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# AIR TRANSPORT AND THE EU'S EMISSIONS TRADING SCHEME

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## **Air Transport and the EU's Emissions Trading Scheme**

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## **Air Transport and the EU's Emissions Trading Scheme**

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### **Introduction:**

In July 2006, a remarkable public exchange took place between a bishop and an airline executive. Referring to the contribution of aviation emissions to global warming, Richard Chartres, the Bishop of London, declared in a Sunday sermon that it was time for people to “tread more lightly on the earth.” In particular, they should change their travel behavior so as to reduce emissions of CO<sub>2</sub> by airliners. Not doing so, the bishop argued, would be spiritually offensive:

Making selfish choices such as flying on holiday or buying a large car are a symptom of sin. Sin is not just a restricted list of moral mistakes. It is living a life turned in on itself where people ignore the consequences of their actions.<sup>1</sup>

The bishop’s sermon drew a characteristically salty response from Michael O’Leary, the CEO of the highly-successful low-cost airline Ryanair. O’Leary responded sarcastically that the bishop was obviously trying to increase his depleted congregation by giving melodramatic sermons. Pointing out that a sharp reduction in air travel would cause “a twenty percent unemployment rate in the tourist industry,” O’Leary concluded: “God bless the bishop. The bishops have got their own crosses to bear. Goodness knows what he would know about greenhouse gases. He was obviously at some dinner party with the chatterati.”<sup>2</sup>

This exchange vividly illustrates the increasingly strident and polarized debate that has developed within the European Union (EU) about aviation emissions. Critics of the airline industry (notably those associated with the environmental NGOs) have become ever more passionate about the atmospheric damage caused by air travel and ever more radical about the measures they believe should be taken to stop this damage. Suggestions for such measures have included the compulsory labeling of airline tickets with warnings about the pollution caused by aircraft emissions and the imposition of an annual ration for individual air travel.

The airline industry has been thrown onto the defensive by this unaccustomed tide of hostility, which has prompted one leader of the industry to worry that air transport is in danger of becoming “public enemy no.1 after tobacco.”<sup>3</sup> The industry is now acutely aware of the serious political and public relations challenge it faces. While proclaiming its commitment to “green” solutions, the industry has had to act expeditiously but carefully to ensure adoption of the best – or the least bad – of the limited range of political responses now available for coping with the emissions problem.

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<sup>1</sup> Clement (2006).

<sup>2</sup> Clement (2006).

<sup>3</sup> Thompson (2006, 34).

## **Approaches to containing aircraft emissions:**

As a policy matter, a key difference between smoking and air transport is that while the impact of smoking is (at least immediately) on individuals and their health, the impact of aviation emissions is unavoidably systemic, and quite fundamentally so. Consequently, those arguing about a suitable strategy to contain and, if possible, reduce the impact of aircraft emissions agree that, since the air transport industry is global in scope, any successful strategy for reducing aircraft emissions must ultimately also be global in form, global in its legal authority and global in the political support it enjoys.

But the participants in this debate differ about the appropriate regulatory framework for controlling and reducing emissions. In particular, the EU and its trading partners in international aviation (most vocally, the United States) differ about the appropriate jurisdiction for developing such a framework. The EU has taken the initiative to create its own regional scheme through recent legislation that adds air transport to the industries covered by the Emissions Trading Scheme (ETS) it launched in 2005 in compliance with the Kyoto Protocol.

The United States and the overwhelming majority of other non-EU states, by contrast, oppose regional schemes (at least in the long term), arguing that authority for developing a global emissions scheme was given by the Kyoto Protocol to the International Civil Aviation Organization (ICAO), a specialized agency of the United Nations.<sup>4</sup> Since 1996, ICAO has, indeed, been trying to find a formula that will be acceptable to all 188 of its members.

The EU and the US also differ about the terms for participating in any scheme for regulating aircraft emissions. The EU favors making participation mandatory for all airlines falling within the jurisdiction of such a scheme: indeed, under the recent ETS legislation it is applying this approach to all airlines flying into and out of EU airports – not, that is, only to airlines based in its 27 Member States. By contrast, the overwhelming majority of the non-EU members of ICAO (including the United States) insist that any international scheme for reducing aircraft emissions must, following the UN's usual voting principles, be adopted and implemented voluntarily by each member state of ICAO.

More broadly, the various contributors (including the airlines) differ substantively about the best strategy for reducing emissions. Some would prefer to rely mainly or exclusively on the market and the price signals shaped by a cap-and trade system such as the ETS. Others (especially participants in the airline and aerospace industries) emphasize the potential of technical innovation, as well as operational and commercial actions by the airlines, for solving or at least reducing the problem. Yet others (especially the environmental NGOs) prefer to emphasize voluntary actions by members of the traveling public in order to curb demand for air travel and to popularize other means of transport. Finally, some still see “command-and-control” actions by governments (notably through the imposition of taxes or even rationing) as useful instruments for reducing emissions.

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<sup>4</sup> Article 2 (2) of the Kyoto Protocol prescribes that the parties to the Protocol “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.” For some comments on the ambiguities of this wording, see Petersen (2008), 201-4.

While these approaches entail real differences in emphasis and philosophy, they are not necessarily mutually exclusive. Indeed, many people concerned with the emissions problem argue that a solution will depend on combining two or more approaches - say, combining the development of aircraft and engines that cause fewer emissions with shaping the market through the ETS.

This paper examines the EU's strategy for containing aircraft emissions as embodied in the new legislation on aviation emissions, as well as criticisms of this strategy and the political and technical problems it faces. The paper discusses in turn:

1. The nature of the aircraft emissions problem;
2. The principles and operation of the Emissions Trading Scheme;
3. The development of an EU strategy to cope with aviation emissions;
4. The attitudes of major stakeholders within and outside Europe to the emissions problem;
5. The attitudes of these stakeholders (and the responses of the EU institutions) to the more contentious issues that emerged in discussion of the Commission's proposals for including commercial aviation in the ETS; and
6. The prospects for the EU's strategy and – more broadly – for the development of a global regime to control and, if possible, reduce the contribution of aviation emissions to global warming.

## **1. Air transport and global warming:**

Aviation is - in static and quantitative terms - a minor culprit in global warming. Until recently, most estimates have suggested that air transport produces between 3% and 4% of global CO<sub>2</sub> emissions (the European Commission usually cites similar percentages for the EU).<sup>5</sup> Consequently, the industry's defenders invariably complain that air transport is being blamed disproportionately and targeted excessively, given the much greater pollution committed by other industries (and other forms of transportation, notably road vehicles and even ships).

But critics of the airline industry argue that aircraft emissions, compared to other kinds of pollution, are especially harmful to the environment. Unlike other atmospheric polluters, jet airliners emit CO<sub>2</sub> (as well as nitrous oxides and water vapor) high into the atmosphere, at cruising altitudes typically between 30,000 and 40,000 feet. Even more seriously, these greenhouse gas emissions survive in the upper atmosphere for as much as a hundred years.

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<sup>5</sup> Commission of the European Communities (2006A, 66). Another source suggests that the relevant figure was roughly four per cent for the EU when it had only fifteen members, but had dropped significantly with the accession of central and eastern European states, in which air transport was less developed (and pollution from industrial sources was greater) (Frontier Economics 2006, Executive summary, 1). The Association of European Airlines (AEA) estimates that in 2003 intra- and extra- EU flights generated 3.4% of total CO<sub>2</sub> emissions within the EU and 0.5% of global CO<sub>2</sub> emissions (AEA 2006).

Finally, the total impact of aviation on the atmosphere is much greater than simple figures for CO<sub>2</sub> emissions suggest – perhaps as much as four times greater.<sup>6</sup>

This impact has been growing significantly over the past two decades. One very recent report suggests, indeed, that aviation may be the cause of as much as 4.9% of global warming.<sup>7</sup> Such growth in emissions reflects a steep growth in traffic and a dramatic multiplication of routes served – both resulting from liberalization of air transport within the EU. Between 1990 and 2003, even as total greenhouse gas emissions from EU sources fell, total CO<sub>2</sub> emissions by EU-based airlines grew by 73%.<sup>8</sup> Rapid growth is continuing with liberalization and the development of low-cost air travel in eastern Europe as well as in Africa, Asia and Latin America.<sup>9</sup>

## **2. How the ETS works:**

The EU developed its Emissions Trading Scheme in response to its commitments under the Kyoto Protocol to reduce greenhouse gases (principally carbon dioxide (CO<sub>2</sub>)). The first phase of the ETS (between 2005 and 2007) covered over 11,000 ground-based sources of atmospheric pollution, such as power stations.<sup>10</sup>

The principles governing the ETS are those used in established “cap-and-trade” systems for controlling atmospheric pollution.<sup>11</sup> Such systems offer choices to firms responsible for pollution, along with incentives and disincentives. Each firm in a designated industry receives an initial annual allocation of the pollutant concerned (in this case, CO<sub>2</sub>). The size of this allocation is based on (but is not necessarily the same as) the firm’s current level of pollution. Each allocation consists of Assigned Amount Units (AAUs), each representing one ton of CO<sub>2</sub>.

