proposing various types of levy on air transport with a view to mitigation of emissions. Even where proposed levies have been dropped, such as in the case of Belgium and the Netherlands, the legal and administrative costs have been significant. Even more critically for the long term, continued exemptions for international aviation from regulation of GHGs (to add to tax exemptions for fuel and VAT) will only strengthen the hand of opposition to aviation expansion – the debate on a third runway at London Heathrow provides an example of how that can be effective. The concept of rationing air transport, either directly or through infrastructure capacity squeezing, is becoming a reality.

There was an understanding at Copenhagen of a need to put a price on carbon but, of course, it was a long way from agreement on appropriate economic instruments. The air transport industry generally seems to accept application of economic measures but only if net revenues are earmarked for return to the industry. Therefore not only should revenues raised from, for example, levies or auction of carbon allowances be channeled entirely into climate change mitigation projects, but also these projects should be kept within the sector.

Other bodies have taken a broader view of what defines the earmark, for example travel and tourism, travel and business, or 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-transfer schemes such as the proposed Copenhagen Climate Fund. 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.

Aviation at some point, both at industry and government level, has to recognize that it cannot keep itself forever isolated from carbon pricing (in whatever form, be it tax, charge, cap-and-trade, or fee-and-dividend) and must take a due share of the burden of reducing GHGs. The sector could do itself a favour by creating and implementing an appropriate, ring-fenced economic instrument at an early date. This needs a strategic vision for the sector at governmental level.

ICAO must be bold

If ICAO is to sustain credibility, it needs to wrest back leadership by developing specific targets within an unambiguous framework that includes more than technology, operations and infrastructure. The organization needs to control the economic options agenda, to be bold and embrace carbon pricing.

As an example, the organization could withdraw its recommendation for exemption of taxes on aircraft fuel. It could develop a plurilateral agreement that would supersede the exemptions of aviation fuel from taxation, which are built into the vast majority of the international air services agreements, and introduce a global levy on carbon from aviation fuels, with the revenues being directed to investment in the production and distribution of sustainable biofuels for aviation. In this way, the industry would accept carbon pricing and be seen to do so, the revenues would be earmarked, and the main

beneficiaries should be developing countries which are likely to be the primary source of sustainable biofuels. Indeed, this application of CBDR might be made mandatory by limiting the application of revenues to developing countries. Integral to such an agreement would be that States would not impose any other carbon price on international aviation without reciprocal agreement – which would *inter alia* mean that intercontinental airline operations would be withdrawn from application under the EU ETS.

An alternative, integral or complementary approach might be to develop a route rather than air carrier based targeting or charging framework, as was touched upon in an earlier GreenAir 'Commentary' article.

CO2 emissions from international aviation globally are already equivalent to those from a single country such as France – larger when other GHGs are taken into account. More critically, just a single air journey can increase the annual carbon footprint of an individual quite substantially. For example, according to ICAO's Carbon Calculator and UNFCCC data, the CO2 emissions from a single round-trip journey in economy class from Paris to Sydney is estimated at 2.8 tonnes, representing about half the average CO2 emissions per capita for France as a whole.

There is a requirement for greater emphasis on the overall environmental, economic and social benefit/cost of travel and tourism, and of trade by air. International aviation needs to be brought into the mainstream of regulatory control as soon as possible.

Ultimately, in the absence of substantive progress by ICAO, international aviation GHGs may follow actions in a broader context by the major producers of GHGs and end up being regulated: by regional organizations such as the EU for their members; between these organizations and third party States; and between other States. Ironically, while this would be a retrograde step from multilateralism and a global solution, in the case of aviation the transposition would be relatively easy to make since international air services are already governed by such agreements – albeit to the detriment of the industry, users and the broader economy. It would certainly enable differentiated treatment. Aviation may have to learn to live with a patchwork, along with everyone else.

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