Including the Aviation Sector in the European Union Emissions Trading Scheme

Report with Evidene
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Report with Evidence

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Global aviation emissions are not currently a serious problem but they will become so. The December 2005 European Environment Council said that the inclusion of the aviation sector in the European Union Emissions Trading Scheme (EU ETS) seems to be the best way forward on aviation emissions and that it has greater potential for application internationally than other policy alternatives. We agree with them but there are substantial problems ahead.

Any legislative proposals must be well thought through and sustainable in the longer term, both on environmental and economic grounds. There must be a robust framework within which to accommodate EU and UK policies on aviation emissions and on air-passenger and air freight growth. It is not clear that those policies are compatible.

An ETS scheme with aviation should include all flights departing EU airports. This would cover all the EU’s contribution to aviation’s CO₂ emissions, some 40% of which arise from intra-EU flights and some 60% from departing flights to third countries. But we identified doubt whether the EU can unilaterally impose a scheme upon non-EU airlines. The EU may be forced to introduce a scheme based on intra-EU flights only and even then there may be challenge on the inclusion of non-EU airlines.

There is a strong argument against auctioning of initial aviation CO₂ emissions allowances, unless basic CO₂ allowances for all industries were put up for auction in Phase 2 of the EU ETS. However, if initial emissions allowances are distributed free of charge, airlines might still raise airfares and make windfall profits. Air fares and air-freight charges should come under close scrutiny for evidence of windfall profit taking in the event that allowances are issued free of charge.

Any permits that are allocated free of charge should be allocated based on a benchmarking system to reflect best practice on aircraft emissions. The design of an aviation scheme within the ETS could have differential affects more generally upon airlines and the European Commission’s 2006 Impact Assessment should examine this. Clean Development Mechanism and Joint Implementation projects, which are Kyoto Protocol mechanisms, may be important sources of extra emissions allowances for the aviation industry if it is to continue to grow.

Clarity is needed about present and future EU policy with regard to the level of permitted carbon emissions, both in total and for the aviation industry. We have severe doubts that the impact upon carbon prices, airfares and air travel will be modest, except in the short term. Substantial increases in air fares and air freight charges could occur within a few years while at the same time prices of energy and other carbon intensive industries will have risen very sharply too, driven in part by the demand for aviation services. Other industries and their customers will feel the main impact of including aviation within the ETS.

The Commission and the United Kingdom Government should conduct a rigorous assessment of all relevant issues before further policy commitments are made.
Including the Aviation Sector in the EU Emissions Trading Scheme

CHAPTER 1: TACKLING THE CLIMATE-CHANGE IMPACT OF AVIATION

1. The European Union (EU) Emissions Trading Scheme (ETS) which started on 1 January 2005 covering all 25 EU Member States is the world’s first large-scale greenhouse-gas trading programme. The aim of the EU ETS is to help EU Member States achieve compliance with their commitments under the Kyoto Protocol. It currently covers 11,500 industrial installations, which together are responsible for nearly half of all EU CO₂ emissions. Within the United Kingdom there are around 1,050 installations operating under the EU ETS.

2. Operators of these installations receive emissions allowances giving them the right to emit a certain level of CO₂ each year. The total of these allowances creates a “cap” on overall emissions from these installations. The terms “allowances” and “emissions allowances” are used throughout this report and are interchangeable. Unless otherwise specified, these terms refer to CO₂ allowances (otherwise known as “carbon allowances”).

3. Allowances for each installation are set at a national level in a National Allocation Plan (NAP) prepared by each Member State. Each NAP must be approved by the European Commission to ensure that they meet a number of criteria, including that they are consistent with each Member State’s emission target under the Kyoto Protocol (see paragraphs 11–15).

4. At the end of each year, operators must surrender the number of allowances equal to their actual emissions in that year. If they anticipate that their emissions will exceed their allowances, they can take measures to reduce their emissions—for example by installing more efficient technology or by reducing their output—or they can buy additional emission allowances on the market. If an installation emits more carbon than it has allowances for and fails to purchase allowances to make up the difference, it would be fined €40 per tonne of carbon for which allowances have not been surrendered.¹ In addition the installation must make up the shortfall: either by purchasing allowances on the market or by using some of its allowances for the next year.

5. Conversely, if an installation’s actual emissions are lower than their allowances, they can sell their surplus allowances on the market or else “bank” them to cover future emissions. Allowances are only valid for the period for which they are issued, for example Phase I or Phase II. They expire at the end of this period. The trading and banking of emissions allowances takes place through the EU ETS Registry. The Commission argues that the existence of a market in which these allowances can be traded enables participating companies to manage their emissions cost-effectively.

¹ This fine will rise to €100 per tonne in Phase II of the ETS
6. The units of trading and banking of allowances is a unit of CO$_2$ and that market price is typically referred to as the carbon price. In a number of places we refer to emissions prices and carbon prices. Unless otherwise specified, these terms are interchangeable.

7. The current EU ETS (Phase 1) covers CO$_2$ emissions from large emitters in the power and heat generation industry and in selected energy-intensive industrial sectors: combustion plants, oil refineries, coke ovens, iron and steel plants, and factories making cement, glass, lime, brick, ceramics, pulp and paper. A size threshold based on production capacity or output determines which plants in these sectors are included in the scheme. Small emitters of CO$_2$ are excluded.

8. In Phase 1 of the ETS, most allocations were made free of charge. Member States were given discretion as to whether to auction 5% of all allowances in Phase I. In the United Kingdom this was not taken up and all allowances were allocated free to existing installations. However, any allowances remaining in the New Entrant Reserve (the pot of allowances that are set-aside for new installations commencing operations in the first phase of the scheme) may be auctioned.

9. Allowances for Phase I installations were allocated using grandfathering. For new entrants, allocations were calculated using a benchmarking methodology (because they were new, they did not have any historic data that could be used to grandfather their emissions).

10. The aviation sector was not included in Phase 1 of the ETS. On 27 September 2005, the Commission adopted a Communication, *Reducing the Climate Change Impact of Aviation*, which concludes that the most cost-efficient and environmentally effective option to deal with the climate change impacts of aviation is to include emissions from aviation in the EU ETS. In the following paragraphs we examine the policy developments that have led to this conclusion.

**Kyoto Protocol**

11. The Kyoto Protocol to the United Nations Framework Convention on Climate Change is an international and legally binding agreement to reduce greenhouse gas emissions worldwide.

12. The objective is the “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system”.


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2 Grandfathering refers to allocating allowances based on past levels of emissions, and was used in the UK to allocate allowances from the sector cap to individual installations. The information used was the level of CO2 emissions from each installation between 1998 to 2003. The average level of emissions for each installation with more than one year’s data was calculated following the exclusion of the year with the lowest level of emissions. These averages were used to determine the proportion of the sector allowances that each installation received. (Environment Agency)

3 Benchmarking is an allocation method in which allowances are allocated free of charge on a system of benchmarks, such as emissions per unit of output.

4 Article 2, UN Framework Convention on Climate Change
total of 156 countries had ratified the agreement (representing over 61% of global emissions).

14. Countries which ratified this protocol are committed to reducing their emissions of carbon dioxide and five other greenhouse gases, or to engage in emissions trading if they maintained or increased emissions of these gases. Signature countries have pledged to reduce their collective emissions of greenhouse gases by at least 5% in the period 2008–2012 compared to the year 1990. The European Union’s policy objective on long-term climate change is a maximum global temperature increase of 2°C over pre-industrial levels. This would require a 70% reduction in greenhouse gases on 1990 levels. The United Kingdom Government has pledged to reduce the United Kingdom’s 1990 Carbon Dioxide levels by 20% by 2010.

15. The Kyoto targets do not include aviation emissions but the Protocol calls on parties to pursue the limitation or reduction of greenhouse gas emissions from aviation by working through the International Civil Aviation Organisation (ICAO).

**International Civil Aviation Organisation and the Intergovernmental Panel on Climate Change**

16. The International Civil Aviation Organisation (ICAO) is the United Nations specialized agency that has global responsibility for the establishment of standards, recommended practices, and guidance on various aspects of international civil aviation, including environmental protection.

17. In 1999, at the request of ICAO, the Intergovernmental Panel on Climate Change (IPCC) produced a Special Report on *Aviation and the Global Atmosphere*.

18. The main conclusions of this report were:

- that aircraft emit gases and particles which alter the atmospheric concentration of greenhouse gases, trigger the formation of condensation trails and may increase cirrus cloudiness, all of which contribute to climate change; and

- that aircraft are estimated to contribute about 3.5 per cent of the total radiative forcing (a measure of change in climate) by all human activities and that this percentage, which excludes the effects of possible changes in cirrus clouds, was projected to grow.

19. The Report recognized that while the effects of some types of aircraft emissions are well understood, the effects of others are not, and identified a

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5 The Intergovernmental Panel on Climate Change (IPCC) was jointly established by the World Meteorological Organisation (WMO) and the United Nations Environment Programme (UNEP) in 1988 to (i) assess available information on the science, the impacts and the economics of and the options for mitigating and/or adapting to, climate change and (ii) provide, on request, scientific/technical/socio-economic advice to the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC)

6 *Aviation and the Global Atmosphere*, published April 1999 see: http://www.grida.no/climate/ipcc/aviation/003.htm

7 Radiative forcing is the change in the balance between radiation coming into the atmosphere and radiation going out. A positive radiative forcing tends on average to warm the surface of the earth, and negative forcing tends on average to cool the surface.
number of key areas of scientific uncertainty that limit the ability to project aviation impacts on climate and ozone.

20. Against this background, the ICAO Assembly in 2001 urged States to promote scientific research aimed at addressing the uncertainties identified in the Report and requested its Council to continue to co-operate closely with the IPCC and other organizations involved in the definition of aviation’s contribution to environmental problems in the atmosphere.

21. In 2004, the ICAO adopted three major environmental goals that included limiting or reducing the impact of aviation greenhouse gas emissions on the global climate. The ICAO Council President said in November 2005 that “liberalization of air travel and the remarkable growth in the air transport sector is outpacing environmental achievements, hence the need for more concerted efforts on the environmental front”\(^8\). The Secretary General of ICAO said recently that the ICAO is considering market-based options to address emissions through the participation of aviation in emissions trading schemes and the use of emissions levies related to local air quality. He added that guidelines for countries wishing to implement such measures would be drawn up for discussion at the ICAO Assembly in 2007 when the direction for future action will be set.\(^9\)

The European Commission

22. The European Union’s 6\(^{th}\) Environment Action Programme, which was published on 24 January 2001, called for specific action to reduce greenhouse gas emissions from aviation as a priority if no action was agreed within ICAO by 2002. No specific action was forthcoming from within ICAO although as noted in paragraph 19 above, discussions have been ongoing within the ICAO.

23. The European Commission, DG Environment, commissioned CE Delft\(^10\) in 2004 to produce a background study on the inclusion of the aviation sector in the EU ETS. The overarching object of the study was to develop concepts to amend Directive 2003/87/EC (the Directive which established the Emissions Trading Scheme) to address the full climate change impact of aviation through emissions trading. The Delft report\(^11\) concluded that the introduction of emissions trading for the aviation sector, most immediately in respect of its CO\(_2\) emissions, while keeping the structure open for including non- CO\(_2\) impacts in the future, did not appear to pose many challenges that had not arisen in the context of the existing EU ETS. The report therefore proposed that emissions trading was a policy option that could be considered alongside other policy instruments to tackle the climate change impacts of aviation.

24. When, on 27 September 2005 the Commission adopted its Communication entitled, *Reducing the Climate Change Impact of Aviation*, the accompanying Impact Assessment examined in detail twelve policy instruments to tackle aviation emissions before concluding that the inclusion of aviation in the EU

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\(^8\) See ICAO News Release of 30 November 2005

\(^9\) See ICAO News Release of 30 November 2005

\(^10\) CE Delft is an independent research and consultancy organisation based in Amsterdam. It specialises in developing solutions to environmental problems

ETS appears to be the most promising way forward. The Communication therefore outlines plans to reduce the impact of aviation on climate change and recommends that aviation emissions should be included in the EU ETS. The Commission views the inclusion of aviation in the EU ETS as part of a comprehensive approach that includes research into cleaner air transport, better air traffic management and the removal of legal barriers to taxing aircraft fuel.

**The United Kingdom Government**

25. In December 2003 the United Kingdom Government published its White Paper on the Future of Air Transport, which, inter alia, sets out proposals to bring aviation within the EU ETS in 2008 to help limit greenhouse gas emissions from aviation. The Government also stated that it would press for the implementation, through ICAO, of a global aviation emissions trading regime.

26. The 2003 White Paper set out the Government’s commitment to taking a lead in tackling the problem of climate change and reserved the right to act alone or bilaterally (with like-minded partners) if progress towards agreement at international level proved slow.

27. The Government’s White Paper on the Future of Transport, published in July 2004, re-iterates the Government’s goal of ensuring that, over time, aviation pays its full external costs including its health and environmental costs. “…the aviation industry has a responsibility to reduce its impacts under the ‘polluter pays’ principle”12 Again the Government indicated that it wanted the aviation sector to enter the EU ETS in 2008 or as soon as possible thereafter.

**Report for information**

28. In December 2005, the EU Environment Council urged the Commission to bring forward a legislative proposal by the end of 2006 that is both environmentally useful and economically efficient. The Commission has established an Aviation Working Group to consider ways of incorporating the climate change impact of aviation into the EU ETS. This Report therefore reports evidence given to us to date and raises a number of issues. We intend to return to the topic when the Commission produces draft legislative proposals.

29. We make this report to the House for information.

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12 White Paper on the Future of Transport
CHAPTER 2: AIR TRANSPORT AND THE ENVIRONMENT

Introduction

30. Aviation meets three main needs, business and leisure related travel and air freight. Passengers travelling for leisure reasons benefit not only the airlines and airports but also the tourism industry and economy of their destination. Business travel helps develop global trade and investment. Globally, the airline and airport industry employs 4.3 million people directly and the civil aerospace industry employs 730,000. A further 5.8 million jobs depend upon purchases of goods and services by the aviation industry in its supply chains. The aviation industry contributes substantially to additional job opportunities in tourism and freight. International visitors arriving by air support 6.7 million jobs.

31. In broad terms, the globalisation of leisure travel and of business assisted by aviation is at an early stage of development. Further substantial growth in aviation appears likely as this globalisation continues, income levels rise and deregulation in air markets continues around the world. However, as with many other business and consumer activities, aviation has an impact on the environment.

32. In its Communication, Reducing the Climate Change Impact of Aviation, the European Commission addresses the growing impact of aviation emissions on the climate. The number of aircraft miles flown and the rate at which technological improvements and innovations in aviation are introduced broadly governs the level of these emissions.

Current and projected air traffic levels

33. At a global level, preliminary figures from ICAO suggest that scheduled services carried 1.88 billion passengers and 37.6 million tonnes of freight in 2004. 40% of international tourists travel by air and 40% of international exports by value are transported by air.

34. The EU was responsible for around 36% of all global air passenger movements in 2003. Of this, air travel within the EU accounted for 24% and the EU share of air travel into and out of Europe (approximated by taking all departures from the EU to non-EU destinations) was 12%.

35. Approximately 80% of all European air traffic is due to tourism. The remaining 20% is a mixture of business travel and freight.

36. European passenger air traffic is growing at a rate of around 4% p.a., while freight air traffic is growing at around 6.4% p.a.. The IPCC in 1999 projected that global air passenger travel would grow by about 5% p.a. between 1990 and 2015. The United Kingdom Government’s Aviation White Paper of December 2003 provides for a substantial expansion in air traffic at 30 United Kingdom airports from the 2003 level of 180 million

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13 The Economic and Social Benefits of Air Transport, Air Transport Action Group
15 Commission’s RIA
passengers p.a. (mppa) to 476 mppa by 2030, a projected 3.7% annual rate of growth.\textsuperscript{16}

**Current and projected environmental effects of aviation**

37. There is broad agreement that aviation is currently responsible for around 3% to 4% of carbon emissions within the EU but also that this proportion will grow significantly in the future. In the following paragraphs we set out some projections of future aviation emissions levels.