Having received its allocation of AAUs, the firm may choose (or be compelled for technical reasons) to exceed its allocation of AAUs. If it does so, it will have to buy additional AAUs equivalent to its excess pollution through a commercial carbon market. Alternatively, the firm may try to reduce its emissions below the level of its initial allocation of AAUs. It may then

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<sup>6</sup> The Intergovernmental Panel on Climate Change (IPCC) estimated that the total impact of aviation on the atmosphere was between two and four times greater than the cumulative emission of CO<sub>2</sub> by the industry since its start (IPCC 1999, quoted in Commission of the European Communities 2006A, 12).

<sup>7</sup> This figure (given in Transport and Environment 2009) refers to 2005 (whereas an IPCC estimate given by the IPCC in 2007 was based on data from 2000).

<sup>8</sup> Figures given in CE Delft (2005) and Commission of the European Communities (2006B, 2), respectively. By early 2005 – with a further growth of traffic of 7.5% in 2004 – total CO<sub>2</sub> emissions by commercial aircraft had grown by 87% relative to the 1990 figure. By contrast, *total* CO<sub>2</sub> emissions within the EU fell by 5.3% between 1990 and 2003: thus, while such emissions fell by 287 million tons during this period, those of the airline industry rose by 47 million tons.

<sup>9</sup> Between 2000 and 2007, passenger air traffic increased by 38% (Transport and Environment 2009).

<sup>10</sup> Directive 2003/87/EC of the European Parliament and the Council of Ministers, 13 October 2003, setting up “a scheme for greenhouse gas emission trading within the Community.” In its first phase, the ETS was applied to over 50% of CO<sub>2</sub> emitted within the EU.

<sup>11</sup> The best-known example being the scheme adopted to deal with the North American acid rain problem.

sell its surplus AAUs in the carbon market and thereby profit from its successful abatement of emissions.

Cap-and-trade thus seeks to achieve reduction of emissions in the most efficient manner and at the lowest cost by appealing to the economic interests of the polluter. By establishing a market mechanism, it should in principle achieve such a reduction virtually without the intervention of government, except as legislator and as monitor of the scheme.

### **3. Aviation emissions on the EU's agenda:**

The EU's initiative to develop its own proposals for dealing with the aviation emissions problem was largely prompted by the slow progress made by ICAO in framing a comprehensive, universal and mandatory formula for controlling such emissions on international flights. Another factor was growing public awareness in Europe – fuelled by some very active NGOs – of the several kinds of environmental damage associated with air travel.

The first suggestion for action by the EU to deal with aircraft emissions came in 1999 – the same year that the Intergovernmental Panel on Climate Change (IPCC) published its study of the atmospheric impact of air transport (the first such study of a particular industry).<sup>12</sup> Following the EU's ratification of the Kyoto Protocol in 2002, the Commission and stakeholders in air transport considered what kind of action would deal most effectively with aircraft emissions. One option was to resort to measures of a “command-and-control” variety which would, for example, impose taxes and other charges on the industry or would set direct limits on its operation and growth.<sup>13</sup>

After consultation and some internal debate, the Commission decided to reject the “command-and-control” option in favor of one relying on a “market-based instrument.” Specifically, the Commission decided that it would recommend including aviation in the emissions trading scheme that the EU was then setting up for ground-based sources of atmospheric pollution.<sup>14</sup> This decision was supported by a feasibility study (published in July 2005) which concluded that inclusion of commercial aviation in the ETS would be the most cost-effective way to tackle the emissions problem. In September 2005, the Commission followed up with a Communication which explained its preference for this course of action.

During the fall of 2005, both the European Parliament (with particular enthusiasm) and the Council of Environmental Ministers endorsed this approach, which was spelled out in detailed legislative proposals for including commercial aviation in the second phase of the ETS

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<sup>12</sup> See Intergovernmental Panel on Climate Change (IPCC) (1999). The Commission declared that “the long-term policy target must be to achieve improvements to the environmental performance of air transport operations that outweigh the environmental impact of growth” (Commission of the European Communities 1999, 2).

<sup>13</sup> Commission of the European Communities (2005).

<sup>14</sup> Directive 2003/87/EC of the European Parliament and the Council of Ministers, 13 October 2003, setting up “a scheme for greenhouse gas emission trading within the Community.”

that were presented by the Commission in October 2006.<sup>15</sup> These proposals have since moved through the EU legislative process, acquiring various amendments on the way.<sup>16</sup> In December 2008, the legislation was finally adopted following agreement between the European Parliament and the Council of Ministers and took effect on 2 February 2009.

#### **4. The approaches of major stakeholders:**

The process of drafting and reviewing the Commission's proposals was accompanied by some very active lobbying, as might be expected over an issue pitching an economically important industry against some increasingly aroused environmental NGOs. In the following sections, we examine the attitudes of the EU airlines, the NGOs and non-EU states and their airlines to the problem of aviation emissions.

##### **a. EU airlines:**

The European airlines and organizations representing them - principally, the Association of European Airlines (AEA) and the European Low Fares Airline Association (ELFAA) -have responded to the global warming issue in essentially two ways. One is political. It involves defending their own record, questioning the assumptions and content of the new legislation and proposing changes that, in their view, will reduce the burden of the ETS on the industry while enabling commercial aviation to continue growing. Public policy should therefore (in the opinion of the AEA) seek "a healthy balance between economic progress and environmental responsibility."<sup>17</sup>

The other kind of response is strategic: it involves looking for and adopting operational, technological and commercial improvements and innovations that the airlines hope will reduce the quantity and impact of emissions from their aircraft.

In political debate, the position of the airline industry on its role in global warming has typically involved three arguments. First, it stresses that commercial aviation is responsible for a very small portion of the CO<sub>2</sub> pumped into the EU's atmosphere, compared to the contributions of fixed sources of pollution (such as power stations and heavy manufacturing plants) and other kinds of transportation.

Secondly, the industry points to its central role in the international economy: more specifically, it claims (again in the words of the AEA) that air transport is "an indispensable

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<sup>15</sup> In November 2005, the Parliament supported strong environmental controls over civil aviation and the imposition of a tax on kerosene (the standard fuel for jet aircraft). In July 2006, the Parliament adopted (by 439 votes to 71) a Resolution welcoming the Commission's Communication of September 2005 on the inclusion of aviation in the ETS, with some MEPs still arguing for a kerosene tax and the creation of a separate ETS for aviation (rather than its inclusion in the existing scheme).

<sup>16</sup> Procedurally, the legislation takes the form of an amendment to Directive 2003/87/EC (see above).

<sup>17</sup> AEA, 2006.

instrument for Europe's growth" and for the economic competitiveness of the EU.<sup>18</sup> As an airline-industry sponsored report noted, the airline industry supports service industries (such as tourism) which are, in the report's words, "a highly productive part of the European economy [whose] growth leads to important knock-on benefits for the wider economy."<sup>19</sup> Thirdly, the airlines point to the increasing importance of air transport and associated industries as employers.<sup>20</sup>

Consequently, while the European airlines emphasize their strong commitment to protecting the environment, they also oppose measures that would seriously curtail their growth. They especially oppose measures that in their view, though presented as environmentally-beneficial, have no demonstrable impact on CO<sub>2</sub> emissions, but are in effect forms of covert taxation that raise airlines' costs while increasing governments' revenues. The airlines believe that they have become – unfairly and too frequently – a favorite target for the imposition by Member State governments of revenue-earning taxes which raise the total cost of tickets and thereby threaten the competitive positions of EU airlines vis-à-vis their non-EU rivals.

Thus when the EU resolved to act on the issue of airline emissions, the airlines – faced with the alternatives of new taxes and "economic instruments" (specifically, inclusion in the ETS) - emphatically if grudgingly opted for the latter. But they quickly added and have repeatedly stressed that any economic instrument "should have a clear environmental rather than fiscal objective."<sup>21</sup>

The solutions actively emphasized by the airline industry involve looking for operational, technological and commercial improvements. All such improvements are appealing to the airlines for at least three reasons. One (the most obvious) is that any reduction in "fuel burn" or any way of using fuel more efficiently will help their - typically fragile – budgets. Secondly, most of the benefits of such improvements will be available immediately and - even better - usually at very low cost to the airlines (in contrast to the investments imposed on the power-generators by emissions abatement rules). Thirdly, with the exception of changes in air traffic

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<sup>18</sup> AEA, 2006. Pointing out that the average distance between Europe's capitals and Brussels is 1,138 kms, the AEA has also claimed that air transport is crucial to "strengthening Europe's cohesion, integration, prosperity and political importance."

<sup>19</sup> Frontier Economics (2006, executive summary, 2). The Commission does not dismiss the industry's claims about its economic importance or its wish to grow further, but argues that "emissions attributable to aviation will have to be de-coupled from aviation growth in order that emissions stabilization can take place followed by emissions reductions" (Commission of the European Communities 2006A, 7).

<sup>20</sup> The AEA has claimed that air transport directly employs some 400,000 people within the EU; indirectly, when the staff of airports and related services are included, as many as 3.1 million jobs may depend on the industry. Globally, (again according to the AEA), "more than 7.5 million jobs depend on air transport, through direct, indirect, induced and catalytic impacts" and "25% of all companies' sales depend on air transport and almost 60% state air connections have a significant impact on their business" (AEA 2006). Much depends on how broadly "aviation" and "related services" are defined. Some definitions include all aerospace activities. In the UK, for example, 180,000 jobs are said to have depended directly (and another 200,000 indirectly) on "aviation" in 1998 (Frontier Economics 2006, 22). Airports alone employed 1.4 million workers in the Member States of the EU in 2004 (Airports Council International, 2004).