38. The IPCC Special Report on Aviation and the Global Atmosphere predicted, in 1999, that aviation CO\textsubscript{2} emissions would grow in the future. Global passenger air travel was projected to grow by about 5% p.a. between 1990 and 2015 whereas total aviation fuel use was projected to increase by 3% p.a. during the same period (the difference is due largely to improved aircraft fuel efficiency).

39. The IPCC Special Report further stated that emissions of carbon dioxide by aircraft were about 2% of total global CO\textsubscript{2} emissions in 1992 or about 13% of carbon dioxide emissions from all transport sources. The Special Report then considered a range of scenarios for future trends: all anticipated that CO\textsubscript{2} from aircraft emissions would continue to grow significantly.

40. There are also non- CO\textsubscript{2} impacts of aviation on climate change, which the IPCC considered. They include emission of nitrous oxides that increase ozone and methane in the atmosphere, water vapour (which is a greenhouse gas), condensation trails\textsuperscript{17} that tend to warm the earth’s surface, and cirrus clouds that can be caused by contrails and cause the earth’s surface to warm. They also include sulphate and soot aerosols that may play a role in enhanced cloud formation and change the radiative properties of clouds.\textsuperscript{18}

41. The EU’s total greenhouse gas emissions fell by 5.5% from 1990–2003. In the same period the carbon dioxide emissions from the international aviation of the 25 Member States of the European Union rose by 73% or 4.3% p.a.\textsuperscript{19} In written evidence, the Department for Environment, Food and Rural Affairs (DEFRA) pointed out that, according to the EU greenhouse gas monitoring mechanism, in 2001, carbon dioxide from aviation emissions accounted for 3% of the EU’s total carbon dioxide emissions, up from 1.8% in 1990. The Commission points out that if growth continues at this rate, aviation emissions will account for 4.5% of total carbon emissions by 2012. Research published by the Tyndall Centre\textsuperscript{20} in 2005 claims that, if unchecked, aviation will account for the EU’s entire carbon budget by 2045, if the EU aims to stabilise its carbon emissions at 450ppm\textsuperscript{21}.


\textsuperscript{17} These are generally referred to as contrails

\textsuperscript{18} See Footnote 7

\textsuperscript{19} Environment Agency written evidence

\textsuperscript{20} The Tyndall Centre for Climate Change Research, University of Manchester. http://www.tyndall.ac.uk/index.shtml.

\textsuperscript{21} Parts Per Million. A unit of concentration.
42. In 2000, aviation in the United Kingdom was responsible for around 11% of the total climate change impact of the United Kingdom. United Kingdom forecasts suggest that the United Kingdom’s combined domestic and international aviation emissions could account for up to a quarter of the United Kingdom’s total contribution to global warming by 2030.

43. In summary, the current level of aviation emissions is small as a proportion of total global, EU or United Kingdom CO₂ emissions. However, all commentators agree that, in the absence of public policy changes, passenger air travel and air-freight will continue to increase and with it a significant growth in CO₂ emissions. In addition, aviation causes other emissions that appear likely to contribute to global warming.

**European Commission’s solution**

44. Any environmental policy measures have to assess and weigh up the benefits and costs involved. In the case of aviation, the industry is strongly linked to global business and economic growth, also strong and continued growth in demand is forecast for personal as well as business travel. On the other hand there is widespread agreement that growth in aviation will bring significant growth in emissions and damage to the global environment unless something changes the equation. Is it possible to have both growth in aviation and reductions in the levels or growth of emissions from aviation? If policy intervention is proposed, how can it achieve the best balance of outcomes at least cost?

45. It is against this background that the European Commission is proposing that aviation emissions should be included in the European Union Emissions Trading Scheme. In the next chapter we go on to review the options for dealing with the climate change impact of aviation considered by the Commission.

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22 BAA written evidence
CHAPTER 3: OPTIONS FOR TACKLING THE CLIMATE-CHANGE IMPACT OF AVIATION EMISSIONS

46. The Commission has produced an impact assessment to accompany its Communication, *Reducing the Climate Change Impact of Aviation*. This analyses twelve options for dealing with the climate change impact of aviation. In this chapter, we set out the twelve options and the views of the Commission and our witnesses on these options.

Options considered to be not sufficiently effective or practicable

47. The following five options were, after preliminary screening, rejected by the Commission for Community-level implementation at this stage because they were not sufficiently effective or practicable.

- restrictions on air traffic volumes
- regulatory standards
- restrictions on access to EU airports for the least-efficient aircraft
- voluntary agreements with airlines to reduce emissions
- departure/arrival taxes, VAT on air transport, removal of public subsidies.

*Restrictions on air traffic volume*

48. Restricting the volume of air traffic at individual airports would guarantee a reduction in greenhouse gas emissions from aviation. The Commission concludes however that it would be a disproportionate measure that would preclude the full use of existing airport capacity and would involve a choice as to the desirable level of aviation activity that could not be based on any objective measurement. The Commission also points out that such action would breach the principle of subsidiarity since it is within the sphere of competence of Member States.

*Regulatory standards*

49. These could be either technical design standards that affect the aircraft engine design or operating standards that affect the way an aircraft is operated. ICAO recommends technical design standards to limit emissions of certain pollutants from aircraft engines. The Commission believes that technical design standards implemented at Community level alone would significantly distort the market for large civil aircraft and jet engines in favour of manufacturers based outside the EU and therefore not subject to these design standards.

*Restrictions on access to EU airports for the least-efficient aircraft*

50. In its impact assessment the Commission explains, “the establishment of operational restrictions based on climate performance indicators agreed at EU level is considered a less promising avenue than the use of economic instruments which would provide more flexibility for aircraft operators.”
Voluntary agreements with airlines to reduce emissions

51. The Commission discussed the necessary conditions for and goals of a possible voluntary agreement in its 1999 strategy. In 2004, ICAO’s Committee on Aviation Environmental Protection (CAEP) endorsed a template agreement and guidance on voluntary measures. Neither of these has resulted in any concrete voluntary agreement being signed.

Departure/arrival taxes, VAT on air transport, removal of public subsidies

52. The Commission suggests that a movement-based aviation tax (for example, a flight departure tax levied on all flights leaving Community airports) would provide no incentive to operators to improve environmental performance or to invest in cleaner technologies. However, a movement-based aviation tax would provide environmental benefits to the extent that it had influenced air transport demand. The Commission concludes, “to the extent that other more sophisticated options are available and deliverable, such taxes are not the preferred way of mitigating the climate impacts of aviation.”

53. Domestic air passenger transport is currently subject to VAT in some EU Member States although not in the United Kingdom. International air passenger transport is exempt from VAT in all Member States. Applying VAT to all air passenger flights could contribute to reducing the climate impact of aviation by reducing demand but it would not provide a specific incentive to reduce emissions. Much the same could be said of the Air Passenger Duty levied on departures from the United Kingdom.

54. The Commission explains in its impact assessment that public subsidies to the aviation industry are currently illegal, save for rescue aid or restructuring aid, and therefore the Commission believes that the removal of subsidies would not offer a significant opportunity for environmental improvement.

Options considered inadequate to achieve policy objective but worth pursuing

55. The following five options were considered inadequate to achieve the policy objective of reducing CO₂ emissions as quickly as possible but nevertheless worth pursuing:

- raising awareness of air transport users
- improving air traffic management
- research and development in air transport technology and operations
- applying energy taxes to commercial aviation
- improving the competitiveness of rail transport

Raising awareness of air transport users

56. The Commission thinks that raising the awareness of consumers about the effects of their behaviour could directly influence the choice of mode of transport, the choice of destination and/or the choice of airline. However the Commission accepts that raising consumer awareness is unlikely on its own

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23 Civil aviation includes both private and commercial aviation. This option deals only with applying energy taxes to commercial aviation.
to have a significant impact on demand for air services, or to channel that demand towards more efficient operators.

**Improving air traffic management**

57. The 1999 IPCC Special Report estimated that improvements in this area could help to improve overall fuel efficiency by 6–12%. The International Air Transport Association estimates that eliminating delays in Europe would save 1 million tons of CO₂ emissions p.a.. Strategies to improve Air Traffic Management (ATM) are being examined by Eurocontrol\(^{24}\) in the framework of their 20 year strategy ATM 2000+. At a Community level, improvements in ATM if achieved could offer a modest opportunity to reduce aviation emissions in Europe over the next few years but cannot be the primary instrument for dealing with the climate impact of aviation.

**Research and development in air transport technology and operations**

58. In its impact assessment, the Commission details the significant sums of money that have been devoted to the research and development of new technological and operational solutions to reduce aircraft emissions. Any resulting advances are likely to have a long lead time and thus the Commission judges this option as worth pursuing but unlikely to produce sufficiently urgent results for it to be the primary instrument for dealing with the climate impact of aviation.

**Applying energy taxes to commercial aviation**

59. It is common for Member States to exempt fuel used for international air services from energy and similar taxes\(^{25}\). The Commission concludes that the extension by Member States of energy taxation to aviation could provide side-benefits in terms of greenhouse gas reductions relatively quickly but only to a limited extent. This option is not considered sufficiently robust to be the basis for a strategy for achieving the Commission’s policy objectives in this area.

**Improving the competitiveness of rail transport**

60. The encouragement of modal shift from air to rail could make a modest environmental impact in the short term. It would not however, according to the Commission, help to provide stronger economic incentives to improve the aviation industry’s environmental performance and to reflect better the true costs of air transport in the price.

**Options considered in detail by the Commission**

61. The following 2 options were considered the best options to achieve most effectively the policy objectives and are considered in detail in the Commission’s Impact Assessment:

- en-route charges or taxes on aircraft emissions and impacts
- emissions trading for aviation

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\(^{25}\) This is done under the Chicago Convention.
We agree that these are the main options.

**En-route charges or taxes on aircraft emissions and impacts**

62. En route charges are aimed at the wider impact of aviation’s climate effects arising from emissions along the entire flight trajectory and should be distinguished from charges or taxes designed to tackle local environmental problems at and around airports.

63. In 2002 the Commission published a study of en route charges aimed at mitigating the climate-change effect of air transport in Europe. The analysis made by the Commission of en-route taxes and charges in its 2005 Impact Assessment is essentially based on this study and considers two policy variants:

- An environmental charge whereby each aircraft would pay a charge based on the volume of greenhouse gas emissions it discharged in EU airspace. This option would raise revenue;

- A performance standard incentive whereby the better an aircraft performed relative to a standard, the more money it would receive and the worse it performed the more money it would pay. This option would be revenue neutral—the sum of payments and revenues would equal zero.

**Emissions trading for aviation**

64. The Commission’s impact assessment notes that including aviation in the EU ETS would require consideration of many design details, including how to take into account the full climate change impact of aviation. We discuss these issues below.

**Commission’s conclusions**

65. The Commission’s Impact Assessment concludes that in terms of effectiveness and efficiency, charges and emissions trading are equivalent. In terms of potential for wider application and legal certainty, emissions trading is preferable to charges.

66. The Commission’s summary of the advantages and disadvantages of these two option shows that whereas for taxes and charges the advantages and disadvantages, numerically at least, are equal, for emissions trading the number of advantages is almost double the number of disadvantages.

**What views were expressed in written and oral evidence?**

67. The vast majority of the evidence we received was in favour, in principle, of aviation joining the EU ETS. British Airways recognised that, “air transport’s climate change impacts must be addressed…if practical solutions are not found to address the impact of aircraft emissions in flight, there is increased risk of punitive measures being introduced, damaging competitiveness and delivering limited environmental benefit”.

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26 Economic incentives to mitigate greenhouse gas emissions from air transport in Europe, CE Delft, 2002

27 British Airways written evidence
68. BAA Plc welcomed the proposal to include aviation in the EU ETS, “We believe that an open emissions trading scheme represents the most economically efficient and environmentally effective way of industry addressing the impact of emissions”\textsuperscript{28} Dr Paul Upham from the Tyndall Centre for Climate Change accepted that, “providing double-counting of emissions is avoided, there appears to be no reason why the EU ETS should not be expanded to include other...activity, including transport.”\textsuperscript{29}

69. In oral evidence, the Minister, Mr Elliot Morley MP, explained that there were a range of options that could be applied to the aviation sector to tackle its climate change impacts but that carbon trading was one of the most effective and that the United Kingdom Government were keen to include aviation in the EU ETS as soon as possible (Q 261). Mr Wiltshire of the British Air Transport Association told us “We do not believe that there are politically practical alternatives to [including the aviation sector in the EU ETS]” (Q 50)

70. Friends of the Earth welcomed the introduction of the ETS and believed that there was “no reason why any sector of industry could not be included within the EU ETS”\textsuperscript{30} However they had doubts whether the ETS as currently configured could cope with the inclusion of aviation and recommended that consideration could be given to protecting “more vulnerable” sectors by creating a dedicated aviation ETS linked through a controlled “buy only” gateway to the current ETS.\textsuperscript{31}

71. On the other hand, the European Low Fares Airline Association (ELFAA) did “not see it as necessary or appropriate to extend the ETS to include aviation.”\textsuperscript{32} They understood the case for reduction in emissions but believed that the considerable efforts already made by the airline industry to reduce carbon emissions had not been taken into account and would not be taken into account in an ETS that included aviation. In oral evidence it appeared that the ELFAA’s objection to including aviation in the EU ETS stemmed from the fear that the no-frills sector would be disproportionately affected by such a move, “We do operate only within Europe.... so we will have the full impact... We are the sector which will be most affected.” (Q 108)

**Other solutions to aviation’s climate change impacts**

72. In both written and oral evidence, our witnesses referred to possible methods of tackling the climate change impacts of aviation other than emissions trading. These included both measures that they would employ alongside inclusion of the aviation sector in the EU ETS and measures that they thought were not appropriate to address the climate change impacts of aviation. In this section we examine these measures and the views expressed in the evidence we received.

\textsuperscript{28} BAA Plc written evidence
\textsuperscript{29} Tyndall written evidence
\textsuperscript{30} Friends of the Earth written evidence
\textsuperscript{31} This was not explained further in the written evidence of Friends of the Earth. We understand it to mean that aviation would not be allowed to purchase allowances from other sectors but other sectors would be allowed to purchase allowances from the aviation sector.
\textsuperscript{32} ELFAA written evidence
In written evidence, the Aviation Environment Federation and Friends of the Earth believed that a kerosene tax could play a part in dealing with aviation’s climate change impacts. Friends of the Earth thought that, “direct taxes or charges would curb demand and therefore emissions”\(^33\) and said that if aviation were included in the EU ETS, the exemption of aviation from kerosene tax needed to be addressed to ensure fair competition between all sectors included in the EU ETS. 

DEFRA recognised that, in the light of ICAO’s policy\(^34\), fuel used for international aviation should not be subject to tax and “a unilateral approach to aviation fuel tax would not be effective.”\(^35\) Mr Morley, whilst recognising in his written evidence that the global exemption of aviation kerosene from fuel tax was anomalous\(^36\), said that at this stage the United Kingdom Government did not wish to put additional costs on the industry (Q 317). Mr Gammeltoft, Head of Clean Air and Transport Unit, DG Environment, European Commission believed that taxation options were a possibility but explained that the bilateral air service agreements that individual Member States had with third countries would need to be renegotiated before taxation became a real possibility. (Q 104) Taxation options would take a considerable length of time to negotiate and implement and this effectively ruled them out of consideration at this stage.

There was unanimity amongst the airlines and airline representative bodies from whom we heard that a fuel tax was not a feasible way forward, “Taxation applied to emissions, fuel usage….would not only be bad for the economics of our industry, it would also be bad environmental policy.”\(^37\)

In paragraphs 62 and 63 en route charges were explained. This was the only option, other than emissions trading for aviation, considered in detail by the Commission in its impact assessment. Both the Aviation Environment Federation and BAA Plc believed that such a scheme could have a part to play in tackling the climate change impacts of aviation. BAA Plc would only support the revenue-neutral version of the scheme and, whilst maintaining that it would not be sufficient on its own, wanted it to be kept under review for aviation’s non- CO\(_2\) impacts.\(^38\)

The Kyoto Protocol allows industries to meet emission reduction commitments in part by funding tree planting (known as “carbon sinks”) in the developing world. If aviation were brought into the European Union ETS, such schemes would be available to airlines just as they are to other emitters.