<sup>21</sup> AEA (2006).

management, virtually all of the actions required would depend on and would be controlled by the airlines themselves. From the industry's point of view, such a formula is naturally far more attractive than any formula entailing more regulation, especially the type and degree of regulation that their critics have been demanding.

Operational decisions consist of those made by airline managers, airport officials and pilots in order to reduce consumption of fuel (and therefore emissions of CO<sub>2</sub>) on scheduled flights.<sup>22</sup> These decisions are about such matters as changes in flight procedure, improvements in air traffic management and more efficient taxiing by aircraft at airports. While in flight, aircraft might be flown at lower speeds and brought in to land without circling above airports and might use a "continuous descent approach" rather than the conventional "drive-and-dive" approach.<sup>23</sup>

Improvements in air traffic management (a high priority for airlines) would include adoption of shorter and more direct routes, allowing pilots more individual choice of routes, more efficient spacing of aircraft and better communication and coordination between air traffic control centers.<sup>24</sup> Fuel consumption on the ground could be cut by taxiing with reduced engine power, devising shorter routes for taxiing and (most of all) reducing waits for the use of runways. Through such operational changes (the airlines claim) fuel use and emissions could be reduced dramatically and efficiency could be increased – in many cases at little or no cost.<sup>25</sup>

Technological changes typically involve the development of more efficient engines, the use of less polluting fuels and the design of airframes that are lighter and aerodynamically more efficient than those currently in service. Substantial research work by aerospace firms, government and private research organizations is now under way to make commercial aircraft more efficient and less polluting. Indeed, the airlines readily point out the progress toward a cleaner and more efficient technology that the industry and its suppliers have made in the last forty years. As a result, emissions from airliners have declined by 70% since 1975 and the EU airlines currently invest 14% of their turnover in research.<sup>26</sup>

At its most optimistic, the implication of this view is that equally dramatic technological progress in the coming years (combined with the savings achieved by more efficient operations) will enable the airlines to stay within or at least close to their carbon allowances, thereby substantially reducing the need for them to purchase carbon in the market. Those taking this view even argue that operational and technical improvements can reduce pollution so much that mandated reduction of emissions (exemplified by the EU's legislation) will be unnecessary.

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<sup>22</sup> A consultant's report on aviation and global warming in 2006 distinguished between "operational" decisions and "strategic" decisions (those "made in the medium to long-term by airline management" regarding the deployment of a company's resources, both material and human) (Frontier Economics 2006, 40).

<sup>23</sup> That is, aircraft would come in to land on a continually-descending slope of 3° rather than through a series of steps, each at an altitude determined by air traffic control.

<sup>24</sup> A recent consultant's report estimates that improved air traffic management alone could yield an 8.4% reduction in fuel burn (Frontier Economics, 2006, 42).

<sup>25</sup> The AEA has estimated that improvements in air traffic management and other operational measures could reduce consumption of fuel by between 8% and 18% (AEA 2006).

<sup>26</sup> AEA (2006).

Indeed, they claim that already “technological and operational progress has made it possible to decouple aviation growth from higher fuel consumption.”<sup>27</sup>

Commercial measures concern the ways in which an airline can use its resources more efficiently, reduce its costs and liabilities and, with luck or skill, ultimately balance its books. For example, an airline might decide to operate fewer flights, fly on fewer routes or use larger aircraft with more seats. To compensate for any loss of passengers due to such measures, it might also increase fares. The immediate purpose of these initiatives would be to ensure the survival and profitability of a company by operating in the most economically efficient way, rather than to achieve larger goals of protecting the environment. However, the airlines argue that - especially with moderation in the cost of fuel - profitability and “greener aviation” are not only mutually compatible but actively interdependent goals. No party, they stress, has a more compelling economic and commercial incentive to be “environmentally-friendly” than the airline industry itself.

#### **b. Non-governmental organizations:**

Until the issue of global warming appeared, environmental activists (both in Europe and in the US) had largely restricted their campaigning about aviation to the problem of aircraft noise near airports and to the encroachment of airport expansion on rural areas.<sup>28</sup>

Rising concern about global warming added a new and far broader issue to the charge list against air transport - namely, its contribution to the problem through the pumping of CO<sub>2</sub> and other greenhouse gases into the atmosphere. The emergence of this issue radically transformed and enlarged the debate about aviation’s environmental impact from one focused on localized nuisance to one powered by fear of the almost unimaginable implications and costs of climate change.

The environmental NGOs concerned with this problem have been of three kinds. The first group consists of established and familiar organizations with broadly-defined environmental agendas; the second consists of existing NGOs concerned particularly or exclusively with transport; and the third consists of new organizations set up more recently for the specific purpose of publicizing the damaging effects of aircraft on the atmosphere and campaigning for its reduction. The three groups differ not only in the breadth and specificity of their agendas, but also in their strategies.

The familiar, established environmental NGOs (such as Greenpeace, Friends of the Earth and the World Wildlife Fund) tend to concentrate on lobbying directed at policy-making bodies,

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<sup>27</sup> AEA (2006).

<sup>28</sup> For example, the website for the British organization Aviation Environment Federation (AEF) notes that the group was founded in 1975 “because of growing concerns about noise from private aircraft” ([www.aef.org.uk](http://www.aef.org.uk)).

especially those in Brussels.<sup>29</sup> The second group - also focusing mainly on Brussels - are the existing NGOs concerned with transport issues, the most prominent and active being the European Federation for Transport and Environment (T and E) which claims to represent fifty-one organizations in twenty-three European countries and which has observer status in two UN bodies.<sup>30</sup>

The third group of organizations, while having opinions about the EU's legislation, tends to appeal directly to citizens within individual Member States, urging them to take action whether individually (for instance, by reducing or giving up air travel) or collectively (for example, through demonstrations at airports in favor of limits on the use of existing runways and against new runways). Such bodies (which might more aptly be described as campaigns) include GermanWatch and the British-based Aviation Environment Federation (AEF), as well as research and advocacy organizations such as the Institute for Public Policy Research (IPPR) in the UK. Several of these organizations are actually federations of more local or more specialized bodies: the AEF, for example, claims to have 120 members, including "community and environmental groups, local authorities, parish councils, businesses and consultancies and individuals."<sup>31</sup> One AEF member, the former [www.Flyless.org](http://www.Flyless.org), while claiming not to be "anti-industry or anti-flying," urged citizens to reduce the environmental impact of air transport, notably by flying on vacation only once every three years.<sup>32</sup>

The almost-religious fervor of environmentalists about global warming has, as noted above, been reflected in statements by some church leaders. In 2004, for example, a senior member of the Church of England noted that 75% of passengers using low-cost airlines were from the higher income groups and commented:

They could afford the imposition of taxes on aviation fuel which would regulate the market. The principle is that the polluter pays. God entrusts the care of his good creation to those made in His image. The challenge to Christians claiming faith is to think more

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<sup>29</sup> The range of such bodies was well illustrated by a letter to *The Independent* (London) in June 2006, calling on the British government to "fundamentally rethink its aviation policy so that it plays a part in making the annual cuts in emissions that are needed to avoid the worst impacts of climate change." This letter was signed by representatives of ten environmental NGOs, including War on Want, the Campaign to Protect Rural England, Greenpeace UK, and the Royal Society for the Protection of Birds (Carmichael *et al.* 2006).

<sup>30</sup> Founded in 1989, T and E (which has headquarters in Brussels) has observer status at ICAO and Special Consultative Status at the U.N. Economic and Social Council. It is also the coordinator of the International Coalition for Sustainable Aviation (ICSA) which (apart from T and E) consists of the (British) Aviation Environment Federation, the Center for Clean Air Policy, the Coalition for Clean Air, the Dutch Society for Nature and Environment (SNM), Friends of the Earth-Europe, the German League for Nature and Environment (DNR), GermanWatch and the World Wildlife Fund-US.

<sup>31</sup> [www.aef.org.uk](http://www.aef.org.uk), "History and membership."

<sup>32</sup> Falconer (2005, 29, 31). Led by Jeff Gazzard, the organization assembled a "green list" of companies that have agreed to reduce their use of air transport (and a "red list" of those that have not done so). Gazzard asserted, nevertheless, that his organization was not trying to attack the industry, but was simply "anti-the impact of flying." In 2006, a journalist observed that a no-flying movement was "beginning to take shape, with many people voluntarily committing not to fly at all on non-essential trips" (Lynas 2006, 14).

than twice before booking flights. Avoid short-haul flights. Is our time more precious than the future of our grandchildren? May we, at least for leisure, limit ourselves to one long-haul return flight a year?<sup>33</sup>

### c. Non-EU governments and airlines:

Flights between the EU and non-EU states are governed (as are flights between non-EU states) by a very restrictive set of rules based on the premise that every state enjoys absolute sovereignty over national airspace (a right invoked with dramatic effect by the US on 11 September 2001).<sup>34</sup> The so-called “Chicago regime” (named after the Chicago Convention on International Aviation of 1944 and based on this premise of sovereignty) sustains a cumbersome system of bilateral air service agreements which prescribe the routes on which the airlines of the two countries in question may fly, the number of airlines that may fly on the designated routes and the frequency of such flights. The traffic rights thus created are then allocated by each signatory state to one or more of its national airlines.

Liberalization of the air transport market has caused some erosion and relaxation of the Chicago regime (and an associated system of fare coordination managed by the International Air Transport Association (IATA)). The EU Member States abolished the bilaterals governing air services between them while establishing the single market in air transport in the 1990s. Moreover, after a long struggle, the Commission has now secured authority to negotiate bilateral agreements between the EU as an entity and non-EU “third countries” (such as the US).<sup>35</sup>

But liberalization does not (and probably never will) reduce, qualify or challenge the sovereignty of every internationally- recognized state over its airspace. The EU Member States did not surrender such sovereignty when they created the EU single market, but rather gave unconditional access to their collective airspace to EU “Community carriers” for purposes of offering services at will between airports in Member States. Further, even so-called “open skies” agreements are essentially liberalized bilaterals, expanding traffic rights for the airlines of the two signatories but not extending them to airlines based in other countries.<sup>36</sup>

Any effort to create an international regime for controlling aviation emissions would clearly have to take account of the attachment of states to sovereignty over national airspace. For

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<sup>33</sup> Christopher Hall, canon of the Oxford diocese of the Church of England (Hall 2004).

<sup>34</sup> An almost invariable result of such assertion of authority is that foreign airlines are forbidden from flying on domestic routes (the so-called “cabotage” rule). Thus, for example, British Airways may not under current rules operate scheduled services between, say, New York and Los Angeles (though it might combine both cities in a service starting or ending in London). However, under the 2007 open skies agreement between the EU and the US, American airlines acquired (in principle) the right to operate between (but not within) EU Member States, leading critics to charge that the agreement was unbalanced.

<sup>35</sup> The agreements negotiated between the EU and third countries supersede existing bilaterals between individual Member States and third countries. The political and legal struggle to secure authority for the Commission to negotiate with “third countries” is described in Staniland (2008, chapter 6).

<sup>36</sup> Thus the 2007 open skies agreement between the EU and the US simply allows EU and American airlines to choose the cities within the EU and the US between which they will offer flights, as well as to determine fares and frequencies on such routes according to their commercial judgment.

most (if not all) non-EU states, the proper forum for developing such a regime is ICAO, pursuing its mandate under the Kyoto Protocol, rather than a regional body such as the EU. They therefore oppose any attempt by the EU to apply the rules of the ETS to non-EU airlines, especially if it raises the possibility of financial costs and penalties for these airlines.

## **5. Arguments about the legislation for including aviation in the ETS:**

### **a. Summary of the goals and content of the legislation:**

Adding air transport to the ETS presented two novel challenges to the European Commission in preparing legislation to apply ETS principles to the industry. One challenge arose from the simple difference between stationary and mobile sources of pollution: the other stemmed from the international nature of the airline industry. All of the industries and plants covered by the first phase of the scheme were stationary and located exclusively within the boundaries of EU Member States. Air transport, by contrast, is intrinsically about mobility - the mobility of passengers and freight and the mobility of the vehicles carrying them. While all transportation necessarily involves both kinds of mobility, air transport is unusual in its geographical scope - specifically the degree to which its services involve frequent crossing of national boundaries and extensive passage over foreign territory and through jealously-guarded national airspace. The challenge facing the Commission was therefore how to devise rules that would simultaneously accommodate the commercial practices of the industry, achieve serious abatement of emissions and respect the jurisdictions over airspace entrenched in the Chicago regime.

Following the principles of the ETS, the legislation on aviation emissions is intended (in the words of a Commission staff document) to promote “better internalization of the external costs of climate change” and to provide “stronger incentives for air transport operators to reduce their impact on the climate.”<sup>37</sup> Its declared goal is to reduce by 2020 the annual CO<sub>2</sub> emissions from commercial aircraft operating to and from EU airports to a level of roughly 218 million tons of CO<sub>2</sub> (the average tonnage emitted by aircraft flying on commercial services within the EU between 2004 and 2006).<sup>38</sup> Such emissions had been expected to rise to 340 million by 2015 and to 400 million by 2020. The legislation thus aims to reduce annual CO<sub>2</sub> emissions from aircraft by at least 182 million tons by 2020.

To achieve such reductions, each airline (as an “accountable entity” within the ETS) will receive at the start of each five-year period a free allocation of AAUs (as noted above, tons of CO<sub>2</sub>). The size of each allocation of AAUs to an airline will be based on the average annual

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<sup>37</sup> Commission of the European Communities (2006A, 7). The 1999 Commission document said that “the long-term policy target must be to achieve improvements to the environmental performance of air transport operations that outweigh the environmental impact of growth” (Commission of the European Communities, 1999).

<sup>38</sup> Reuters (2008). The Commission’s original estimate of this average was 161 million tons, with emissions rising (under various “business-as-usual” scenarios) to between 202 million and 286 million tons by 2020.

emissions of CO<sub>2</sub> by the aircraft of that airline in the period 2004-2006, modified by a benchmark intended to award efficient operation. At the end of each year, the airline will be required to submit (“surrender”) AAUs equal to the tonnage of CO<sub>2</sub> emitted by its aircraft during the past twelve months.

Following the general ETS rules, each airline will have to purchase extra AAUs in the carbon market if in a particular year it exceeds its allocation. Conversely, it may sell in the carbon market any surplus AAUs it accumulates through reduced operation and/or greater efficiency.

**b. The major issues in debate and amendment:**

The formula thus summarized was the result of a contentious process involving the major stakeholders in air transport. This process mainly turned on how to apply the general principles of the ETS (and its existing practice) to the particular character and circumstances of commercial aviation. Some of the questions that arose in this process were quite easily resolved. These questions included the following:

- To which gas or gases should the legislation apply? The unanimous answer to this question was CO<sub>2</sub>, though some parties wanted to add nitrous oxide (always present in jet exhausts, but proportionately much smaller than CO<sub>2</sub>);
- Who or what should be the “accountable entity”? A consensus favored designating the airlines as accountable entities (rather than, for example, airports, aircraft constructors or, indeed, individual passengers). Since airlines are directly and solely responsible for operating the aircraft emitting the CO<sub>2</sub>, all parties agreed that “aircraft operators” would be the appropriate “accountable entities” in the new legislation.<sup>39</sup> This was consistent with the logic (that the polluter should pay) that had earlier led to power-generating firms being held accountable for emissions from power stations;

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<sup>39</sup> Use of the term “aircraft operator” (rather than, say, “airline”) in practice expanded substantially the number and range of “accountable entities” under the legislation to include aircraft belonging to general aviation companies, corporations and non-profit organizations – all of which the Commission apparently decided were engaged in some form of commercial aviation. While the UK Department for Transport had earlier identified 52 EU-based airlines and 35 non-EU airlines that would be liable for emissions under the Commission’s proposals, the Commission published in February 2009 a list of over 2,700 non-EU aircraft operators it had identified as liable because of their use of EU airports (all of which were assigned to individual Member States for purposes of monitoring emissions (Commission of the European Communities, 2009)). The majority of these operators were not passenger-carrying airlines, but rather general aviation and cargo companies, corporations, and not-for-profit organizations. Belgium, for example, was given responsibility for 41 operators, including not only Brussels Airlines and VLM, but enterprises as unfamiliar to users of Travelocity or Expedia as Hewa Bora Airways of the Congo, Toyota Motor Europe, and Newell Rubbermaid. Bulgaria was assigned (among others) the Red Cross, MIG Russian Aircraft, and Yeti Airlines (sic) of Nepal.

- How might new airlines be able to obtain emissions allowances? What should happen to carbon allowances granted to airlines that go bankrupt?

Recognizing the dynamics of the airline industry, the EU institutions agreed that new entrants would have to buy the AAUs they expected would be necessary for their first year in business and would eventually receive their own allowances in the next cycle of allocations. The AAUs released through established airlines going out of business would, under the legislation, be held back (rather than being offered for sale in the carbon market) and would be cancelled when a new general allocation of allowances took place.

- Who should monitor compliance, and how?

In principle, the monitoring of aviation emissions (compared to that involved in monitoring power stations) is relatively simple, uncontroversial and immune to manipulation. Emissions can be deduced from the consumption of fuel by aircraft and such deduction is quite straightforward since the number of commercial aircraft and engine types in service is fairly small. Emissions can thus be determined by using a small set of standardized fuel consumption formulas (for particular engines and aircraft types). Moreover, records of fuel purchase by particular airlines are easily obtained and easily verified.

But the actual measurement of emissions requires some complicated calculations. For this purpose, the Commission has already undertaken technical consultations intended to explore the issues involved in “monitoring, reporting and evaluation” (MRE) and to create detailed procedures for monitoring the emissions of individual aircraft operators.

Other questions raised by the Commission’s proposals proved to be chronically contentious and divisive. They included the following:

- What should be the base year or years for determining the overall cap on emissions?

The Commission’s proposals on the question of a baseline year had recommended that the cap for air transport under the ETS should be derived from (though not necessarily equal to) the average of the total miles flown in 2004, 2005 and 2006 on flights to and from EU airports.

Several airlines and environmental NGOs challenged this recommendation. The airlines argued that 2004-6 was “too far removed from the 2011-2022 trading period”: 2008 would therefore provide a better basis for calculating the cap. The NGOs, in contrast, wanted to push the baseline back as far as 1990 – consistent with the Kyoto agreement, but also seven years before full implementation of the EU’s liberalization package for air transport. To the disappointment of the NGOs, the Commission responded that rolling back the baseline as far back as 1990 was completely unrealistic and would destroy all the benefits of liberalization.<sup>40</sup> Ultimately, the legislation incorporated the 2004-6 baseline proposed by the Commission.