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\(^{33}\) Friends of the Earth written evidence  
\(^{34}\) Under the Chicago Convention  
\(^{35}\) DEFRA written evidence  
\(^{36}\) DEFRA written evidence  
\(^{37}\) BA written evidence  
\(^{38}\) BAA Plc written evidence
78. Some airlines already voluntarily run carbon emissions offset schemes whereby passengers are given the option of paying a third party organisation to invest in projects that reduce emissions elsewhere in the world. We received some evidence advocating this voluntary commitment scheme as a useful extra tool in fighting aviation’s climate change impacts.39 The evidence to date is that take up of these voluntary schemes has been very modest but, as the British Air Transport Association (BATA) pointed out, any passenger taking up the offset option would have to pay a higher overall cost (Q 8). The United Kingdom Government recognises that the provision of such schemes demonstrate that the industry has recognised its environmental responsibility and is responding proactively.40

**Improved efficiency of Air Traffic Control**

79. Mr Callaghan of RyanAir, speaking on behalf of ELFAA, told us that there were huge inefficiencies in Air Traffic Control and that, if this issue were properly tackled, a 12% reduction in carbon emissions could be obtained (Q 133). British Airways acknowledged that this figure came from an authoritative source (the IPCC) but questioned whether it was achievable because of the number of political obstacles, including military use of airspace, which would have to be overcome (Q 242). Mr Wiltshire, Secretary General of the British Air Transport Association, accepted that improvements in Air Traffic Control could bring about a reduction in carbon emissions (Q 55). BAA told us that advanced air traffic management could reduce environmental impacts by routing aircraft to avoid climate-sensitive parts of the sky where contrails would otherwise be produced.41 The Minister, Mr Morley, agreed and reminded the Committee that there was a 20-year plan at EU level to bring about improvements to Air Traffic Control (Q 315).

80. Most witnesses who considered improvements in Air Traffic Control as a viable tool to cut aviation CO₂ emissions wanted it to be used in conjunction with the EU ETS. ELFAA wanted it to be used in conjunction with technological improvements.

81. If aviation enters the ETS, technological improvements in the aviation industry will become even more urgent in order to reduce emissions while maintaining growth in air travel and airfreight. Air traffic management and control improvements can help reduce aviation emissions and measures to maximise these improvements should be pursued vigorously within the European Union and internationally.

**Investment in new technologies**

82. Mr Buck, BATA, explained that the new Boeing 787 aircraft should offer a 20 per cent fuel energy saving. This aircraft would be in service by 2008 and should offer fuel efficiency and a corresponding carbon emissions saving. (QQ 54–55). Mr Callaghan of ELFAA mentioned the Boeing 800 series 737 in which Ryan Air had invested as part of a 3 billion euro fleet replacement programme during the past five years. This aircraft had, “had the impact of

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39 BA written evidence, Monarch Airlines written evidence
40 DEFRA written evidence
41 BAA written evidence
reducing our per passenger emissions by 50 per cent. It has also reduced fuel burn by 45 per cent” (Q 113). ELFAA detailed a number of other technologies that no-frills airlines had invested in or would invest in which could deliver a cut in emissions (QQ 113–115).

Other policy tools

83. If agreement to the inclusion of aviation in the ETS could not be obtained, the Environment Agency favoured an increase in Airline Passenger Duty (APD) or an EU-wide emissions charge.42

Inclusion of intra-UK flights in NAP of current ETS

84. Regardless of agreement to the inclusion of aviation in the EU ETS, the Environment Agency thought that the United Kingdom could show leadership in the area of tackling the climate change impacts of aviation by including intra-UK flights in its own second phase of the National Allocation Plan of the current ETS.

Conclusions

85. The paragraphs above demonstrate that there was broad agreement both by the Commission and by most of our witnesses that emissions trading was the best way forward as the primary instrument to tackle the climate change impacts of aviation CO₂ emissions. Even the ELFAA, the only witness who thought that it was inappropriate to extend emissions trading to the aviation sector, acknowledged that the scheme was likely to get political backing.43

86. All witnesses expressed concern about the details of an ETS that included aviation: even those who were supportive of the proposal in principle said that the devil was in the detail. In the next chapter, we examine the evidence that we have received about the detailed design of the scheme.

87. We therefore conclude that, in principle, the inclusion of aviation emissions in the EU ETS is appropriate.

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42 Environment Agency written evidence
43 ELFAA written evidence
CHAPTER 4: DESIGN OF AN ETS WHICH INCLUDES AVIATION

88. The Commission has concluded that inclusion of the aviation sector in the EU ETS is the best way forward to deal with the climate change impacts of aviation and it appears likely that a legislative proposal to facilitate this will be produced during 2006.

89. A number of issues arise when considering the detailed design of an emissions trading scheme that includes aviation. In this Chapter, we consider:

- the issues which the Commission has acknowledged need to be addressed and the views expressed to us by witnesses; and
- other issues raised during the course of our inquiry.

90. The CE Delft Report, produced on behalf of the Commission, identified the following seven design elements, which would require careful consideration:

- Interplay with Kyoto Protocol;
- Coverage of climate impacts (which of aviation’s climate-change impacts should be included in the ETS?);
- Geographical scope of the scheme;
- Decision on allocation rules;
- Trading entities;\(^44\)
- Allocation method for allowances; and
- Monitoring method.

91. In its Communication, the Commission distilled these into four core issues:

- type of entity made responsible for aviation’s climate-change impact;
- extent to which the full impact is addressed;
- types of flight covered; and
- calculation and apportioning of sector’s emissions limitation.

92. In the following paragraphs we examine the design issues that were presented to us during the course of our inquiry, following the order as set out in paragraph 90 above. Little or no evidence was received relating to the monitoring method and therefore we do not examine this element.

Interplay with Kyoto Protocol and with the existing EU ETS

93. Greenhouse gas emissions from fuel consumption in international aviation are not covered by the Kyoto Protocol and are accordingly reported separately in national inventories. By including aviation within the EU ETS, the European Union would be going further than the requirements of the Kyoto Protocol. This raises a number of issues. If aviation is included in the ETS, how will the emissions from aviation relate to the existing EU Kyoto

\(^{44}\) This refers to which entities should receive and surrender emissions allowances. The CE Delft Report considered the following options: aircraft operators, airports, fuel suppliers, providers of air traffic management and aircraft manufacturers. See paragraph 135 for more detail.
obligations on emissions reductions? As aviation is not within existing Kyoto obligations, what will the new self-imposed aviation emissions obligations represent?

94. If aviation is included within the ETS, will the existing overall ETS limits [allowances] on carbon emissions be maintained or will the overall level be increased in order to accommodate the inclusion of the aviation sector? If the latter, by how much will the overall permitted level of emissions [allowances] be increased and on what basis? As time passes, and if there is pressure to increase the level of permitted CO₂ emissions arising from aviation, will that mean smaller overall reductions in CO₂ by the EU or even increased levels? Will there be a clear policy framework laid down to provide regulatory certainty on the future levels of allocated CO₂ allowances for the aviation sector and will that cap be expected to expand or decrease over time?

95. Answers to the questions raised in paragraphs 93 and 94 are of substantial importance in determining a number of matters. First, what will be the initial and future impact upon the price of carbon, upon other industries in the ETS and their customers, and upon CO₂ emissions? Second, will the ETS be a robust framework within which to accommodate EU policies on aviation emissions and on air-passenger and air-freight growth in the future? Are those policies clear and compatible?

96. One issue on which witnesses and the Commission were agreed is that emissions from international aviation should ideally be included in a wider international, even global agreement. Discussions on a post-2012 climate change regime are currently taking place. At the time of writing this Report, it was unclear what progress if any had been made on this at the Montreal Conference on climate change and Kyoto2. The position of the USA and in due course of China and India will be important on aviation emissions as well as on climate change more generally. The reported approach within the ICAO suggests that discussions on aviation emissions policy may yet make progress there although the same considerations may apply there.

97. We encourage the Commission to continue to press for international aviation to be included in any post-2012 climate change regime.

Coverage of climate impacts

98. The European Union Emissions Trading Scheme monitors and aims to reduce CO₂ emissions but currently does not monitor or seek to address the other climate change impacts of aviation which include emission of nitrous oxides and water vapour (which is a greenhouse gas), formation of contrails and emissions of sulphate and soot aerosols. Does this matter?

99. Dr Anderson, of the Tyndall Centre, told us that the warming effects of nitrous oxides emitted from aircraft are 2 to 4 times that of CO₂. However, the effects of nitrous oxides last for only a few days compared to the effects of CO₂, which last for about a hundred years and hence are cumulative. He suggested that the non-CO₂ effects of aviation should be dealt with separately from carbon, which should be included in the EU ETS (Q 338).

100. Mr Lockley of the Aviation Environment Federation (AEF) expressed concern that, if emissions of nitrous oxides were not monitored, airlines would divert all their environmental effort to reducing emissions of CO₂ and “let the nitrous oxides question go by the board” (Q 164). The Environment
Agency said that the global warming impact of aviation is three times greater than the equivalent amount of ground level emissions of CO₂, therefore the wider climate change impacts of aviation must also be considered. However, the Environment Agency said that emissions such as nitrogen oxides and water vapour might best be dealt with by an EU charge rather than by the ETS, because the effects of these emissions are felt regionally rather than globally.\(^\text{45}\)

101. BAA recognised that total climate change impacts should be addressed\(^\text{46}\). They thought it might be possible to expand the ETS to include these effects in the future though there are practical difficulties to overcome. As reported in paragraph 19 above, the 1999 Report of the Intergovernmental Panel on Climate Change recognized that while the effects of some types of aircraft emissions are well understood, the effects of others are not, and identified a number of key areas of scientific uncertainty that limit the ability to project aviation impacts on climate and ozone. The Environment Agency told us that it is considered unlikely that additional non- CO₂ gases will be incorporated in Phase II of the EU ETS.\(^\text{47}\) The Communication from the Commission says that both the CO₂ and non- CO₂ impacts of aviation should be included as far as possible.

102. **We urge the United Kingdom Government and the European Commission to fund further research into understanding and addressing the non-CO₂ climate change impacts of aviation, and to seek wider international agreement on this issue as the basis for future policy.**

**Geographical scope of scheme**

103. We can categorise flights involving the European Union into those flights that are entirely within the EU (flights that both take off and land within the EU) and those flights between the EU and third countries. Of the latter, an equal number of flights depart the EU for third countries to the number that land in the EU from third countries. If the aim is to cover those emissions for which the EU is “responsible” and avoid double counting then this could be dealt with by all “intra EU” flights plus all flights departing the EU for third countries. (Q 79) In effect, this would involve all flights departing EU airports. This would cover all the EU’s contribution to aviation’s CO₂ emissions, some 40% of which arise from intra-EU flights and some 60% from departing flights to third countries (Q 79).

104. Our inquiry revealed different views on which flights should be included when aviation emissions are calculated if aviation enters the ETS. Should it be “intra-EU” flights only? If so, what is the relevant geographical area of the EU? Does it include all parts of the Community “including islands, the Outermost Regions and Overseas Countries and Communities”?\(^\text{48}\) The Delft Report makes the distinction between Ultra Peripheral Regions (UPR), e.g. the Canaries, Madeira, Martinique; and Overseas Countries and Territories (OCT), e.g. Bermuda, Montserrat, Saint Helena when it considers five scenarios for the geographical scope of an ETS including aviation. (See the

\(^{45}\) Environment Agency written evidence  
\(^{46}\) BAA written evidence  
\(^{47}\) Environment Agency Written evidence  
Minister’s supplementary written evidence for a complete list). Should an intra-EU scheme include Iceland, Norway and Switzerland? Should it include flights between the EU and all third countries? If so, which flights, all departing flights or also flights arriving in EU from third countries? If some parts of the EU (UPR and OCT) were excluded from an “intra-EU” scheme, would they have to be included in a wider scheme including all departing flights from EU airports? Should only flights in EU airspace be included and if so, how would over-flying by aircraft [without taking off or landing in the EU] be treated?

A global scheme

105. Without exception, our witnesses said they would greatly prefer a global scheme that would cover all aviation CO₂ emissions if that were achievable. However, it was generally accepted that the EU did not have the competence to introduce this and that ICAO was the body with responsibility in this area. We have noted above (paragraph 22) that progress by the ICAO in this direction has so far been limited. But it is reported to be considering market based options to address aviation emissions through emissions trading schemes and guidelines will be drawn up for discussion at its Assembly in 2007.

106. Many witnesses expressed the wish that the European Union ETS which included aviation should be the stepping stone to a global scheme, “the European emissions trading system… offers an opportunity to involve the rest of the world in our efforts to combat climate change… we should be making a system here which could logically be continued by the rest of the world” (Q 79).

Inclusion of intra-EU flights only

107. More than 95% of intra-EU flights are by EU airlines. (Q 99) Including only intra-EU flights in the EU ETS may be the simplest to achieve of the geographical scope options. Many of our witnesses assumed that this would include all such flights irrespective of nationality of the airline involved 49 British Airways, concerned about the difficulties of including emissions from carriers based outside the EU, favoured an intra-EU scheme only because they thought it was the best that was achievable. They expected such a scheme to form a bridge between the current position and an ETS that included all aviation CO₂ emissions.50 Other witnesses questioned whether the EU could include non-EU airlines in the ETS. The Minister assured us in oral evidence that there is no legal obstacle to applying a scheme to non-EU airlines for flights departing the EU and, we assume, for intra-EU destinations. (Q 287) We noted the careful language of the Minister on this important point but note that there is some doubt on the issue. See also paragraph 116 on a related point.

108. Air France supported the position of the European Aviation Agency that for further analysis the geographical scope be limited to intra-EU flights (with a possible extension to associated European States), irrespective of nationality or type of operation. They said that “intra-EU” should exclude overseas territories of EU Member States and exclude over flights. There appears to

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49 See, for example, BAA written evidence
50 BA written evidence
be some sensitivity within the Commission and Council of Ministers on the inclusion of Ultra-Peripheral Regions and Overseas Countries and Territories within an intra-EU scheme. In the event that air fares rise significantly over time, the impact upon travel between the EU and some of these areas could be considerable as might be the economic consequences for the areas concerned. If the areas are not included, it could raise questions about the desire of the EU to introduce a comprehensive scheme for aviation. Other parts of the EU might seek omission or relief from the scheme, e.g. Cyprus or in due course Turkey. The Environment Council of Ministers urged the Commission to consider, inter alia, “the diversity of situations in the various regions of the Community” when undertaking an impact assessment during 2006.

109. The ELFAA thought it possible that proposals based on intra-EU flights might not include flights within the EU by non-EU airlines and on that basis believed the proposals would be discriminatory. Other witnesses\(^51\) assumed that coverage would include all intra-EU flights and would not have any significant effects on the competitive position of EU airlines relative to non-EU airlines.

110. Some witnesses were concerned that the application of the ETS to intra-EU flights only, including non-EU airlines, could distort competition within the aviation industry in favour of flights to and from non-EU destinations against intra-EU flights\(^52\) although that was not a general concern. The ELFAA, however, argued strongly that this approach would disproportionately affect those airlines that operated only within Europe. They argued that standard business model airlines\(^53\) which concentrate on inter-continental traffic could absorb any increased cost of their intra-EU operations and spread it over their entire network. Monarch Airlines made a similar point in their written evidence.

111. In oral evidence, Mrs Jan Skeels of the ELFAA explained that an intra-EU scheme would impact upon their members 100% because, “we operate only within Europe …. whereas other airlines can carry some of the costs of operating within Europe or they can cross-subsidise those costs from operations outside of Europe, or indeed operations coming into Europe” (Q 110).

112. Mr Buck, representing the leisure carrier members of BATA\(^54\), put it to us that, “the overall cost base of my airline with a 75 per cent exposure to an Emissions Trading Scheme compared to [an]other airline which might only operate flights to and from Florida, which would have a zero exposure to the cost of an Emissions Trading Scheme, would affect the overall cost base of the two airlines and could distort competition with my airline as opposed to theirs” (Q 40).

113. The Commission also told us that restricting the proposals to intra-EU flights would raise competitive concerns.\(^55\)

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\(^{51}\) See for example BAA written evidence paragraph 4.3.1

\(^{52}\) Aviation Environment Federation written evidence

\(^{53}\) These are airlines that do not consider themselves to be, nor market themselves as “no-frills airlines”.

\(^{54}\) The members of BATA are Astraeus, B A CitiExpress, bmi, Britannia Airways, British Airways, DHL Air, Excel Airways, First Choice Airways, flybe, Monarch Airlines, My Travel, Thomas Cook, Virgin Atlantic Airways.

\(^{55}\) See European Commission’s supplementary written evidence
Inclusion of intra-EU flights plus flights departing from the EU

114. The Communication from the Commission expressed the preference to cover all flights departing from EU airports, both to intra-EU and to third country destinations. (Q 106) This would capture all the EU’s contribution to aviation’s CO₂ emissions, some 40% of which arise from intra-EU flights and some 60% from flights to third countries.

115. Mr Gammeltoft explained that the Commission were looking to create a system that could logically be extended to the rest of the world. (Q 79) They believed that an ETS covering intra-EU flights and flights departing from the EU was the best way forward to achieve this, i.e. all departures from EU airports. 70% of these flights are by EU airlines, 30% by non-EU airlines. (Q 99)

116. Representatives from the BATA concurred with the Commission’s view, “I would support what the Commission is proposing to do, which is to have a scheme as wide as possible within the EU, including all flights departing from the EU. There may well be bilateral difficulties in achieving that, but, as I understand it, at the moment that is the Commission’s stated aim and that is what we would support.” (Q 260) In written evidence, the BATA had told us that they believe it will be extremely difficult to get agreement from many non-EU states to include emissions produced outside EU airspace and by non-EU airlines.  

117. Friends of the Earth went somewhat further than the Commission and told us that emissions in EU airspace plus the remaining emissions from flights departing the EU for non-EU countries should be included. (Q 112, Q 121, Q 125). This was the only suggestion made to us that the intra-EU basis of inclusion should be that of air space rather than intra-EU departing/arriving flights and would therefore include over-flying aircraft. However, the basis of airspace was not applied by Friends of the Earth to flights departing from the EU to non-EU destinations. Mr Wiltshire of BATA pointed out that air traffic control payments for use of European air space are made for over-flying aircraft. The European Aviation Industry, in written evidence, said that flights over EU airspace should be excluded.

118. The ELFAA explained that, although they would like the scheme to include as many flights as possible in order to minimise the possibility of competitive distortion, “we have great difficulty conceiving of how this emissions scheme could be made to apply to airlines of non-Member States, which brings us back to the worry that it will be launched as an intra-European operation only” (Q 112, Q 121, Q 125). The European Low Fares Airlines expressed similar doubts about the ability of the ETS scheme to include non-EU airlines. British Airways told us that “attempts to include all flights from and to no-EU countries (extra-EU) would result in international disputes, leading to retaliatory action and high risk of disruption to the British Airways operation”. They argued that legal action could significantly delay full implementation of an extra-EU scheme and could lead to exemptions and compromises for particular countries with damaging consequences for EU based airlines.

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56 BAA written evidence
57 Friends of the Earth written evidence
58 BA written evidence
119. The Minister, Elliot Morley MP, favoured the Commission’s suggested scheme, “if we want this Scheme to be really effective and also an issue of competitiveness and equity then it should apply to all planes taking off from EU destinations, whatever their country of origin” (Q 284).

120. The Minister addressed the question of the legality of including within the EU ETS a third country airline taking off from an EU airport, telling us that “it would not be against current international agreements to apply it to all carriers departing from the EU” (Q 287).

121. The Commission told us that the 1944 Chicago Convention on civil aviation requires laws and regulations to be applied to aircraft without distinction as to nationality and that all aircraft are required to comply with such rules. To the extent that they operate from airports in the EU, foreign airlines would thus be affected in the same way as EU airlines. However, when asked if there is a possibility that the scheme might have to be confined to intra-EU flights, Mr Gammeltoft from the Commission said that “at this stage it would not be prudent to exclude the possibility.” (Q 80) We have to conclude that there is some doubt about the ability of the EU unilaterally to include flights of airlines not based in the EU. Press reports since we concluded taking evidence have reinforced this doubt for both an intra-EU scheme involving non-EU based airlines and for one covering all departing flights.59

Inclusion of intra-EU flights plus flights departing from and landing in the EU

122. This scheme would include all CO₂ emissions from aviation either taking off or landing within the EU. If third countries were to participate in an emissions trading system or otherwise seek to impose levies on emissions this would lead to duplication as both parties [the EU and the third country] would be including all flights between them, both landing and taking off.

123. Some witnesses questioned the legality and practicality of such a scheme, believing that bringing it into operation would involve legal challenges from third country airlines (see paragraph 108 above). British Airways agreed that there is no legal basis for it. (Q 228)

124. Mr Lockley, from the Aviation Environment Federation (AEF), said the CE Delft report had looked at the legal issue and concluded that, “coverage of international aviation by an EU emissions trading scheme would not interfere with the sovereignty of other states or have any other regulatory impact on other territories outside the EU, including the high seas” (Q 170). This was because “Emissions trading does not relate to the operation of aircraft. It would establish obligations relating to the arrival and/or departure of aircraft within EU territory.” In effect, the level of emissions would serve only as a calculation parameter for determining how many allowances the aircraft operator must surrender to the competent EU authorities. (Q 170)

125. In giving oral evidence, the AEF therefore revised their position from that set out in their written evidence where they advocated a scheme covering intra-EU flights and departing flights. Mr Lockley explained that the AEF now supported, in addition, the inclusion of all flights arriving at EU airports from third countries (Q 171). When questioned about the practicality of such a scheme, he was confident that it could be made to work because, “that this is

59 The Times, 3rd January 2006
how security charges are levied at the moment, and the system operates very smoothly, so I see no reason why emissions charges could not be levied in the same way” (Q 172).

126. The witnesses from the Tyndall Centre told us that is was essential that all flights were included to ensure that the ETS delivered the necessary environmental results in terms of reducing the climate change impacts of aviation (Q 339).

Conclusions on geographical scope

127. We believe that the best measure of the EU’s responsibility for aviation emissions is that of intra-EU flights and all flights departing from the EU to third countries. The Minister, Mr Morley, told us that it would not be against current international agreements to apply it to all carriers departing from the EU. We conclude that the geographical scope for aviation within the ETS should be all flights departing the EU, provided this does not result in a lengthy delay in moving forward. It is not clear to us what practical issues regarding negotiations with third country carriers and governments might be required to implement this approach. We have noted above (paragraphs 118 and 121) that there appears to be some doubt as to the legal position on this. We recognise the significant issues that could arise over time for areas within the UPR and OCT (see paragraph 104 and the Minister’s supplementary written evidence). If an intra-EU scheme were introduced, there will be some difficult issues to be resolved and the forthcoming Impact Assessment will no doubt provide more details on those issues. If the EU does press ahead with the wider geographical coverage it is difficult to see how it could exclude these areas as there would be many more territories outside of the EU’s ambit that could equally well claim exemption on similar grounds.

128. An ETS scheme with aviation should include all flights departing EU airports. We agree that this is a desirable goal but we identified doubt whether the EU can unilaterally impose a scheme upon no-EU airlines. It is important that this legal uncertainty is resolved speedily. Otherwise, the EU may be forced to introduce a scheme based on intra-EU flights only and even then there may be challenge on the inclusion of non-EU airlines.

129. We do not believe that a wider scheme to include in the ETS all flights arriving as well as departing EU airports is desirable or practical. Such a scheme would go well beyond dealing with the CO₂ emissions for which the EU could reasonably take responsibility.

Decision on allocation rules

130. A number of issues arise here. What should be the total amount of CO₂ allowances allocated to aviation if it joins the ETS scheme? If that decision is taken at EU level, should Member States be free to distribute those allowances to “its” airline operators as it feels fit or should distribution between airlines be decided at EU level? What should be the basis of distribution of CO₂ allowances? Are airline operators the appropriate trading entities for the operation of the ETS as it applies to aviation?
131. We heard evidence from the Aviation Environment Federation that they believed the allocation of overall emissions allowances for aviation should be set at European level and that all stakeholders agreed with this (Q 141).

132. The Minister, whilst accepting that aviation emissions would have to be included in the overall cap, expected that within this there would also be a cap on aviation emissions. Asked if the initial allowances for aviation should be made at EU level or by Member States, the Minister replied, “The calculations would have to be made at EU level” (Q 279) Nevertheless, the Minister thought that aviation allocations would come within the National Allocation Plans of Member States. Mr Yeo, of the National Climate Change Division of DEFRA, told us that, “there is not a methodology for assigning international aviation emissions to Member States ... that is something currently under discussion in the UN Framework Convention on Climate Change” (Q 282). Even so, the Minister went on to say airlines will come under each Member States’ National Allocation Plans based on the location of the head office of each airline (Q 283) and that the sectoral cap for aviation would add to the overall cap of the National Allocation Plans (Q 297). There appeared to us to be some confusion on this point.

133. The Tyndall centre witnesses explained that the European Union needed to, “reduce the EU ETS cap by in the order of four per cent a year to get down to a minus 80 per cent reduction by 2050” (Q 334). The Aviation Environment Federation told us that a target for reduction of aviation carbon emissions should be set which was stringent and reflected the climate change goals that the European Union had agreed.

134. Mr Yeo of DEFRA said that a key driver of the impact on the price of carbon is the overall level of allocation across the entire ETS scheme, not just for aviation (Q 294). The Minister added “I would hope very much that the [aviation] cap did present a challenge to the industry in terms of getting ... emissions down ..” (Q 299) Asked if the future level of the aviation cap would be stable, rise or fall the Minister said, “It is crystal ball stuff really”. He foresaw tough negotiations on this because, “the setting of the cap is going to be everything, it is the crucial factor. Set it too high and you are going to have no impact on emissions .... Set it too low and .. you will have an impact on fares and competitiveness” (Q 301). He added that when caps are reviewed it should be on the basis that each sector contributes to climate stabilisation (Q 302). He agreed that “We do need to give industry a long-term signal so that they can plan and invest” (Q 304).

Trading entities

135. During the design of any ETS system, it will necessary to address the issue of which entities would receive emissions allowances and be required to surrender allowances. The CE Delft report considered several options: aircraft operators; airports; fuel suppliers; providers of air traffic management; aircraft manufacturers.

136. Our witnesses appeared to assume that the aircraft operators would be the trading entities and we agree with them. Aircraft operators are most directly responsible for aircraft emissions and climate change impacts of aviation and best placed to respond to pressures to reduce the level or growth in aviation emissions.
34 INCLUDING THE AVIATION SECTOR IN THE EUROPEAN UNION EMISSIONS TRADING SCHEME

Allocation method for allowances

Auctioning or free allocation?

137. In paragraph 8 we noted that in Phase 1 of the ETS, most initial allocations to businesses were made free of charge. In the United Kingdom no allocations have been auctioned to date. This will not automatically be the case if aviation is included in the EU ETS. Some witnesses favoured auctioning at least some of the initial aviation emissions permits for the aviation sector. Auctioning ensures that permits are allocated on a non-discriminatory basis with the market determining which airline secures emissions allocations.

138. The cost to airlines of purchasing their initial allocation of carbon emissions upon entry to the ETS is subject to some uncertainty. It depends upon many variables including the initial total level of allowances allocated to aviation compared to the then current level of CO₂ emissions by aviation. The Delft Report estimated that auctioning could raise €600mn. Another study in 2004 estimated that for intra-EU flights only, auctioning would cost British Airways €42mn, KLM €13mn, and SAS €17mn. BA told us that their estimate was €50–60mn. An estimate supplied to the Committee by the Environment Agency suggested that the cost to BA of an auction of initial allowances for all its flights departing EU airports could be in the order of €200mn. We discuss below who might bear those costs.

139. Mr Lockley of the AEF favoured auctioning because it would be in line with the “polluter pays” principle: the airlines that emitted the most CO₂ and therefore caused the most pollution would need to buy the most permits. He thought that auctioning would create a pot of money that could be used, by the EU, for further research into cleaner technologies (Q 142).

140. The Minister, Mr Morley MP, put it to us that, “although there is a cost to it, really auctioning has the most attractions” (Q 262). He later told us that this was his personal opinion and that he thought there is a very strong argument for auctioning. (Q 274). He went on to say that the view of both DEFRA and of the DTI is that, within the United Kingdom National Allocation Plan, ultimately auctioning would be desirable. “It is a place we would like to get to, but you have to get the scheme started” (Q 274).

141. Mr Gammeltoft, for the Commission, was non-committal on this issue in oral evidence, “we need to look in more detail at how the different groups of aircraft operators are impacted by the decision on allocation. This is why it has been deferred to the working group to look at this in more detail” (Q 70).

142. Airline witnesses disagreed that auctioning was the best method of allocating allowances and wanted them to be allocated free of charge, as they were for Phase 1 of the EU ETS. Industry and industry bodies argued that auctioning would impose on them a significant financial cost because they would have to purchase the initial allocation of permits.

143. British Airways explained that they were against auctioning permits because, “it takes resources away from the airlines which they really need—and we are not a particularly financially successful industry—to make the investment in the technology and in the emissions reduction” (Q 195). They were concerned that auctioning would create a flow of money, which airlines could ill afford, that had no environmental benefit.
144. This argument assumes that airlines would not raise their fares at all if CO$_2$ emissions allowances were distributed free of cost, unless the allocations were not sufficient to meet their requirements. In the latter case an airline would need to buy the additional emissions requirement in the CO$_2$ market and would incur costs that would, in whole or in part, be passed on to the customer.

145. It is possible that, even if initial emissions allowances were given free of charge, airlines would still raise airfares in the medium term to cover the opportunity cost of those allowances. If a particular flight did not take place, this would save some CO$_2$ allowance that could be sold in the carbon market. A flight would need to cover both its costs and the opportunity cost of the carbon allowance if it is to go ahead. Airlines could do this because all would be in the same position. In that event, airlines would make windfall profits equal to the value in the market place of their free CO$_2$ allowances. Economic analysis suggests that in the medium term air fares would rise to reflect the cost of carbon whether or not initial CO$_2$ allowances were distributed free or auctioned. Airlines would not make a loss or be deprived of existing resources if initial allowances were auctioned but they would not make a windfall profit. Airlines, air fares and air-freight charges will come under close scrutiny for evidence of windfall profit taking in the event that allowances are issued free of charge.

146. The BATA, in written evidence, also told us that, “it is essential that the initial allocation of allowances is...applied on the basis of free allocation”. In oral evidence they expanded on this, “The other industries currently in the scheme account for about 50 per cent of total EU carbon emissions and we are just two per cent of that intra-EU, so we do not see that we should be treated any differently from the other industry sectors” (Q 13). This appears to be a strong argument against auctioning for initial aviation CO$_2$ emissions allowances, unless basic CO$_2$ allowances for all industries were put up for auction in Phase 2 of the EU ETS. A supplementary case against auctioning, not one made to us, is that aviation emissions at present are not a significant problem but the projected growth is. Placing aviation in the EU ETS is aimed at reducing future growth and level of emissions rather than penalising current levels. Airlines will have to buy carbon in the open market as and when their emissions exceed their basic allowances and that is how growth in emissions is discouraged or bought from other industries that in turn reduce their emissions.

147. We agree that, unless basic CO$_2$ emissions allowances for all industries were put up for auction in Phase 2 of the EU ETS, there is a strong argument against auctioning initial aviation CO$_2$ emissions allowances.