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<sup>40</sup> The Commission said that in choosing the 2004-6 reference period, it had explicitly recognized that, given the extent to which aviation has grown since 1990, “the sector [could not] be expected to take on the same level of ambition as other sectors already covered by the ETS” (Commission of the European Communities 2006A, 63).

- What should the cap be?

Procedurally, the 2004-6 average was only a basis for subsequent calculation and debate: the actual cap for emissions by commercial aircraft might be set at any level from 100% downward. The Commission therefore had to decide where to set this level. Again in the face of more radical proposals by the environmental NGOs, it proposed that the cap should – at least initially - be set at 100% of the baseline 2004-6 amount.

Discussion in the Parliament and elsewhere produced widely different suggestions for the level of the cap. While the airlines endorsed the Commission's proposal for a 100% cap, the Parliament's environment committee considered lowering the cap to 75% or even 50% of the base figure (a percentage that the environmental NGOs supported). But even the rapporteur of the committee (himself a strong advocate of reducing emissions) rejected the suggestion for a 50% reduction as “technically and politically not achievable.”<sup>41</sup> His committee eventually fell back on a recommendation for a 90% cap, and the eventual bargaining range was between 90% and 100%.

Finally, the Council and the Parliament reached an agreement on 27 June 2008, by which the cap was set at 97% of the 2004-6 average, to fall to 95% in the second phase of the ETS between 2013 and 2020.<sup>42</sup> This decision was roundly criticized by several NGOs, T and E, for example, calling it a “historic missed opportunity” that would prevent significant reductions of aviation emissions.<sup>43</sup>

- What kinds of flights should be covered by the ETS?

On consideration, the question of determining the kinds of flights to be subject to the ETS divides into two quite distinct questions applicable to particular cases. The first is a functional question - what is the purpose of the flight? The second is a question of geographical scope – is the flight, for instance, short-haul or long-haul, domestic or international?

The Commission's answer to the functional question was that only commercial air transport (whether carrying passengers or carrying freight) should be subject to the ETS rules, since, among all forms of aviation, commercial aviation is (in aggregate) by far the largest polluter. The Commission thus excluded military flights, rescue and other emergency flights, training and technical flights, most forms of recreational flying and flights by heads of state and government and government ministers. In subsequent discussion, the Commission's proposal to

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<sup>41</sup> Quoted in *ENDS Europe Daily* (2007).

<sup>42</sup> Airlines could also use credits acquired from investment in environmental projects in developing countries through the so-called Clean Development Mechanism (which allowed industries covered by the ETS to use credits generated by underwriting environmental projects in developing countries).

<sup>43</sup> In making the decision, T and E remarked, the Member State governments had “once again [taken] the side of their flag-carrying airlines” (Joao Vieira, quoted in *EurActiv.com*. 2008B).

restrict application of the ETS rules to commercial (passenger and cargo) flights raised no objections, with one minor exception.<sup>44</sup>

The question of geographical scope was more complicated and, moreover, had significant political ramifications. It required the Commission to decide whether ETS rules should apply to all commercial flights using EU airports, regardless of their length, whether they were on domestic or international routes, and whether they were operated by EU or non-EU airlines.

**TABLE 1: INCLUSION OF AIR TRANSPORT IN E.T.S: PROPOSALS AND AMENDMENTS**

<u>Body:</u>	<u>Commission proposal:</u>	<u>European Parliament: Environment Committee</u>	<u>European Parliament: Transport Committee</u>	<u>AEA</u>	<u>ELFAA</u>	<u>NGOs</u>	<u>June 2008</u>	<u>Dec 2008</u>
<u>Topic:</u>								
<u>Gases covered</u>	CO <sub>2</sub>	CO <sub>2</sub>	CO <sub>2</sub>	CO <sub>2</sub>	CO <sub>2</sub>	CO <sub>2</sub>	CO <sub>2</sub>	CO <sub>2</sub>
<u>Accountable entity</u>	Airline	Airline	Airline	Airline	Airline	Airline	Airline	Airline
<u>Flights covered</u>	All to and from EU airports	All flights to and from EU airports	All to and from EU airports	All to and from EU airports	All to and from EU airports	All to and from EU airports	All to and from EU airports	All to and from EU airports
<u>Base year/s</u>	2004-6 Average			2008				
<u>Cap</u>	100%	50 or 75%	100%				97%, down to 95% in 2013-20	
<u>Start date</u>	(1)2010-11 for intra-EU flights; (2)2012 for all flights (intra- and extra-EU)				Single start date	2010	2012	
<u>Allocation procedure:</u>	Mix of free and auctioned							
(a)Free (%)	90% +		80%			Maximum of 50%	85%	85%
(b)Auctioned (%)	c.10% Unlimited from 2013	50%	Parliament: 25%; (European Council wanted 10% auctioned)				15%	15%
<u>Trading (open/closed system)</u>	<u>Open system:</u> no purchase of aviation AAUs by firms in other industries					<u>Closed</u>		<u>Open</u>

<sup>44</sup> The exception was a decision, initiated by some members of the Parliament's Transport and Energy Committee, to remove flights by heads of state and government from the exempt category, on the ground that such exemption would be discriminatory and "elitist."

On the question of distance, the Commission decided that the length of a flight was not in itself relevant to determining liability under ETS rules. Since such liability depended on the amount of CO<sub>2</sub> emitted, distance was relevant only in that a longer flight would cause more pollution (in aggregate) and entail greater liability than a shorter one.<sup>45</sup>

Regarding the routes for which CO<sub>2</sub> liability would be assessed, the Commission opted for the simplest and most comprehensive formula available, namely, to apply the new rules to all commercial flights to and from airports within the EU. This definition was uncontroversial when applied to flights within the EU: for purposes of regulating aviation, the distinction between “domestic” and “international” flights had effectively become obsolete with the establishment of the single market.

But the inclusion of all commercial flights using EU airports entered legally-perilous territory because it necessarily involved flights from or to airports in non-EU countries, which were sure to question its legality. Such a definition of geographical scope would also dramatically expand the reach of the ETS, compared to an “EU-only” definition: it would make even the longest of long-haul routes as subject to emission quotas as the shortest intra-EU trip (in fact, the two-minute flight from Westray to Papa Westray in Orkney).<sup>46</sup> Legally, such an interpretation would also raise questions about global (as distinct from national or regional) authority to frame rules on aircraft emissions, since it would implicitly override the division of labor defined by the Kyoto Protocol.

Assessing liability for emissions between EU and non-EU airports would require answering two further questions. First, should the ETS rules apply to all airlines, regardless of nationality? Secondly, what would be the appropriate distance to use in calculating liability - specifically, for what part of an international flight (and the related CO<sub>2</sub> emissions) should the operator of the flight be liable?

Regarding the first question, the Commission’s phrasing was quite unequivocal: absent explicit exclusion of non-EU airlines from liability, the rules would have to apply to all airlines, regardless of nationality.<sup>47</sup> Indeed, if the Commission had exempted non-EU carriers from accountability, the European airlines would have immediately protested about discrimination and distortion of competition.<sup>48</sup> They would have complained that such exemption would put them at a serious economic disadvantage in competing with non-EU airlines and that they would therefore have to increase their fares on long-haul routes to take account of the carbon charges

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<sup>45</sup> However, the overall intensity of emissions is greater on shorter flights than on longer flights insofar as shorter flights entail more frequent landings and takeoffs. But shorter flights are more efficient insofar as they involve a lower weight penalty from carriage of fuel than longer flights.

<sup>46</sup> The shortest documented time for this flight (achieved with a favorable wind) is 58 seconds. According to the Guinness Book of Records, this is also the shortest scheduled commercial flight in the world.

<sup>47</sup> The only flights to be exempted from liability under the ETS would be those passing through the airspace of Member States without landing - a very small proportion.

<sup>48</sup> This was a telling argument since the Commission had always argued that the ETS would not distort competition.

not borne by their non-EU rivals.<sup>49</sup> This disadvantage would be all the more serious since European “legacy” airlines operate by far the majority of long-haul flights to and from European cities and, indeed, depend on these flights for much of their revenue. Application of the ETS rules would therefore be much more costly for them than for their competitors.<sup>50</sup>

Determining the portion of a flight for which airlines should be liable required choosing between two radically different definitions (with radically different implications for emissions liability). One definition (the “routes-based” formula) would base liability for emissions on the entire distance flown between, say, New York and London (roughly 3,500 miles). The other definition (the “airspace-based” formula) would use only the mileage flown through airspace above one or more Member States. On a New York – London flight, the distance on which liability for emissions would be based might therefore be as small as a couple of hundred miles or as large as 3,500 miles, depending on which formula was applied.

The Commission favored the “routes-based” formula – that involving the greater distance – for four reasons. The first (which may also be the most important in the minds of Commission officials) was that the “routes-based” formula “would give the greatest environmental benefits.”<sup>51</sup> Only a formula covering the entire distance of long-haul flights would capture these benefits and would (in the Commission’s words) “most adequately reflect the higher external costs associated with long-haul trips.”<sup>52</sup>

The second reason was administrative practicality. According to the Commission, the “routes-based” formula would be far easier to apply than an “airspace-based” formula in assessing liability for carbon emissions. Applying an “airspace-based” formula would require finding out and recording each year the exact distance flown within the airspace of one or more Member States by every commercial flight en route to or from a third country.<sup>53</sup> The task of assembling and processing such data would be immense. The “routes-based” formula, by contrast, could be applied simply by using standard city-to-city mileages (such as the 3,500 for London - New York).

Thirdly, the Commission claimed that its choice of the “routes-based” formula directly followed advice given in 1996 by the relevant committee of the United Nations Framework

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<sup>49</sup> The Commission has always assumed that all costs incurred by airlines as a result of participation in the ETS would be passed through to customers.

<sup>50</sup> This is a point that Commission officials have often used tactically in arguing with critics in the US and elsewhere.

<sup>51</sup> Specifically, the Commission’s working document concluded that:

the broadest possible **geographical scope of all departing and arriving flights** would give the biggest environmental benefits, would be neutral from a competition point of view considering the alternative scope options and would be the best option for tourism. (Commission of the European Communities. 2006A, 64 (bold in original)).

<sup>52</sup> Commission of the European Communities (2006B, 12).

<sup>53</sup> Regulators would in fact have to collect information on every flight, since air traffic control centers may direct different flights on a common route to follow different courses, necessarily resulting in different mileages flown.

Convention on Climate Change (UNFCCC).<sup>54</sup> This committee had argued against basing carbon allowances on “emissions generated in national airspace.” The Commission, following this advice, had therefore ruled out an airspace-based approach “at an early stage.”<sup>55</sup>

Fourthly, the Commission in its original proposals and subsequently has consistently argued (following legal advice provided in Brussels) that a “routes-based” formula is consistent with international law and specifically with the Chicago Convention. While insisting on the legality of its position, it also said when presenting its proposals that it had no intention of challenging, much less contravening, the provisions of the Chicago Convention. Any appearance of such a challenge was, it implied, incidental and secondary.

In subsequent discussion, most of the organized interests in the EU supported the application of the ETS’s rules to all flights into and out of EU airports, but for different reasons. The environmental NGOs argued that to apply these rules only to intra-EU flights would, in the words of a Green Party MEP, “undermine the environmental integrity of the scheme” since between 75% and 80% of the mileage flown by EU airlines is on long-haul routes.<sup>56</sup> The Commission’s representatives made the same argument, using similar figures.<sup>57</sup>

The EU airlines also accepted the Commission’s formula. ELFAA (the low-fare airline organization) was particularly opposed to restricting the ETS rules to intra-EU flights. Doing so (it argued) would burden its members disproportionately since they fly overwhelmingly on routes within the EU: by contrast, “legacy” carriers, such as British Airways and Air France, rely (as noted above) much more on long-haul routes for their revenue.

The EU legacy carriers also accepted the logic of applying the ETS rules to all flights into and out of EU airports, provided that these rules were applied to airlines of all nationalities. Otherwise, the competitiveness of EU airlines would suffer since they would face costs and limitations greater than those borne by their foreign competitors. The extra costs would, in turn, force them to charge higher fares than those charged by their rivals and they would lose business.

Non-EU governments, however, objected strenuously to both the Commission’s adoption of the “routes-based” formula and its application of the ETS rules to non-EU airlines using European airports. Predictably, they saw in these decisions an improper extraterritorial application of EU law and an encroachment on their sovereignty over aircraft on their national registers. In particular, they referred to the prohibition of taxes and similar charges on international flights contained in the Chicago Convention, arguing that the ETS legislation’s provision for buying carbon allowances breached this provision. For the non-EU states, the Commission’s claim that it had never intended to challenge the Chicago Convention was beside

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<sup>54</sup> Specifically, the committee on scientific and technological advice.

<sup>55</sup> Commission of the European Communities (2006A, 11).

<sup>56</sup> The speaker was Caroline Lucas (see also Lucas 2008). Transport and Environment calculated that intra-EU flights generated only 50 million tons of CO<sub>2</sub> per annum, whereas the total for all flights arriving at and departing from EU airports was roughly 200 million tons (Transport and Environment 2006).

<sup>57</sup> John Bruton, the EU ambassador to the US, pointed out in May 2008 that “two thirds of emissions come from intercontinental flights, and only one third from internal European flights” (European Union Delegation of the European Commission to the US, 2008).

the point. The provisions of international law on commercial aviation were to them clear and fundamental: they could not be overridden simply in order to advance EU policy, however urgent (and global) might be the problems addressed by such policy.

- When should aviation become subject to the ETS?

On the timing of aviation's inclusion in the ETS, the Commission originally proposed that implementation should occur in two phases. In the first, to occur in 2010/2011, the emissions scheme would apply only to intra-EU flights: in the second, to occur in 2012, it would apply to all commercial flights using airports in the EU. The Commission argued that a two-phase approach would give it and the Member States a year to gain experience in implementing the new rules before they had to deal with the much larger volume of traffic that would face them under the "all flights into and out of EU airports" formula.

Debate about a starting date for inclusion of aviation in the ETS mainly focused on two issues: first, the desirability of a phased introduction of the ETS and, second, the actual year or years when it would be introduced.

Criticism of the two-phase approach came mainly from two groups, the environmental activists (along with Green Party and other members of the Parliament) and the low-cost airlines.<sup>58</sup> But the reasons for their preferences differed substantially. The environmental NGOs and the Greens wanted a single starting-date because, regardless of what year was chosen, adoption of such a date would mean that long-haul flights would become liable for emissions at the same time as intra-EU (and shorter) flights – for them, a desirable change, given the greater pollution caused by long-haul flights.

The low-cost airlines, by contrast, were worried that a two-phase approach would distort competition if only intra-EU flights were covered by the first phase.<sup>59</sup> Such an approach (ELFAA argued) would discriminate against airlines flying largely or exclusively within the EU (as the low-costs do). For an entire year (2010-11), they would be fully liable for CO<sub>2</sub> emissions and subject to the related restrictions and costs of the ETS on all their routes, while airlines (EU or non-EU) operating long-haul services to and from non-EU states would escape liability for such services.<sup>60</sup>

Worse still, since many of the airlines operating long-haul services also flew on intra-European routes, they would be able during the transitional year to cross-subsidize their intra-EU services with revenue from long-haul services. More precisely, they would be able to apply the savings they made because of exemption from the ETS to reduce the costs of (and the fares for)

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<sup>58</sup> The non-EU member states of ICAO also objected to phasing-in. But they objected to the legislation itself because it ignored ICAO's mandate and because the Commission intended to apply it to their airlines.

<sup>59</sup> The large number of regional airlines would, of course, have similar interests.

<sup>60</sup> Accordingly, ELFAA argued, under a phased approach "long-haul airlines, who are the biggest polluters, would not have to pay the cost of their emissions"(ELFAA 2008A).

their intra-EU flights. The low-costs therefore argued that the proposed phasing-in would necessarily distort competition on intra-European routes.<sup>61</sup>

Even if the EU dropped phasing-in, it would still have to decide on the actual date for implementation. The environmental NGOs and the Parliament's environmental committee favored not only a single date, but also an early one – typically, 2010. The low-costs did not have especially strong views about the date to be chosen, provided that it applied to all airlines operating within EU airspace.

After argument within and outside the Parliament, the two-phase approach was abandoned in favor of a single start-date for all flights – specifically, 1 January 2012.

- How should carbon allowances be allocated?

Allocation of carbon allowances to airlines under the new legislation involves three stages. One is the collection of data on emissions by the airlines of individual Member States. The second is application of a formula for determining the level of allowances to be allocated to each airline, starting from its average emissions in the 2004-6 reference period. The third is applying a formula for making these allowances available to the airlines (for free, for a charge or through auction, or through some combination of procedures).

The first – essentially administrative - step requires each Member State to report in a National Allocation Plan the total CO<sub>2</sub> emissions of its airlines in the reference period (as well as those of non-EU airlines for which it would be responsible).<sup>62</sup> The Commission will then determine the number of AAUs to be made available to each airline, while prescribing *how* they will be made available.

The Commission reviewed several alternative formulas for distribution of AAUs, as follows:

(1) “Grandfathering,” by which each airline would receive a *free* allocation of allowances exactly equal to the emissions produced by its aircraft in the reference period. The Commission rejected this option because it would give the least possible incentive to airlines to improve their efficiency and thereby reduce their emissions.<sup>63</sup>

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<sup>61</sup> Understandably, the low-costs were absolutely opposed to the proposal occasionally heard for an even longer introductory period (say, five years) during which only intra-European flights would be subject to emissions control. They feared that, because of inertia, “ultimately there would only be an intra-EU scheme [which] would be a ridiculous result” (ELFAA 2008A).

<sup>62</sup> See note 36 above. This responsibility would also entail administering the allowances subsequently allocated to the designated non-EU carriers. The legislation applies the term “attributed aviation emissions” to emissions by aircraft of non-EU airlines and labels those of EU-based aircraft as “historic aviation emissions” (those for the period 2004 -2006) (Commission of the European Communities 2006B, Ch.1, (2), (q) and (r)).

<sup>63</sup> Indeed, the Commission remarked that this approach could be seen “as rewarding the polluter” (Commission of the European Communities 2006A, 20).