148. Economic analysis suggests, however, that even if initial emissions allowances are distributed free of charge, airlines might still raise airfares in the medium term to cover the opportunity cost of those allowances. In that event, airlines would make windfall profits equal to the value in the market place of their free CO$_2$ allowances. This would strengthen the case for auctioning. Airlines, air fares and air-freight charges should come under close scrutiny for evidence of windfall profits.

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60 BATA written evidence
windfall profit taking in the event that allowances are issued free of charge.

**Grandfathering or benchmarking?**

149. Any allocations that are made free of charge could be allocated either on a grandfathering basis or on a benchmarking system. In the following paragraphs we analyse these two options.

150. Grandfathering refers to allocating allowances based on past levels of emissions and it is the method by which permits were allocated in Phase 1 of the EU ETS.

151. Benchmarking on the other hand refers to a level of emissions fixed according to industry best practice. This would mean that the airlines that emitted more CO₂ than industry best practice would receive fewer permits than they needed and thus would be forced to either cut their level of emissions or purchase more permits through the ETS.

152. The ELFAA, and BATA were strongly in favour of benchmarking. No-frills airlines represented by ELFAA had, “always used the most fuel-efficient and therefore low CO₂ emitting aeroplanes” (Q 113). Benchmarking would allow some credit to be given for this. BATA expanded on this, “the methodology we prefer is one called benchmarking which allows an average allocation to an averagely performing industry sector or industry member, in our case an average airline. Those operating with more fuel efficient aircraft would tend to get a benefit out of that approach and those operating with less fuel efficient aircraft would get a penalty”.

153. British Airways had similar reasons for favouring benchmarking over grandfathering, “I think the more compelling argument for a benchmarking approach is that it does not penalise early action. So if you already have a relatively fuel-efficient fleet, as British Airways have—our fleet is younger than the international average and our fuel efficiency figures are better than the average for airlines internationally—you are not penalised coming into a scheme because your historical performance is giving you less emissions permits” (Q 196). Dr Sentance of British Airways said that benchmarking would create a more complex administrative burden on the competent authorities (Q 196).

154. The Aviation Environment Federation were against benchmarking in principle in that it pre-supposed a free allocation of permits, which they opposed absolutely. They did however favour benchmarking over grandfathering (Q 148).

155. The Minister did not come to a definite view on this subject (Q 262). Mr Gammeltoft from the Commission told us that the Commission had an open-mind on this issue but recognised that different airlines would have different views, “High-growth airlines, for example, are likely to, relatively speaking, benefit from benchmarking rather than traditional grandfathering on the basis of volumes of traffic so far” (Q 73).

156. We heard little evidence in favour of grandfathering but compelling arguments in favour of benchmarking which is more consistent with the “polluter pays” principle and ensures that the significant investments made by airlines in the recent past to cut their emissions are rewarded. We
conclude that any permits that are allocated free of charge should be allocated based on a benchmarking system.
CHAPTER 5: THE IMPACT OF AVIATION ENTERING THE ETS

157. The impact of aviation entering the ETS may be assessed in a number of ways. For example, the impact upon:

- aviation growth in passengers and freight
- growth in the number of flights
- growth in fuel used
- the environment in terms of emissions
- different airlines within the EU, and EU airlines relative to non-EU airlines
- economies within the EU and outside, business, economic growth
- people’s leisure and tourism choices and opportunities
- other carbon emission sources [industries] and their customers.

More research on impacts needed

158. Our witnesses addressed themselves directly to just some of these, while giving little attention to wider impacts upon economies, business or consumers. No witness addressed the impact upon air freight. Most attention was paid to the impact upon aviation in general and through that upon the environment. Many witnesses addressed the knock on effect upon other industries that were in the ETS and for some witnesses this was a major issue. It appeared that many witnesses addressed the impacts in the short to medium term while ignoring the longer term. For others, the longer-term impacts were the most important issues to address in taking decisions on whether or not entry of aviation into the ETS would achieve policy objectives.

159. Many witnesses, when questioned about the likely impacts of aviation entering the ETS relied on statistics and projections produced by the Commission. Some said that there were too many variables, in terms of the detailed design details of an ETS which included aviation, for authoritative figures to be produced (Q 67). The Minister told us that, “The forecasting of allowance process is complex and highly uncertain.”61 As we explained in the previous chapter, important decisions have yet to be made about the detailed design of an ETS in which aviation is included and this does make predicting the detailed impacts more difficult. Even so, despite these disclaimers, most witnesses sought to predict some impacts and the issues they raised are discussed below.

160. **Industry bodies and airlines appeared not to have carried out their own detailed research into the impacts of including aviation in the EU ETS.** We would urge them to do so as far as is practical ahead of the publication of the Commission’s legislative proposal to bring aviation into the ETS which is expected to be produced in 2006. This would enable them to respond fully when the proposals are published.

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61 DEFRA supplementary evidence
Impact on air fares and the environment

161. The majority of witnesses told us that the impact upon passenger air fares and hence upon demand for air travel would be very modest. The BAA told us, “We recognise that aviation will need to take up more than its allocated share of (carbon emission allowances), given society’s growing demands for air transport, and given the absence of short-term technological solutions which will allow a breakthrough in reducing CO₂ emissions” Emissions trading will lead to higher air fares, and the extra costs on aviation will depend on range of factors. BAA quoted the CE Delft Report estimates of higher fares in an intra-EU scheme as between €1.3 and €2.6 per return flight. BAA thought that higher air fares may influence choice of mode but only on short-haul journeys and that there would be no significant impact on competitiveness of the United Kingdom or the EU aviation industry as a whole. BAA added that environmental benefits would depend on lower emissions and that depended on the level of the emissions cap set for aviation and the ETS scheme as a whole. Again they quoted the CE Delft Report assessment for an intra-EU aviation scheme of a 30% reduction in aviation emissions by 2012 compared with no policy change.

162. British Airways said that under the ETS, “the environmental outcome is fixed by setting an upper limit on economy-wide emissions. However, certainty over the environmental outcome comes at the expense of certainty over the market price of CO₂ allowances. Therefore the actual cost of emissions trading cannot be predicted.”62 The Environment Agency also said that the cost to the aviation industry would depend on the size of the cap for allowances allocated to the aviation sector and on the way those allowances were distributed between participants63.

163. The AEF felt that placing aviation within the ETS was unlikely to generate significant emission reductions in the aviation sector itself. Most airlines would purchase permits to expand and the regime would not be burdensome. The AEF felt that aviation might be eased into the ETS to make it more politically attractive. This, they told us, would be a mistake given the forecast rapid growth of aviation. They argued that a sectoral cap on allowances is needed for aviation within the EU ETS with a stringent target for the aviation sector.

164. Monarch Airlines calculated that a carbon price of €23 per tonne would be equivalent to an extra €4.20 per passenger over all its routes, and around €3.30 per passenger on its intra-EU flights. As with the ELFAA, Monarch’s main concern was that an intra-EU scheme would discriminate against carriers with largely intra-EU operations. ELFAA argued that an intra-EU scheme would be discriminatory against European airlines that conduct all their operations in Europe because other European airlines with non-EU routes could absorb the cost and spread it over their entire network.64

165. DEFRA explained that placing aviation into the ETS meant emissions reductions required to achieve a desired environmental outcome would take place in as cost-effective a manner as possible.65 DEFRA also said that the

62 British Airways written evidence
63 Environment Agency written evidence
64 ELFAA written evidence
65 DEFRA written evidence
cost of correcting the market failure would depend upon the details of the trading regime. This raised the important question of the level set for emissions allowances for aviation upon entry to the EU ETS, a matter to which we return later. Even so, DEFRA told us that the impact of emissions trading on ticket prices would be relatively small.66

166. The Commission argued that including aviation in the ETS would enable airlines to manage their emissions cost-effectively. If they anticipate that their emissions will exceed their allowances, they can take measures to reduce their emissions—for example by installing more efficient technology—or they can buy additional emission allowances on the market, whichever is cheaper. Conversely, if their actual emissions are lower than their allowances, they can sell their surplus allowances on the market or else “bank” them to cover future emissions.

167. The Commission’s impact assessment concluded that the overall effect on the European economy and competitiveness is likely to be very small in terms of GDP growth and employment. For aviation, the main impact is likely to be a small reduction in the rate at which demand grows. For example, for 2008–2012 forecast overall growth of 17% in demand for air travel might be reduced by between 0.1% and 2.1%. The impact assessment produced some estimates of the impact upon air fares with the impact varying upon which scheme was adopted and its precise design. Table 1 gives the estimates provided. These appear to be small increases that would be unlikely to have a significant impact upon demand for air travel and upon emission levels from aviation.

168. Clarity is needed about present and future policy on the level of permitted carbon emissions, both in total and for the aviation industry. We have severe doubts about the view that the impact upon carbon prices, airfares and air travel will be modest, except in the short term.

### TABLE 1

**Estimates of impacts of ETS on air fares**

<table>
<thead>
<tr>
<th>Length of flight</th>
<th>Range of fare increases depending on assumptions (in Euros) – per round trip</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short haul</td>
<td>0.2 to 4.6</td>
</tr>
<tr>
<td>(e.g. Amsterdam – Paris)</td>
<td></td>
</tr>
<tr>
<td>Medium haul</td>
<td>0.4 to 9.0</td>
</tr>
<tr>
<td>(e.g. Munich – Palma de Mallorca)</td>
<td></td>
</tr>
<tr>
<td>Long haul</td>
<td>1.0 to 6.9</td>
</tr>
<tr>
<td>(e.g. Gatwick – Newark USA)</td>
<td></td>
</tr>
</tbody>
</table>

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66 DEFRA written evidence
169. The EA told us “if the cap is set at a challenging level, including aviation in the EU ETS will drive trading prices [of carbon] up because the industry will be net buyers … an escalating cost of carbon because of the expected expansion of the industry within a capped regime. The EU ETS will therefore provide the strong market signal to prompt new technology and fuel changes in aviation, or bridge to another, future, mechanism” It is difficult to believe that fare increases of the levels indicated by the Commission will have those effects. The question is whether the cost of carbon and of airfares will rise more steeply than suggested by the Commission, a matter to which we return later.

170. In an ETS scheme including aviation, the adjusted level of overall allowances and the initial cap for aviation will be a key driver of the price of carbon. This in turn will determine the effect on aviation and other industries in the ETS. There is considerable lack of clarity in the detail of thinking in this area both within the Commission and within the United Kingdom government. This cannot be left as a detail to be dealt with after legislation is passed. The Commission’s Impact Assessment must be more forthcoming and explicit about likely initial allowances for aviation and the principles governing future levels.

171. A wider issue was opened up by the BATA. They said that improvements in fuel efficiency will not be enough to off-set the expected growth in demand for air travel. “Unlike many other industry sectors, aviation does not have feasible alternatives to fossil fuels in the short to medium term.” Consequently, aviation will have to buy emissions permits from other sectors.67 BA accepted that under the ETS, if aviation “does increase its emissions, this rise is funded by cuts in other sectors”.68 Under the ETS, “it is a reality that in order to achieve the necessary reductions in greenhouse gases, the cost of economic activities and products that are energy intensive will need to rise.” 69

172. DEFRA agreed that “The inclusion of aviation has the potential to impact on the EU Allowance price, which will have a subsequent cost to existing (non-aviation) EU ETS sectors. … the magnitude and nature of this impact will depend on a wide range of design factors.” 70 In September 2005 DEFRA commissioned a study of these matters. The Minister later told us that the study is, “designed to give an indicative feel to inform further work, rather than attempt to conduct a precise quantified assessment of the impact of aviation on allowance process, which would be challenging, particularly given the uncertainty in forecasting prices.” 71 We understand that this report is to be published shortly.72

173. Importantly, DEFRA commented that the Commission’s feasibility study “also indicates that the inclusion of aviation will result in a total reduction of 20–26 MtCO₂ of which 0.3–5.6 MtCO₂ would come from aviation and the

67 BATA written evidence
68 BA written evidence
69 BA written evidence
70 DEFRA written evidence
71 DEFRA supplementary written evidence
72 As at 18 January 2006
remainder purchased from other sectors”. On that basis, we might expect around 15% of CO₂ emissions reductions post-aviation entry to the ETS to come from aviation and around 85% from other industries. While precise estimates have not been forthcoming and many uncertainties exist, it seems clear that other industries and their customers will feel the main impact of aviation within the ETS.

174. In view of the full-hearted commitment given by the United Kingdom Government to the inclusion of aviation in the ETS from 2008, we find it surprising that a fuller assessment of these matters has not preceded that policy commitment. It is imperative that both the Commission and the United Kingdom Government now conduct a rigorous assessment of all relevant issues before further policy commitments are made.

175. Some of our witnesses took this proposition further by looking to the longer term. Dr Upham of the Tyndall Centre told us that on a number of assumptions, given the United Kingdom’s target for a 60% reduction in CO₂ by 2050, the consequences of continued aviation growth for other sectors would be severe. He argued that, if the additional warming effect of aviation emissions is included (which he accepted is somewhat problematic scientifically), then by 2017 aviation would have taken up all permitted CO₂ allowances for the EU. No growth in carbon emissions by other sectors would be possible thereafter. Even growth in aviation emissions would only be possible at a rate equal to continued contraction in emissions by other sectors over and above any contraction in emissions required to meet EU targets by 2050. This scenario already assumed fuel efficiency gains in aviation of 1% to 2% p.a. up to 2050.

176. Mr Gammeltoft for the Commission told the Committee that in the shorter-term aviation within the ETS will help reduce overall emissions in other sectors by buying allocations and essentially financing efforts to reduce CO₂ emissions in sectors where it is cheaper. In the longer term, he told us, the EU ETS would impact on the environmental performance of aircraft. On current evidence we believe that this takes an over-optimistic view of aviation’s ability to reduce its own emissions even in the longer term and under-states the potential conflict with other industries.

177. Other evidence that we heard suggested the new Boeing 787 aircraft will deliver 20% fuel efficiency saving (QQ 54,113). The BAA also told that future aircraft improvements, together with air traffic control efficiencies could deliver a further 50% fuel savings by 2020 (Q 55). It is possible that major technological breakthrough will occur but past evidence points to caution is assuming that, on average, fuel efficiency will improve faster than 1–2% p.a. on average over the longer term.

178. Dr Upham suggested that, if aviation is included in the ETS and the EU sticks to its emissions targets, then a rise in price of carbon would be likely to prevent the currently projected 2017 level of aviation activity and emissions. Aviation would become more expensive as airlines purchase emissions allowances that rise in price in the face of scarcity. Dr Upham warned that it would be unwise to assume the availability of sufficient allowances for

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73 DEFRA written evidence
74 Tyndall written evidence
continued aviation growth even up to 2017 and certainly beyond it.\textsuperscript{75} This clearly presages very substantial increases in air fares and air freight charges within the next 10 years while at the same time prices of energy and other carbon intensive industries will have risen very sharply too, driven in part by the demand for aviation services.

179. Dr Upham said that there is some scope for mitigating the above conclusions, especially through participation by the aviation industry directly or indirectly in the Clean Development Mechanism and Joint Implementation schemes. He told us these could be important instruments for an aviation industry seeking growth under conditions of a tightly capped EU ETS.\textsuperscript{76} On this and other somewhat less demanding assumptions, he calculated that by 2020 EU aviation emissions will be 54\% of the EU’s overall emissions target for 2050; 67\% by 2030 and 101\% by 2050. This is a somewhat less dramatic scenario than his initial prognostication but it would still lead to the same major consequences for the aviation industry and its customers and for other industries in the ETS albeit over a rather longer time period for adjustment. But even this is a very different picture from that provided by the Commission, the Minister and the airline industry. It highlights some substantial issues underlying EU policies on emissions targets and the inclusion of aviation within the EU ETS.