(2) “Benchmarking,” by which each airline would receive a *free* allocation of allowances equal to its 2004-6 average *modified* by a benchmarking formula that would reward efficient and less polluting operations.<sup>64</sup>

The Commission’s proposed formula for benchmarking involved a formula that would give credit for actual payloads carried (to reward efficient use of aircraft) and for taking the shortest routes on its flights. This formula would then be applied to a figure for total transportation as measured in ton/kilometers (so as to avoid discriminating between short-haul and long-haul flights). The effect of applying such a formula would be that an airline which was or became more efficient and less polluting would “receive proportionately more allowances as compared to its needs than an aircraft operator which [was] less efficient than average.”<sup>65</sup>

- (3) Mixture of freely-allocated and auctioned allowances, in which each airline would receive a proportion of its “historic” emissions *free* and would be allowed to bid for allowances retained and auctioned by the Commission;
- (4) Auctioning of all allowances (and therefore *no* free distribution). This option (preferred by some environmental organizations) was rejected by the Commission.

The Commission originally recommended adopting option (3), with each Member State authorized to determine the percentage of AAUs that its airlines would receive free and (therefore) the percentage that would be put up for auction. The Member States would schedule the auctions and decide on the number of AAUs to be sold at each auction. They would receive the revenue from auctions, but the Commission in its initial proposals recommended that they should use this revenue “to mitigate greenhouse gas emissions, to adapt to the impacts of climate change, to fund research and development for mitigation and adaptation, and to cover the costs of administering the scheme.”<sup>66</sup>

In the extended debate about formulas for determining and allocating allowances, the airlines and the environmental organizations (along with their parliamentary sympathizers) once again took radically different positions.

The airlines wanted straightforward “grandfathering,” with all - or a very large proportion - of the carbon allowances provided to them free. Conversely, they were against any auctioning of allowances because (the Secretary General of ELFAA argued) “auctioning would simply be an additional tax without any environmental benefit.”<sup>67</sup> It would increase the costs of an industry that was already weighed down by a variety of charges and taxes. Secondly, while increasing the costs of doing business (and putting more money in government treasuries), auctioning of carbon

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<sup>64</sup> Use of such a formula would, the Commission believed, give “environmental credibility” to the ETS: “A benchmarking system [it said] should incentivize companies to deliver a good or service in a less carbon intensive manner” (Commission of the European Communities 2006A, 62).

<sup>65</sup> Commission of the European Communities (2006A, 61-62).

<sup>66</sup> Commission of the European Communities (2006B, 13 and Article 3c). But the legislation, as amended, provides only that the proceeds of auctioning will go to the exchequer of the auctioning state.

<sup>67</sup> Quoted in ELFAA (2008A).

allowances might, ironically, cause airlines to postpone buying newer and less polluting aircraft. It would reduce the profitability of airlines and would require them to divert money intended for purchase of new aircraft to paying instead for carbon allowances.

The NGOs and their parliamentary allies, on the other hand, favored formulas that would both lower the overall level of AAUs offered to the airlines and reduce the proportion they would receive free. Consequently, the NGOs completely rejected “grandfathering,” arguing that it would remove any incentive to (and pressure on) the airlines to operate more efficiently. Further, they recommended reducing the number and proportion of free allowances, arguing that the availability of such allowances would (as the Institute for Public Policy Research (IPPR) in London put it) give the airlines “a cheap flight.”<sup>68</sup>

The NGOs were especially skeptical about giving free allowances to the airlines not only because of the environmental implications of doing so but also because of experience in the first phase of the ETS when some energy companies had gamed the system in order to make windfall profits. They had been able to do so because Member States had initially made over-generous allocation of carbon allowances to the energy sector, inadvertently enabling energy companies to profit by selling allowances that were surplus to their needs.<sup>69</sup>

The moral was clearly that, in dealing with aviation, the Commission should restrict and, if possible, eliminate opportunities for the gaming of ETS procedures by restricting - and, ideally, eliminating – the allocation of free carbon allowances to the airlines. Otherwise, the IPPR estimated, the airlines would stand to make windfall profits of around £ 2.7 billion (then €4 billion).<sup>70</sup> Even if they still needed to buy further credits in the market, they would simply pass on the marginal costs of these credits by raising fares (as the Commission always assumed they would do).

The NGOs therefore pressed for a formula with the highest possible ratio of auctioned to free allowances (or, best of all, a formula that completely excluded free allowances). Both Transport and Environment and the World Wildlife Fund argued for auctioning 100% of the AAUs because this procedure was “the most efficient and fairest way to issue permits,” would remove the possibility of windfall profits and would produce revenue that might be applied to developing green technology.<sup>71</sup>

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<sup>68</sup> Institute for Public Policy Research (2006B), quoted in *EurActiv* (2006).

<sup>69</sup> In the UK, energy companies had made windfall profits of approximately £1 billion in the first year of their inclusion in ETS. Figures issued in 2006 showed that actual CO<sub>2</sub> emissions by these companies were 44 million tons under the level permitted by the initial allocation of free allowances in 2005.

<sup>70</sup> Institute for Public Policy and Research (2006A and B). A World Wildlife Fund study had earlier estimated that the airlines might make as much as €3.5 billion per annum from their inclusion in the ETS (cited in *EurActiv.com*, 2006). The airlines denied that any such windfall profits would be possible. ELFAA, indeed, commissioned a consultant’s analysis on this issue after a consultant for the UK government had forecast that airlines would make significant windfall profits from the ETS. The ELFAA consultant’s report criticized the methodology of the UK study (see Frontier Economics 2008 and Vivid Economics 2007 and 2008).

<sup>71</sup> Transport and Environment (2006).

While the Member States (through the Council of Ministers) supported auctioning only 10% of the carbon allowances, the environment committee of the Parliament twice recommended a 50% figure (some members arguing (like the NGOs) for the auctioning of all allowances). Both the Green Party and the socialist PSE bloc insisted that 50% should be the minimum proportion auctioned, one Green Party MEP declaring that it was time for the Parliament “to get tough with the aviation sector.”<sup>72</sup>

Faced with a warning by the committee’s rapporteur that the Member States would never accept 50% auctioning, the environment committee eventually settled for recommending that 25% of the allowances should be auctioned in the first year. But it further recommended that the proportion of allowances auctioned should rise progressively between 2013 and 2020, by which time the airlines would have to buy all their carbon allowances at auction (as the Commission was recommending for the other industries covered by the ETS).<sup>73</sup>

While the Parliament and the Council of Ministers agreed in June 2008 that only 15% of allowances should be auctioned, the EU airlines were outraged that any double-digit figures were being considered.<sup>74</sup> They had seen even the 10% figure recommended by the Council of Ministers as “unfairly punitive” and they were naturally appalled by the decision to raise it to 15%.<sup>75</sup> The airlines complained that auctioning would increase their costs immensely, just as the industry was facing a steep rise in the price of aviation fuel, with several airlines already on (or already over) the edge of bankruptcy.<sup>76</sup> Sylviane Lust, the director-general of the International Air Carrier Association (representing leisure and charter airlines), declared that the 15% figure was “unaffordable and unacceptable.” ELFAA, for its part, was “shocked” by the June agreement. It accused the EU of having “traduced” the principles of the ETS in order to impose “the biggest ever tax in aviation history”: by requiring the airlines to buy so many allowances, Brussels had in effect “turned a green initiative into a straight tax.” The industry had expected – because of the decision to set the cap at 97% of the baseline amount – that it would have to buy only three per cent of its allowances (if a “grandfathering” formula was adopted): now it saw that proportion increasing fivefold.

The airlines were therefore relieved when further negotiation between the Parliament and the Council of Ministers in December 2008 led to an agreement that the environmentalists saw as a significant capitulation to the airlines.<sup>77</sup> The agreement rejected the environment committee’s recommendation that the airlines (along with other industries covered by the ETS) should have to buy through auction an increasing proportion of their allowances in the 2013-2020 period. Instead, the proportion of allowances to be auctioned would remain at 15% (the proposal for

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<sup>72</sup> Caroline Lucas, quoted in Mahony (2008).

<sup>73</sup> In October 2008, on the second reading of the proposed ETS rules, the environment committee returned to the charge, voting for an increase in auctioning up to 20% in 2013, with (as already agreed) a complete phasing out of free allowances by 2020.

<sup>74</sup> In June 2008, the Parliament and the Council also agreed to drop the requirement that Member States invest any revenue from auctioning in “green” projects.

<sup>75</sup> ELFAA (2008A).

<sup>76</sup> The price had risen by 140% between December 2006 and June 2008 and (ELFAA pointed out) some twenty airlines had already declared bankruptcy in the first six months of the year.

<sup>77</sup> Dunn (2009).

allowing each Member State to determine its own level of auctioning having been dropped). In greeting the new agreement as a victory for common sense, ELFAA justifiably commented that the EU had effectively established “a separate scheme for aviation in the ETS.”<sup>78</sup>

The environmental organizations, by contrast, were disappointed by the continuing dilution of the provisions for auctioning (as they had been disappointed by a decision in June to drop the requirement that Member States should use any revenue from auctioning for environmental projects). Friends of the Earth spoke for many of the NGOs when it commented that the compromise reached in December was so weak that “it [would] have little impact on the rocketing growth in carbon dioxide pollution from flying.”<sup>79</sup>

- How should airlines conduct trading in carbon allowances?