180. It is, of course, not the inclusion of aviation within the ETS per se that would raise prices of carbon, of air travel, of all industries in the ETS and curtail growth in all the sectors concerned, but the contracting emissions cap that is necessary for the ETS to achieve its ultimate purpose.\textsuperscript{77}

181. This led Dr Upham to question the political will to institute a declining cap in the ETS from an early date if aviation is included. He thought there was a danger that including the aviation sector might reduce the willingness to control overall CO\textsubscript{2} emissions or might result pressure to allow aviation emissions to grow. In that case, he told us, the less desirable option of a severe emissions or fuel charge would be necessary to reduce demand. “Given the potential for uplifted aviation emissions to consume the entire EU 2050 budget by 2017, and to continue to grow for further decades, there is a strong case for a supplementary mandatory requirement for an annual reduction of offsetting of EU aviation emissions of at least” 2\% p.a..\textsuperscript{78}

182. Commenting upon the Tyndall projections, the Minister said that they give a projection at the upper end of growth in aviation and that “it is very difficult to say for sure whether those figures are actually going to materialise”. But, he added, “it is likely that there will be an impact upon fares” but it would be premature to say that it would be an enormous impact. (Q 305)

183. Friends of the Earth took a similar view to that of Dr Upham. They did “not believe that the EU ETS as currently configured could cope with the addition of aviation. … (aviation) will be a high net buyer of permits, there would be heavy knock-on effects on other sectors ... (this) could push up the price of (allowances) to other .. sectors to a politically unfeasible level.” The conclusion reached by Friends of the Earth was that other sectors within the

\textsuperscript{75} Tyndall written evidence
\textsuperscript{76} Tyndall written evidence
\textsuperscript{77} Tyndall written evidence
\textsuperscript{78} Tyndall written evidence
ETS should be protected from the increasing demands of airlines for emissions allowances by establishing a dedicated aviation-only ETS linked to the existing ETS through a controlled “buy only” gateway. Despite its name, a “buy only” gateway means that aviation could only sell CO₂ allowances to other sectors, not buy them. In that way, other CO₂ emitting industries would be protected from the impact of demands from aviation. It would, of course, be highly unlikely that aviation would be a net seller of CO₂ allowances. The dedicated aviation ETS would have its own caps and targets.79

184. In summary, the Commission, the United Kingdom Government and the aviation industry support entry of aviation into the EU ETS because they believe that aviation will be able to offset it emissions growth through the purchase of emissions allowances surrendered by firms in other sectors and that this is economically optimal solution. But the Tyndall Centre (Dr Upham) and Friends of the Earth take a challenging view of the implications of this policy for aviation, for other industries in the ETS or for the achievement of emissions targets. Their analysis raises some important questions even at this stage.

185. Greater clarity from the Government on these matters would be helpful, as would answers to the following questions:

- Will inclusion of aviation within the mainstream EU ETS eventually become a major problem for other industries in the ETS? If so, over what timescale? Should that potential problem be recognised now and if so, what are the implications for the proposal to deal aviation climate change emissions within the framework of the EU ETS?

- Is aviation a special case in the context of emissions-reduction policies in the sense that its ability to reduce the level or even the growth of CO₂ emissions is extremely limited in the foreseeable future? Is it wise to put it into an ETS where the ability of many businesses to reduce emissions or willingness to accept reductions in output is implicit?

- Is there consistency between aviation policies of the EU and of Member States and CO₂ reduction policies within the context of Kyoto? How can those policies be reconciled, if at all? Is an environmental policy driving a proposed way forward that may quite quickly lead to a serious clash with policies on aviation and economic growth? Are the proposals by the Commission frank about the real impacts and the policy issues they raise?

- How do other countries outside the EU view these issues? Is there any real prospect of taking the EU ETS global with aviation within it? Or are the better prospects likely to be a dedicated aviation ETS, encompassing an increasing number of countries over time?

Other impacts

186. A number of more detailed impacts were discussed by witnesses. Almost all such discussion was in the context of the relatively mild impact on airline

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79 Friends of the Earth written evidence
costs and air fares as set out by the CE Delft Report and endorsed by the Commission and the Minister. In the event that the scenarios set out by Dr Upton and Friends of the Earth proved correct, some of the issues and impacts would fall into still sharper focus.

Would no-frills airlines be disproportionately affected?

187. We heard evidence from representatives of the no-frills sector and the standard business model sector. Concerns were voiced that entering the EU ETS, if permits were not allocated free of charge, would have a disproportionate effect on those airlines whose operations were confined to intra-EU flights or for whom fuel was a high proportion of their total operation costs.

188. ELFAA explained that no-frills airlines generally operated only intra-EU flight and that, if the ETS did not apply to all flights departing from and landing in the EU, airlines that operated flights to or from third countries would be able to cross-subsidise the cost of belonging to the EU ETS (Q 110). They argued that airlines operating only intra-EU flights would not be able to do this and would therefore be disadvantaged.

189. Mr Gammeltoft told us that, “different types of carriers, low fare or high fare and so on, are in absolute terms affected in the same way” (Q 74). He accepted that it could be argued the ETS could have a different impact on airlines depending on their cost base but pointed out that there were, “arguments pulling the other way, for example, that low-cost carriers typically have a larger occupancy rate of seats” (Q 74). He added later that “depending on the allocation system that you use, you can actually differentiate the impact on different types of carriers” (Q 93).

190. We agree that the design of an aviation scheme within the ETS could have differential affects upon different airlines and believe that the Commission’s 2006 Impact Assessment should examine these issues.

Would European airlines be disadvantaged?

191. British Airways expressed concern that entering the EU ETS could negatively impact EU carriers competing with non-EU carriers on certain routes. Dr Sentance gave the example of a flight from New York to Barcelona: BA might choose to route that flight via Heathrow in which case the second part of the journey would be included in ETS. An American airline choosing to fly direct from New York to Barcelona would not have to surrender carbon allowances for its journey. (Q 200)

192. The Minister Mr Morley, in written evidence, said that care should be taken to ensure that entering the ETS did not distort competition within the industry.

193. Until the details of the design of the aviation, including ETS are decided and estimates that are more robust provided on future price of carbon and airfares, it is difficult to assess whether EU airlines will be disproportionately affected by entering the ETS. Under the Tyndall / Friends of the Earth scenario, this could become a major issue if other major countries did not join a wider ETS and especially if the EU were not able to apply the EU ETS to non-EU airlines or have to confine a scheme to intra-EU flights only.
194. The implication of taking aviation into the EU ETS is that relevant aviation activity will face substantial increases in costs and airfares such that EU-related market for air travel and airfreight will grow more slowly and eventually face stagnation. The alternative scenario, that increases in costs and airfares will be modest, at least hinted at by the Commission and the Minister, may be true in the short run but cannot be true in the medium term if EU-related aviation emissions are to be significantly curtailed. This must eventually impact disproportionately upon EU-based airlines. EU airlines or industry bodies might be well advised to carry out extensive research into this area.

Environmental impacts

195. Most observers agree that aviation is currently responsible for 3–5% of global CO₂ emissions. Most also agree that aviation emissions are not currently a major problem but that they will be one of the most significant causes of CO₂ emissions within one or two decades. This is the reason for addressing policy to the issue now, rather than wait for it to become a major problem that is difficult to deal with.

196. Under the Kyoto Protocol, signature countries have agreed to cut their carbon emissions by 2012. International aviation is not included within the Kyoto targets. However, the aviation industry is growing and with it aviation’s carbon emissions. There is broad consensus that aviation should be brought into a system to limit emissions. It makes more sense to do this as soon as possible before aviation becomes a major source of CO₂ emissions.

197. We asked witnesses whether taking aviation into the EU ETS would curb the growth in aviation emissions and therefore reduce the climate change impacts of aviation.

198. Mr Lockley of the AEF thought that, in the long-run, the EU ETS would be the best way to deal with aviation’s emissions problems but that in the short-term it would not be sufficient and would need to be accompanied by other measures (Q 137).

199. Dr Upham agreed that the EU ETS could help to limit aviation emissions but he insisted that the overall emissions cap would need to be much tighter than it had been for Phase 1 of the EU ETS if it were to make a real difference to carbon emissions (Q 334). However, he foresaw much greater problems within one or two decades. He thought that the EU ETS including aviation would create unacceptable pressures on non-aviation industries in this longer term and concluded that there should be a separate aviation-only ETS with a “buy only” gateway link with the wider EU ETS.

200. Mr Gammeltoft told the Committee that the EU ETS “In the longer term ...will impact on the environmental performance of aircraft (Q 100). In the shorter term its environmental contribution “will be by making aviation contribute to efforts in other sectors by buying allocations and essentially financing efforts to reduce CO₂ emissions in sectors where it is cheaper” (Q 100).

Clean Development Mechanisms and Joint Implementation Projects

201. A number of witnesses predicted that the aviation industry would obtain extra emissions allowances through financing Clean Development
Mechanism and Joint Implementation projects, which are Kyoto Protocol mechanisms. These are:

- Clean Development Mechanisms (CDM) which allow airlines to carry out emission reduction projects in countries without targets (developing countries), and count the achieved reductions against their own targets;
- Joint Implementation (JI) which allow airlines able to carry out emission reduction projects in countries with targets and count the achieved reductions against their own targets.
- Both of these mechanisms are allowed under Phase 1 of the EU ETS.

202. Dr Anderson favoured the use of such mechanisms (Q 339). Mr Lockley of the AEF, accepting that CDMs might be a way of allowing aviation to grow whilst recognising its environmental costs, thought that they offered airlines a “cheap get-out clause which will mean that emissions are not reduced in the EU as a whole” (Q 161).

203. Dr Sentance believed that CDMs could be useful but explained that they were currently too bureaucratic and called for changes to make them cheaper and easier to implement (Q 240).

204. Faced by increasingly strong environmental constraints, the aviation industry will be able obtain extra emissions allowances through financing Clean Development Mechanism and Joint Implementation projects, which are Kyoto Protocol mechanisms, if this is permitted under Phase 2 of the ETS. We believe that they should be permitted. We note the view of British Airways that the schemes were currently too bureaucratic and changes were required to make them cheaper and easier to implement. We urge the Commission to ensure that these concerns are fully reviewed.

205. A more positive development of the CDM and JI initiatives should be encouraged by the EU and by the aviation industry.

Impact on economies, business and tourism

206. We received remarkably little evidence on this issue, other than the potential impact upon other generators of carbon emissions. That may be because most witnesses appeared to assume a limited effect upon aviation costs and hence upon air fares and air-freight charges. If the Tyndall/Friends of the Earth scenario has some validity, this assumption may be unfounded. We described the economic significance of aviation in Chapter 2. All commentators agree that aviation is, other things being equal, likely to grow very much further in the foreseeable future and with it the direct and indirect contribution to economic growth and consumer choice. By contrast, the most dramatic forecast of the Tyndall Centre is effectively that aviation might have to stop growing by 2017. These are sharply different views of the future of aviation, global business and personal international air travel.

207. Applied to the EU and the global economy this raises important issues of economic development and of personal lifestyle choices. Can the EU take decisions that impact more widely on other economies without consequences for its own international competitiveness and potential retaliation? Can the EU determine a policy unilaterally that will raise airfares substantially and limit growth in air travel and airfreight between the EU and for example North America, India, China and the Far East without regard to the
competitive position of the EU in relation to those markets? Citizens and businesses in other parts of the world have choices. The price elasticity of air travel as a whole may be low but price elasticity between markets [destinations] is much higher as a recent Civil Aviation Authority (CAA) report about the factors influencing demand for outbound leisure air travel in the United Kingdom.  

208. The overall answer provided to the questions above may be either that there will be no problem or that every effort will be made to persuade other countries to join an ETS including aviation. The former is unlikely, the latter may be wishful thinking. We hope that the Commission’s 2006 Impact Assessment will address these and many other issues with the same rigour as that applied to the environmental impacts of its proposals.

209. Within the EU itself, what would be the impact upon EU economic and social integration? When questioned on the impact on tourism within the EU of the modest airfare rises predicted by the Commission, Mr Gammeltoft believed that there would be a redistribution of tourist numbers rather than an overall drop in tourism. He thought it possible, for example, that some parts of Spain might receive more Spanish tourists (Q 101).

210. The answer provided to the questions above may be either that there will be no problem or that every effort will be made to persuade other countries to join an ETS including aviation. The former cannot be true, the latter may be wishful thinking. We hope that the Commission’s 2006 Impact Assessment will address these and many other issues with the same rigour as that applied to the environmental impacts of its proposals.

Is there a better solution to aviation emissions?

211. Two principal ways have been suggested to avoid some of the problems identified earlier. First, to proceed with an ETS for aviation but to place aviation in a separate ETS. This may have a “buy-only” window that prevents aviation buying carbon allowances from other sectors but, theoretically, allows other sectors to buy from the airlines. The latter is unlikely, given that the purpose of separating aviation is the fear that it will drive carbon prices to levels that few other industries could afford. There would in effect be two separate EU carbon markets with two different prices. If operators in both were permitted to trade in the CDM and JI markets, then aviation would dominate those markets unless some device was established to limit access of aviation to them. That in turn would make the position of aviation even more difficult as the CDM and JI markets offer an important opportunity for aviation growth while investing in off-setting emissions reductions elsewhere.

212. The second route, considered by the Commission, is en route charges or taxes on aircraft emissions and impacts. The merits of inclusion in the ETS includes the least-cost trade-offs to secure carbon reductions across businesses and sectors. It provides a market mechanism that determines the price of carbon and minimises intervention by governments. The demerits include the potential impact upon other industries in the EU ETS, their output and prices.

80 Demand for Outbound Leisure Air Travel and its Key Drivers, Civil Aviation Authority.
213. The merit of charges or taxes is that they can be targeted at aviation without a knock-on effect upon other sources of carbon emissions. The demerit is that it requires a highly explicit intervention by government in levying taxes and charges upon aviation, providing a direct and transparent link between government policy objectives and actions and airfares or airfreight charges and their consequences. Those interventions may have to be regular and frequent. This approach would raise the question of which authority in the EU determined the level of charges or taxes, who levies them and what happens to the revenues raised?

214. The December 2005 Environment Council Conclusions noted the EU’s position that all policy instruments should be maintained as potential options but said that the inclusion of the aviation sector in the EU ETS “seems to be the best way forward” and that it has “greater potential for application internationally than other policy alternatives ..” The Minister told us that there are a range of options that can be applied to aviation to deal with emissions and carbon but he thought that the carbon trading approach is one of the most effective (Q 261) He thought that non-CO₂ emissions might be dealt with in a different way. (Q 313) Asked if he would consider levying charges or taxes, he said that, “ if the carbon trading scheme does not appear then we may have to look at other alternatives.” (Q 317)

215. In summary, the impact on airfares and on air travel would not be a consequence of entry by aviation into the EU ETS. Those impacts would follow from any determined attempt by the EU to reduce significantly the growth in aviation emissions on a sustained basis in the years ahead. If the environmental policy objectives are paramount and the impact on industries and their customers is a secondary if important concern then entry by aviation offers the economically most efficient way forward and will, initially at least, shield politicians, governments and EU institutions from some politically difficult decisions.

216. The Commission and the Minister appeared to suggest that aviation should be included in the ETS in order to deal with a future significant rise in emissions, but that inclusion will not have much impact on airfares, hence upon demand for air travel, or upon economic activity. This may be a convenient means to secure acceptance in the short term but it may be less than frank about the medium term. Some of the evidence we have received suggests that the honeymoon, while extended, may not last. It is important that all Government departments are fully involved in developing the United Kingdom’s analysis of any Commission proposals, as the consequences of joining the ETS or of alternative policies involve industry and users of aviation, as well as the environment. The analysis and recognition of those wider consequences appear to us not yet to have been thought through with sufficient rigour.

217. The December 2005 Environment Council Conclusions noted the EU’s position that all policy instruments should be maintained as potential options but said that the inclusion of the aviation sector in the EU ETS seems to be the best way forward and that it has greater potential for application internationally than other policy alternatives. We agree with them but there are substantial problems ahead.
218. It is important that all government departments are fully involved in developing the United Kingdom analysis of any Commission proposals as the consequences of joining the ETS or of alternative policies involve industry, users of aviation as well as the environment. The analysis and recognition of those wider consequences appear to us not yet to have been thought through with sufficient rigour.

219. We shall scrutinise the Commission’s Impact Assessment, and the United Kingdom Government’s Regulatory Impact Assessment, with considerable care when they are published in the next few months. It is important that any legislative proposals are well thought through and sustainable in the longer term, both on environmental and economic grounds.
CHAPTER 6: SUMMARY AND CONCLUSIONS

220. In this chapter we summarise the main issues considered in this report and draw together the conclusions we have reached.

221. Aviation meets three main needs, business and leisure related travel and air freight. Passengers travelling for leisure reasons benefit not only the airlines and airports but also the tourism industry and economy of their destination. Business travel helps develop global trade and investment. Globally, there are some 2 billion air passengers a year and 40% of inter-continental exports by value are transported by air. However, aviation has an impact on the environment. This inquiry has been carried out in response to proposals by the Commission to limit the climate change impacts of aviation by including aviation in the EU ETS.

222. The EU Environment Council, in December 2005 urged the Commission to bring forward a legislative proposal by the end of 2006 that is both environmentally useful and economically efficient. The Commission has established an Aviation Working Group to consider ways of incorporating the climate change impact of aviation into the EU ETS. This Report therefore reports evidence given to us to date and raises a number of issues. We intend to return to the topic when the Commission produces draft legislative proposals. (para 28)

223. All commentators agree that, in the absence of public policy changes, passenger air travel and air freight will continue to increase and with it a significant growth in CO\textsubscript{2} emissions. In addition to CO\textsubscript{2} emissions, aviation causes other emissions that appear likely to contribute to global warming. We agree that action will be needed to address this environmental issue.

224. We do not agree with the Environment Council that global aviation emissions are currently a serious problem but we agree that they will become so. The current level of aviation emissions is small as a proportion of total global, European Union or United Kingdom CO\textsubscript{2} emissions. It is most unlikely that aviation could be included within the EU ETS (if that is the desired option) by 2008. Stavros Dimas, the European Commissioner was recently quoted as saying that aviation would be included in the ETS at the earliest opportunity but that this was unlikely to be before 2012.\textsuperscript{81} It is important that any legislative proposals are well thought through and sustainable in the longer term, both on environmental and economic grounds. (para 219)

225. Two options were considered by the Commission to be the best means to achieve effectively the policy objectives of restraining growth in aviation emissions:

- en-route charges or taxes on aircraft emissions and impacts
- emissions trading for aviation

We agree that these are the main options.(para 61)

226. If aviation enters the ETS, technological improvements in the aviation industry will become even more urgent in order to reduce emissions while maintaining growth in air travel and airfreight. Air

\textsuperscript{81} Financial Times. 10 January 2006.
traffic management and control improvements can help reduce aviation emissions and measures to maximise these improvements should be pursued vigorously within the EU and internationally. (para 80) A more positive development of the Clean Development Mechanism and Joint Initiative schemes should be encouraged by the EU and by the aviation industry. (para 205)

227. There are a number of important detailed design issues for an emissions trading scheme that includes aviation. We consider these in Chapter 4. They are of substantial importance in determining a number of matters. **What will be the initial and future impact upon the price of carbon, upon other industries in the ETS and their customers, and upon CO₂ emissions? Will the ETS be a robust framework within which to accommodate EU policies on aviation emissions and on air-passenger and air freight growth in the future? Are those policies clear and compatible?** (para 95)

228. Witnesses and the Commission agreed that emissions from international aviation should ideally be included in a wider international, even global agreement. **We encourage the Commission to continue to press for international aviation to be included in any post-2012 climate change regime.** (para 97)

229. The European Union Emissions Trading Scheme monitors and aims to reduce CO₂ emissions but currently does not monitor or seek to address the other climate change impacts of aviation, which include emission of nitrous oxides and water vapour (which is a greenhouse gas), formation of condensation trails\(^{82}\) and emissions of sulphate and soot aerosols. The Environment Council says that both the CO₂ and non-CO₂ impacts of aviation should be included in a future scheme to the extent possible. **We urge the United Kingdom Government and the European Commission to fund further research into understanding and addressing the non-CO₂ climate change impacts of aviation, and to seek wider international agreement on this issue as the basis for future policy.** (para 102)

230. **An ETS scheme with aviation should include all flights departing EU airports.** This would cover all the EU’s contribution to aviation’s CO₂ emissions, some 40% of which arise from intra-EU flights and some 60% from departing flights to third countries. **We agree that this is a desirable goal but we identified doubt whether the EU can unilaterally impose a scheme upon no-EU airlines. It is important that this legal uncertainty is resolved speedily. Otherwise, the EU may be forced to introduce a scheme based on intra-EU flights only and even then there may be challenge on the inclusion of non-EU airlines.** (para 128)

231. **We do not believe that a wider scheme to include in the ETS all flights arriving as well as departing EU airports is desirable or practical.** Such a scheme would go well beyond dealing with the CO₂ emissions for which the EU could reasonably take responsibility. (para 129) Any doubts as to the legality of imposing an EU scheme on non-EU countries referred to in paragraph 121 above would apply more strongly in this case.

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\(^{82}\) These are generally referred to as contrails
232. In an ETS scheme including aviation, the adjusted level of overall allowances and the initial cap for aviation will be a key driver of the price of emissions allowances. This in turn will determine the effect on aviation and other industries in the ETS. The Minister told us “it is the crucial factor”. He also told us “We need to give industry a long-term signal so that they can plan and invest”. But the Minister told us that, “It is crystal ball stuff really”. There is considerable lack of clarity in the detail of thinking in this area both within the Commission and within the United Kingdom government. This cannot be left as a detail to be dealt with after legislation is passed. The Commission’s Impact Assessment must be more forthcoming and explicit about likely initial allowances for aviation and the principles governing future levels. (para 170)

233. During the design of any ETS system, it will be necessary to address the issue of which entities would receive emissions allowances and be required to surrender allowances. Our witnesses appeared to assume that the aircraft operators would be the trading entities and we agree with them. (para 136)

234. The method of distributing the total level of CO₂ allowances for aviation raised disagreement. The British Air Transport Association told us that, “.. other industries currently in the scheme account for about 50 per cent of total EU carbon emissions and we are just two per cent …, so we do not see that we should be treated any differently from the other industry sectors” (Q 13). We agree that this is a strong argument against auctioning for initial aviation CO₂ emissions allowances, unless basic CO₂ allowances for all industries were put up for auction in Phase 2 of the EU ETS. (para 147)

235. Some airlines argued against auctioning permits because, “it takes resources away from the airlines which they really need—and we are not a particularly financially successful industry—to make the investment in the technology and in the emissions reduction”. Economic analysis suggests, however, that even if initial emissions allowances are distributed free of charge, airlines might still raise airfares in the medium term to cover the opportunity cost of those allowances. In that event, airlines would make windfall profits equal to the value in the market place of their free CO₂ allowances. This would strengthen the case for auctioning. Airlines, air fares and air-freight charges should come under close scrutiny for evidence of windfall profit taking in the event that allowances are issued free of charge. (para 148)

236. If initial carbon allowances to aviation are allocated free of charge, there are compelling arguments in favour of a benchmarking basis for allocation between airlines. It is more consistent with the “polluter pays” principle and ensures that the significant investments made by airlines in the recent past to cut their emissions are rewarded. We conclude that any permits which are allocated free of charge should be allocated based on a benchmarking system. (para 156)

237. The impact of aviation entering the ETS can be assessed in a number of ways. We consider these in Chapter 5. Witnesses addressed themselves directly to just some of these, while giving little attention to wider impacts upon economies, business or consumers. None addressed the impact upon airfreight. Most attention was paid to the impact upon aviation in general
and through that upon the environment. Many witnesses addressed the knock on effect upon other industries that were in the ETS and for some witnesses this was a major issue.

238. Many said that there were too many variables in the detailed design of an ETS that included aviation for authoritative figures to be produced. The Minister told us that, “The forecasting of allowance process is complex and highly uncertain”. Industry bodies and airlines appeared not to have carried out their own detailed research into the impacts of including aviation in the EU ETS. We would urge them to do so as far as is practical ahead of the publication of the Commission’s legislative proposal to bring aviation into the ETS which is expected to be produced in 2006. This would enable them to respond fully when the proposals are published. (para 160)

239. The majority of witnesses, including DEFRA, told us that the impact upon passenger air fares and hence upon demand for air travel would be very modest. Clarity is needed about present and future policy on the level of permitted carbon emissions, both in total and for the aviation industry. We have severe doubts about the view that the impact upon emissions allowances prices, airfares and air travel will be modest, except in the short term. (para 168)

240. The inclusion of aviation in the EU ETS will affect the EU carbon allowance price, which will have a subsequent cost to existing (non-aviation) EU ETS sectors. The Commission’s feasibility study revealed that around 15% of CO₂ emissions reductions post-aviation entry to the ETS are expected to come from aviation and around 85% from other industries. While precise estimates have not been forthcoming and many uncertainties exist, it seems clear that other industries and their customers will feel the main impact of including aviation within the ETS. (para 173) The magnitude and nature of this impact will depend on a wide range of design factors. DEFRA commissioned an interim study of these matters. In view of the full-hearted commitment given by the United Kingdom Government to the inclusion of aviation in the ETS from 2008, we find it surprising that a fuller assessment of these matters has not preceded that policy commitment. It is imperative that both the Commission and the United Kingdom Government now conduct a rigorous assessment of all relevant issues before further policy commitments are made. (para 174)

241. Some of our witnesses looked to the longer term and told us that, given the United Kingdom’s target for a 60% reduction in CO₂ by 2050, the consequences of continued aviation growth for other sectors would be severe. Under some assumptions, no growth in carbon emissions by other sectors would be possible after 2017. Growth in aviation emissions would only be possible if emissions by other sectors were reduced over and above any contraction in emissions required to meet EU targets by 2050. One witness suggested that if aviation is included in the ETS and the EU sticks to its emissions targets, a rise in price of emissions allowances would be likely to prevent the currently projected 2017 level of aviation activity and emissions. This presages very substantial increases in air fares and air freight charges within the next 10 years while at the same time prices of energy and other carbon intensive industries will have risen very sharply too, driven in part by the demand for aviation services.
This scenario would have major consequences for the aviation industry and its customers and for other industries in the ETS albeit over a rather longer time period for adjustment. **This is a very different picture from that provided by the Commission, the Minister and the airline industry. It highlights that there are substantial issues underlying EU policies on emissions targets and the inclusion of aviation within the EU ETS.**

242. Commenting upon these projections, the Minister said that they give a projection at the upper end of growth in aviation and that “it is very difficult to say for sure whether those figures are actually going to materialise”. But, he added, “it is likely that there will be an impact upon fares” but it would be premature to say that it would be an enormous impact. **Greater clarity from the Government on these matters would be helpful, as would answers to the following questions:**

- Will inclusion of aviation within the mainstream EU ETS eventually become a major problem for other industries in the ETS? If so, over what timescale?
- Should that potential problem be recognised now and if so, what are the implications for the proposal to deal with aviation climate change emissions within the framework of the EU ETS?
- Is aviation a special case in the context of emissions-reduction policies in the sense that its ability to reduce the level or even the growth of CO₂ emissions is extremely limited in the foreseeable future?
- Is an environmental policy driving a proposed way forward that may quite quickly lead to a serious clash with policies on aviation and economic growth? (para 185)

243. Mr Gammeltoft for the Commission told the Committee that in the shorter-term aviation within the ETS will help reduce overall emissions in other sectors by buying allocations and essentially financing efforts to reduce CO₂ emissions in sectors where it is cheaper. In the longer term, he told us, the EU ETS would impact on the environmental performance of aircraft. **On current evidence we believe that this takes an over-optimistic view of aviation’s ability to reduce its own emissions even in the longer term and under-states the potential conflict with other industries.** (para 176)

244. The most dramatic forecast of the Tyndall Centre is that aviation services for the EU might have to stop growing by 2017. Even if that exaggerates the position, when applied to the EU and the global economy it raises important issues of international competitiveness, economic development and of personal lifestyle choices. Within the EU itself, what would be the impact upon EU economic and social integration? Can the EU take decisions that impact more widely on other economies without consequences for its own international competitiveness and potential retaliation? Can the EU determine a policy unilaterally that will raise airfares substantially and limit growth in air travel and airfreight between the EU and for example North America, India, China and the Far East without regard to the competitive position of the EU in relation to those markets? (para 207)
The overall answer provided to the questions above may be either that there will be no problem or that every effort will be made to persuade other countries to join an ETS including aviation. The former is unlikely, the latter may be wishful thinking. We hope that the Commission’s 2006 Impact Assessment will address these and many other issues with the same rigour as that applied to the environmental impacts of its proposals. (para 208)

It is, of course, not the inclusion of aviation within the ETS per se that would raise prices of emissions allowances, of air travel, of all industries in the ETS and curtail growth in all the sectors concerned, but the contracting emissions cap that is necessary for the ETS to achieve its ultimate purpose. The same issues and others too arise with alternative approaches to aviation emissions.

Witnesses gave evidence on a number of more detailed impacts if aviation enters the EU ETS. Low fares airlines argued that they would be affected disproportionately in various ways. Other EU airlines were concerned about the impact of the ETS on them relative to non-EU airlines that would be less dependent upon the EU market. Most of the views expressed appeared to assume relatively mild impact on airline costs and airfares. As airfares may rise more sharply than airlines acknowledged, their concerns may be increased. We agree that the design of an aviation scheme within the ETS could have differential affects upon different airlines and believe that the Commission’s 2006 Impact Assessment should examine these issues. (para 190)

Faced by increasingly strong environmental constraints, the aviation industry will be able obtain extra emissions allowances through financing Clean Development Mechanism and Joint Implementation projects, which are Kyoto Protocol mechanisms, if this is permitted under Phase 2 of the ETS. We believe that they should be permitted. We note the view of British Airways that the schemes were currently too bureaucratic and changes were required to make them cheaper and easier to implement. We urge the Commission to ensure that these concerns are fully reviewed. (para 204)

Two principle ways have been suggested to avoid some of the problems identified earlier. The first is to place aviation in a separate ETS. The second is en route charges or taxes on aircraft emissions and impacts. We consider these in paragraphs 210 and 211. There are advantages and disadvantages of both.

The December 2005 Environment Council Conclusions noted the EU’s position that all policy instruments should be maintained as potential options but said that the inclusion of the aviation sector in the EU ETS seems to be the best way forward and that it has greater potential for application internationally than other policy alternatives. We agree with them but there are substantial problems ahead. (para 218)

It is important that all government departments are fully involved in developing the United Kingdom analysis of any Commission proposals as the consequences of joining the ETS or of alternative policies involve industry, users of aviation services as well as the environment. The analysis and recognition of those wider consequences appear to us not yet to have been thought through with
sufficient rigour. We shall scrutinise the Commission’s Impact Assessment and the United Kingdom’s Government Regulatory Impact Assessment with considerable care when they are published in the next few months.(para 219)
APPENDIX 1: SUB-COMMITTEE B (INTERNAL MARKET)

The Members of the Sub-Committee were:
   Baroness Eccles of Moulton
   Lord Fearn
   Lord Fyfe of Fairfield
   Lord Geddes
   Lord Haskel
   Lord Roper
   Lord St John of Bletso
   Lord Swinfen
   Lord Walpole
   Lord Woolmer of Leeds (Chairman)

Dr Mark Williams was appointed as Specialist Adviser for the inquiry.

Declarations of Interests:

   Baroness Eccles of Moulton
   *Times Newspapers Holdings Ltd*

   Lord St John of Bletso
   *Consultant to Merrill Lynch (Europe), 1992–*
   *(Past oil analyst, specialisation on emerging markets, particularly Africa)*
   *Consultant to Globix Europe*
   *Chairman, Governing Board of Certification International*
   *Non-executive Director, Regal PLC*
   *Director of Estates and General plc*
   *Chairman, Spiritel plc*
   *Trustee, Oxford Philomusica*
   *Trustee, Life Neurological Trust*
   *Chairman of the Trustees, Citizens on Line*
   *Trustee, Oxford Philomusica*
   *Trustee, Life Neurological Trust*
   *Trustee, Tusk*

   Lord Woolmer of Leeds
   *Visit to Wimbledon tennis (28 June 2005) as guest of British Airways*
APPENDIX 2: CALL FOR EVIDENCE

Sub-Committee B (Internal Market) of the House of Lords Select Committee on the European Union is undertaking an inquiry into the merits of including the aviation sector in the EU Emissions Trading Scheme (ETS).