A key issue for the Commission in devising rules for carbon trading by airlines was to define the market in which trading might occur. Specifically, would airlines be allowed to trade only in a “closed system” (one in which buyers and sellers could only exchange allowances allotted originally to airlines)? Or would they be permitted to trade in the broader carbon market created when the ETS was first established (that is, trading in surplus allowances originally allocated to all industries covered by the scheme)?

This choice of market was crucial because everyone involved agreed that the airlines would have to buy carbon allowances even to maintain their present level of operations (and many thought that the industry would always need to buy a very large number of allowances). So the scope of the relevant carbon market and the rules governing transactions in it would be very important in determining how seriously the ETS affected the growth and profitability of the airline industry. If the Commission chose a closed system, the supply of surplus allowances would be either zero or very small, and the price of any allowances available would be very high.<sup>80</sup> If, however, the Commission chose an open system – one in which the airlines would be allowed to buy surplus allowances offered by firms in other industries - the supply of allowances would probably be much larger and (other things being equal) prices would be much lower.<sup>81</sup>

In its original proposals, the Commission firmly advocated an open system for aviation on three grounds. First, aviation could not sustain a viable market on its own. Secondly,

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<sup>78</sup> ELFAA (2008B). ELFAA also commented (wrongly) that the December agreement would “make the EU ETS more saleable to third countries, whose participation in EU ETS [would be] essential for it to be environmentally effective” (ELFAA 2009).

<sup>79</sup> Richard Draper, quoted in *EurActiv.com* (2008C).

<sup>80</sup> The Commission suggested that in a closed system for aviation, the price of a ton of carbon would probably reach between €114.1 and €325.8 (roughly \$171 and \$489, respectively) by 2020 (Commission of the European Communities, 2006A, 40). Current prices in the open market are in the range €19-€23 per ton (roughly, \$28.5 and \$34.5, respectively).

<sup>81</sup> Observers also agreed that the entry of the airlines into the carbon market would probably have little impact on prices, simply because the industry is a fairly small part of the total EU economy (producing only about 0.6 per cent of value-added in the economy (Commission of the European Communities, 2006A, 6). The Commission had calculated that at 2005 levels of emission, air transport would contribute extra emissions equivalent to only eight per cent of the CO<sub>2</sub> emitted by the industries already covered by the ETS.

regardless of conditions in specific industries, an open system would lead to more efficient use of available carbon allowances. Thirdly, including aviation in an open system would (the Commission believed) make it easier to reach international agreement on controlling aviation emissions than if it were put into a closed system. In fact, ICAO had already decided that “international open emissions trading” would be better for commercial aviation than a closed system. So allowing EU airlines to trade in the open carbon market would make it easier to accommodate the EU’s regional emissions scheme to any eventual ICAO global scheme (should it ever offer one).<sup>82</sup>

But the Commission prescribed specific conditions for carbon trading by the airlines. While they would be able to buy carbon allowances from the general pool within the ETS, “operators from other sectors [would] not be permitted to surrender [that is, buy] aviation allowances.” Conversely, airlines would not be allowed to sell allowances from their own allocation to companies outside the industry.<sup>83</sup> In effect, the Commission (as it noted) had created a “one-way gate”: airlines might buy emission allowances originally allotted to other industries, but these industries would be excluded from buying allowances originally allotted to the airlines.

On the issue of an appropriate carbon market for trading by airlines, the industry and its critics again took diametrically opposed positions. The airlines consistently favored an open trading system because it would give them a chance to continue growing. Conversely, the environmentalists (and the Parliament’s environment committee) favored a closed system precisely because it *would* slow down such growth: the high prices (and small supply) of allowances within a closed system would force the airlines to raise their fares substantially and perhaps even reduce their flights.<sup>84</sup> As a result, demand would level off or even fall and emissions would be contained or even reduced.<sup>85</sup>

Some environmentalists went further, arguing that successful abatement would require putting a cap on the number of allowances that airlines, individually or collectively, would be allowed to buy.<sup>86</sup> Otherwise, the airlines would simply raise fares to match the cost of purchasing allowances. Raising fares might or might not reduce demand, depending on the route and the type of passenger concerned. Given such uncertainty, therefore, the surest (and perhaps the only) way to ensure containment of emissions would be to impose a limit on the number of allowances that an airline might buy.

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<sup>82</sup> An open system would be “economically more efficient” because a single overall price for carbon would enable all market participants to make gains from trade and allow the EU to meet its goals for CO<sub>2</sub> “at minimum cost across all the covered sectors” (Commission of the European Communities, 2006A, 40).

<sup>83</sup> Commission of the European Communities (2006A, 17).

<sup>84</sup> As Jean-Cyrille Spinetta of Air France put it (rather opaquely), a closed system would not be “adapted to the context of the air transport sector” (meaning apparently that it would impede the industry’s growth) (quoted in *EurActiv.com*.2008A).

<sup>85</sup> T and E also invoked a more economic argument, suggesting that a closed system was desirable “for reasons of effectiveness and cost effectiveness” (Transport and Environment 2006).

<sup>86</sup> One member of the environment committee also suggested that purchase of allowances in the carbon market should be made conditional on an airline having already met a specified minimum level of fuel efficiency in its operations.

However, the eventual legislation contained very few of the NGOs' recommendations. Instead, the Parliament and the Council agreed with the Commission that the airlines should be allowed to trade without restriction within the open carbon market (subject to the provisions for "one-way" trading in the original proposals).

## **6. Prospects for reducing aviation emissions:**

Before and since its adoption, critics have criticized the EU's new emissions regime for aviation on legal, political and economic grounds. The non-EU members of ICAO (most vocally, the United States) claim that it contravenes the Chicago Convention by presuming to impose an illegal charge based on liability for emissions on their airlines whenever they fly to and from EU airports.<sup>87</sup> They also claim that the EU, by creating a regional scheme for aviation emissions, has usurped the mandate given to ICAO under the Kyoto Protocol. IATA has repeatedly warned that implementation of the ETS rules will (in the words of its director-general) "only invite international legal battles."<sup>88</sup> Finally, the US government and the US airline industry (the latter through the Air Transport Association (ATA)) have reacted quite polemically to the ETS and, more broadly, have so far rejected "cap-and-trade" as an appropriate instrument for reducing aircraft emissions.

Environmental activists and NGOs have, meanwhile, criticized the emissions scheme as a political compromise that will have no serious impact on the growth of aircraft emissions (a view shared by some economists).<sup>89</sup> Some critics are skeptical of the very principle of "cap-and-trade" (because, they believe, it implicitly legitimizes pollution). But critics more commonly complain that, whether because of omission or dilution, the ETS lacks elements that, for purposes of effective abatement, are crucial.

Such elements usually include (in different combinations) the following:

- (1) a lower overall cap;
- (2) lower initial allocations of carbon allowances;
- (3) a much higher proportion of auctioned as against freely-given allowances;
- (4) a separate (closed) trading scheme for aviation; and
- (5) a cap on the number of allowances that individual airlines are permitted to buy and/or a requirement that airlines meet a specified level of abatement as a precondition for buying allowances.

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<sup>87</sup> The articles of the Convention usually cited in this discussion are Articles 15 (dealing with airport charges) and 24 (dealing with customs duties). Critics of the legislation claim that emissions charges are sufficiently similar to such charges and duties that their imposition will breach one or both of these articles. Other legal analysts (including those advising the Commission) argue that emissions charges are entirely different in character from the charges envisaged in the Chicago Convention and are therefore permissible as long as they are levied "in a non-discriminatory manner with respect to nationality" (such non-discrimination being a major value in the Convention) (Petersen 2008, 201-2).

<sup>88</sup> Giovanni Bisignani, quoted in *EUobserver.com* (2008).

<sup>89</sup> For two recent analyses concluding that the impact of the ETS will be quite modest: see, for example, Mendes and Santos (2008, 204) and Scheelhaase and Grimme (2007, 262).

Only by such means (and perhaps by the imposition of *en route* or other charges) – the critics argue – will the cost of emissions (both for airlines and passengers) begin to meet or exceed the (already high) costs of abatement, thereby encouraging the industry to be more efficient and would-be passengers (and users of airfreight services) to be more frugal about air travel.

The EU airlines, for their part, have accepted pragmatically (and in some cases, embraced) trading as the least bad alternative, compared to taxes and other command-and-control measures. Even in bowing to this pressure, however, the airline industry (like its American counterpart) insists that technological and operational measures informed by its own expertise and under its own control offer the surest, most efficient, most productive and least costly way to control aircraft emissions.

However, EU officials and the majority of MEPs are clearly convinced that inclusion of aviation in the ETS and the overall policy it serves are necessary and imperative in the fight against global warming. Indeed, they claim that the rules they have developed can “serve as a model for the expansion of the scheme worldwide.”<sup>90</sup> Caught between the unanimous opposition of the ICAO members outside Europe and pressure at home from increasingly strident environmental organizations, they show no inclination to defer to the ICAO majority, including the US.

Moreover, if forced to state their priority among the three commitments recognized in the drafting of the ETS – containment of emissions, equal treatment of EU and non-EU airlines, and uncritical compliance with the Chicago Convention – Commission officials might well decide (as Green MEPs and the environmental NGOs have obviously long since decided) that preventing climate change comes first, and does so by a long way. As an official in Brussels remarked to the author about the airline industry and its sympathizers (and did so with some impatience): “Look, these people have got to understand that protecting the environment comes before everything else. It’s got to.”

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<sup>90</sup> Commission of the European Communities (2006B, 12).

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