The Commission is due to bring out a discussion paper on the merits of including the aviation sector in the EU Emissions Trading Scheme which has been active since early 2005. It is one of the UK Presidency priorities to include aviation by 2008, however the Environment Commissioner Mr Dimas has stated publicly that 2013, the third round of the trading scheme, is a more realistic timeframe.

This inquiry seeks to find out how well the Emissions trading scheme has worked so far, and whether it would be beneficial to include the aviation sector.

The Sub-Committee seeks evidence relating to the following questions:

- Has the emissions trading scheme worked well so far, and does the current system provide a solid foundation for expansion to include other sectors of industry?
- Why include the aviation sector, and what are the possible costs and benefits to the industry of joining the ETS?
- What are the possible impacts of the inclusion on the international competitiveness of the EU aviation industry (and its competitive position in relation to other transport modes)?
- What are the costs and benefits to consumers and the environment of including aviation in the ETS?
- At what point in the development of the EU ETS would it be feasible to incorporate the aviation sector?
- What other economic or regulatory mechanisms exist to encourage reductions in CO2 emissions from the aviation sector, and how effective might they be compared to emissions trading?
APPENDIX 3: LIST OF WITNESSES

The following witnesses gave evidence. Those marked * gave oral evidence.

Air France
* Aviation Environment Federation (AEF)
BAA plc
* British Air Transport Association (BATA)
* British Airways
* Mr Elliot Morley MP, Minister of State for Climate Change and Environment, Department for Environment Food and Rural Affairs (defra)
Environment Agency
* European Commission
* European Low Fares Airline Association (ELFAA)
Friends of the Earth
Monarch Airlines Limited
* Tyndall Centre for Climate Change Research, The University of Manchester
# APPENDIX 4: GLOSSARY

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<th>Abbreviation</th>
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<td>AAUs</td>
<td>Assigned Amount Units</td>
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<tr>
<td>ACA</td>
<td>Advisory Council on Aviation</td>
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<tr>
<td>ACARE</td>
<td>Advisory Council for Aeronautical Research for Europe</td>
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<tr>
<td>AEF</td>
<td>Aviation Environment Federation</td>
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<tr>
<td>AERO2K</td>
<td>an EC Fifth Framework Programme project which has developed a new global inventory of emissions and fuel usage from aviation for the year 2001/02</td>
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<tr>
<td>APD</td>
<td>Air Passenger Duty</td>
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<tr>
<td>ATC</td>
<td>Air Traffic Control</td>
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<td>ATM</td>
<td>Air Traffic Management</td>
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<td>BATA</td>
<td>British Air Transport Association</td>
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<tr>
<td>Benchmarking</td>
<td>an allocation method in which allowances are allocated free of charge on a system of benchmarks, such as emissions per unit of output</td>
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<tr>
<td>CAEP</td>
<td>Committee on Aviation Environmental Protection</td>
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<td>CCS</td>
<td>Carbon Capture and Storage</td>
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<td>CDM</td>
<td>Clean Development Mechanism</td>
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<td>CE Delft</td>
<td>Dutch Consultancy firm who produced Giving Wings to emission trading Inclusion of aviation under the European emission trading system (ETS): design and impacts, Report for the European Commission, DG Environment No. ENV. C.2/ETU/2004/0074r</td>
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<tr>
<td>CO₂</td>
<td>Carbon Dioxide</td>
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INCLUDING THE AVIATION SECTOR IN THE EUROPEAN UNION EMISSIONS TRADING SCHEME

ELFAA European Low Fares Airline Association

ETS Emissions Trading Scheme

EU European Union

Eurocontrol European Organisation for the Safety of Air Navigation

FAB Functional Airspace Blocks

Grandfathering grandfathering refers to allocating allowances based on past levels of emissions

ICAO International Civil Aviation Authority

IPCC Inter-Governmental Panel on Climate Change

JI/CDM Joint Implementation and the Clean Development Mechanism (known as project credits)

NAPs National Allocation Plan/s

NGOs Non-Governmental Organisations

NO\textsubscript{x} Nitrous Oxides

OCT Overseas Countries and Territories

ppmv parts per million by volume, a measure of concentration

Radiative forcing the change in the balance between radiation coming into the atmosphere and radiation going out. A positive radiative forcing tends on average to warm the surface of the earth, and negative forcing tends on average to cool the surface

SESAME Single European Sky Implementation Programme
UNFCCC  United Nations Framework Convention on Climate Change

UPR  Ultra Peripheral Regions
APPENDIX 5: RECENT REPORTS

Recent Reports from the Select Committee

Session 2005–06
Ensuring Effective Regulation in the EU (9th Report, Session 2005–06, HL Paper 33)
Evidence from the Minister for Europe—the European Council and the UK Presidency (10th Report, Session 2005–06, HL Paper 34)
Reports prepared by Sub-Committee B (Internal Market)

Session 2002–2003
“Open Skies” or Open Markets? The Effect of the European Court of Justice (ECJ) Judgments on Aviation Relations Between the European Union (EU) and the United States of America (USA) (17th Report, Session 2002–03, HL Paper 92)

Session 2003–2004
Directors’ and Auditors’ Liability (15th Report, Session 2003–04, HL Paper 89)

Session 2004–2005
Liberalising Rail Freight Movement in the EU (4th Report, Session 2004–05, HL Paper 52)

Session 2005–2006
Completing the Internal Market in Services (6th Report, Session 2005–06, HL Paper 23)
Minutes of Evidence

TAKEN BEFORE SELECT COMMITTEE ON THE EUROPEAN UNION
(SUB-COMMITTEE B)

MONDAY 17 OCTOBER 2005

Present

Fearn, L
Fyfe of Fairfield, L
Haskel, L
Swinfen, L
Walpole, L
Woolmer of Leeds, L (Chairman)

Letter from Mr Roger Wiltshire, Secretary General, British Air Transport Association,
to Sub-Committee B

INQUIRY INTO THE AVIATION SECTOR IN THE EU EMISSIONS TRADING SCHEME (ETS)

In response to your call for evidence of 28 July to our Chairman, Danny Bernstein, I am pleased to submit
evidence to your Sub-Committee’s investigation of aviation and emissions trading.

BATA has been very active on aviation environmental issues for a number of years. Most recently we helped
to launch Sustainable Aviation, a joint UK aviation industry strategy for sustainable development, which
includes strong support for including aircraft emissions in the EU Emissions Trading Scheme. I was chairman
of the Sustainable Aviation Steering Committee in the run up to and during the launch of the strategy and I
enclose a copy with this submission (not printed).

Despite air travel contributing only a small proportion of man-made CO₂ emissions, the inclusion of a new
sector in the EU ETS will require much detailed work over the next few years. However, we believe that it is
right for aviation to be included in an international framework that achieves stabilisation of greenhouse gas
concentrations and, in the absence of a global scheme, the EU ETS is an appropriate first step.

Written evidence from British Air Transport Association (BATA)

1. BATA welcomes the opportunity to submit evidence to the Sub-Committee. BATA represents
UK-registered airlines, covering the scheduled, charter and freight sectors. Our members produce 90 per cent
of UK airline output.

2. The Sub-Committee seeks evidence relating to the following questions:

Has the emissions trading scheme worked well so far, and does the current system provide a solid foundation for expansion
to include other sectors of industry?

3. There have been some teething problems with the EU (Emissions Trading Scheme) related to the
decentralised approach adopted. If aviation is to join the ETS then allocation and target setting should be
imposed at an EU level so that there is consistent treatment of aviation emissions across the EU. Targets would
then affect all carriers to the same degree ie in proportion to their emissions on the applicable flights. The
alternative of each State allocating to its own carriers, could lead to market distortions and is incompatible
with the EU’s open skies policy whereby carriers can operate services outside their home state.

4. It is essential that the initial allocation of allowances is designed to avoid market distortion and applied on
the basis of free allocation. The allocation methodology should be based on benchmarking which takes
account of the position of airlines which have taken early action by investing in the most fuel-efficient aircraft.
Why include the aviation sector, and what are the possible costs and benefits to the industry of joining the ETS?

5. International aviation (and shipping) are excluded from greenhouse gas emission reduction targets set as part of the Kyoto Protocol. Although aviation only accounts for about 3 per cent of global CO\textsubscript{2} emissions currently, it is a growing industry and it will have to be accounted for eventually in some way if all emissions are to be dealt with.

6. The industry is expected to grow at a rate faster than it can improve fuel efficiency which means it will have to buy emission permits from other sectors. Costs to the industry are therefore likely to increase in the long-term in line with emissions growth and the price of carbon in the scheme.

7. The benefit to the industry is that the ETS offers a potentially economically efficient method of accounting for CO\textsubscript{2} emissions whilst allowing it to grow within an overall emissions target.

What are the possible impacts of the inclusion on the international competitiveness of the EU aviation industry (and its competitive position in relation to other transport modes)?

8. Geographical scope should, at a minimum, cover all intra-EU flights. This however would lead to market distortion with disadvantages to those airlines operating solely or predominantly within the EU. Market distortion will be reduced if all flights to and from the EU (for example flights to and from the USA or Brazil) by all operators were also included within the EU ETS. Whilst this is obviously preferable from a competition point of view, it will greatly increase the scheme’s complexity and we believe it will be extremely difficult to get agreement from many non-EU states to include emissions produced outside EU airspace and by non-EU airlines. There is also a risk of market distortion if non-EU states take retaliatory action or insist on more favourable allocations or targets.

9. If, despite these obstacles, the Commission wishes to seek inclusion of non-EU carriers and extra-EU flights, they should do so in a way that avoids retaliation (or legal challenge) and without delaying implementation beyond what could be achieved with a simpler scheme.

10. If agreement with non-EU states is not forthcoming in a reasonable time, then we believe that the initial phase should cover intra-EU flights only, perhaps with the addition of EEA countries—Switzerland, Norway and Iceland. The operator scope should include all air service operators, irrespective of nationality or type of operation. This includes non-EU carriers, scheduled, charter, no-frills and cargo operators. Unless all operators are included there will be unacceptable market distortion.

11. In order to avoid market distortion, the EU Commission should consider how other transport modes might be brought into the scheme or what equivalent instruments might be applied to them if aviation goes into the EU ETS.

What are the costs and benefits to consumers and the environment of including aviation in the ETS?

12. Unlike many other industry sectors, aviation does not have feasible alternatives to fossil fuels in the short or medium-term. The environmental advantage of aviation being in the ETS is that overall emission targets will be met. With other economic instruments that might be applied, the environmental effects are uncertain.

13. The aviation industry has a good track record on improving fuel efficiency and reducing emissions but we accept that improvements in efficiency will not be enough to offset the expected growth in demand.

14. Membership of the EU ETS will increase costs to the industry and consumers will pay higher fares than would otherwise be the case. There are no direct benefits to consumers apart from the knowledge that the CO\textsubscript{2} emissions of their flight have been accounted for as part of the EU emissions reduction programme. Consumer demand for increased air travel will be met in an environmentally effective and an economically efficient manner.
At what point in the development of the EU ETS would it be feasible to incorporate the aviation sector?

15. BATA supports the Government’s policy to investigate inclusion of aviation in the EU ETS from 2008, or as soon as possible thereafter.

What other economic or regulatory mechanisms exist to encourage reductions in CO₂ emissions from the aviation sector, and how effective might they be compared to emissions trading?

16. Economic instruments such as taxes or charges are limited by international treaties. The Chicago Convention prevents taxes or charges on fuel kept on board aircraft and consumed on international flights. The UK introduced Air Passenger Duty (APD) as a surrogate fuel tax and it raises about £1 billion per year. This is about 1.5 times the cost of CO₂ emissions from all flights departing from the UK (based on the Government’s price of £70 per tonne of carbon). Alternatively, it might be possible to devise an emissions charge which is compatible with the Chicago Convention. However, such duties and charges do nothing to encourage reductions in CO₂ emissions beyond the level already being achieved. CO₂ emissions are directly proportional to the amount of fuel burnt and fuel is a significant proportion of operating costs. Airlines already have every incentive to be fuel efficient.

17. Membership of the EU ETS should be supplemented by technological investment and infrastructure development by governments. A significant proportion of fuel is wasted due to the inadequate capacity of the European Air Traffic Control (ATC) system and the shortage of slots at some major airports. These cause in-flight delays and inefficient routings.

18. APD should be removed from flights covered by the EU ETS once aviation has joined. The EU ETS is a mechanism by which aviation covers the external costs of its CO₂ emissions and if APD is retained, aviation will in effect be charged twice.

19. The economic and social value of aviation to the UK is very significant and we should use the most economically efficient mechanisms to address the industry’s CO₂ emissions and climate change impacts.

15 September 2005

Examination of Witnesses

Witnesses: Mr Roger Wiltshire, Secretary General, British Air Transport Association, and Mr Simon Buck, Head of Industry Affairs, First Choice Airways, examined.

Q1 Chairman: Good afternoon, Mr Wiltshire and Mr Buck. Can I say how grateful we were for the written evidence you submitted to us and for kindly agreeing to meet with us today in oral session. You will know that this is held in public and that afterwards a verbatim transcript of the proceedings will be forwarded to you for any corrections. I wonder if you would be able to stay with us until around 5.30? That would be very helpful. We have many questions to ask you and I am sure that you have much to tell us. It would be helpful for the Committee to be reminded, briefly, Mr Wiltshire, who the Association represents and, Mr Buck, who you represent. If you would like to make an opening statement, Mr Wiltshire, please do and then we will go straight into questions.

Mr Wiltshire: Thank you, my Lord Chairman. My name is Roger Wiltshire. I am Secretary General of the British Air Transport Association (BATA). We represent UK registered airlines, both scheduled, charter and freight. We represent about 90 per cent of the UK airline output. We have been active in the area of aviation and the environment for at least the last five years over the period of my tenure in this job.

We have made submissions to Government on this subject. Also, we have been joint founder members of an initiative called Sustainable Aviation which was put together by the airports, the airlines, manufacturers and air traffic control in the UK and launched in June which, amongst other things, comments on this area.

Mr Buck: My Lord Chairman, my name is Simon Buck. I am the Head of Industry Affairs for First Choice Airways. In effect, I represent a subset of BATA. I represent leisure carrier members of BATA, which consists of First Choice Airways, Thomson Fly, Thomas Cook Airlines, Monarch Airlines, My Travel Airlines, and also two other airlines that are now members of BATA which are Excel Airways and Astraeus Airways.

Q2 Chairman: I know some of those would designate themselves as low cost airlines. In general, does in BATA represent other low cost airlines or not?

Mr Wiltshire: Our members have amongst their groups low cost or no-frills operations, so a number of airlines have mixed operations.
Mr Buck: I would consider all our members to be low cost airlines!

Chairman: I should have said “no frills”. Can we go straight into questions; we have lots to talk about. At the end I will give you an opportunity if there is anything you would like to say that we might have missed.

Q3 Lord Fearn: Good afternoon. Is there any practical alternative to entry of aviation emissions into the ETS if the growth in EU aviation emissions is to be reduced? Whilst we are at it, what are the pros and cons of bringing aviation emissions into the ETS?

Mr Wiltshire: We believe what we see as the objective here is a global framework on greenhouse gas emissions, such as to stabilise greenhouse gas concentrations. We believe that all sectors that emit should be part of that global framework and we believe that aviation should play its full part. Aviation is currently a very small proportion of global greenhouse gas emissions, something in the order of 3 per cent.

Q4 Lord Fearn: 3 per cent?

Mr Wiltshire: 3 per cent of man-made greenhouse gas emissions globally. Despite that, we are a growing industry, we recognise that growth and we have a responsibility to be part of the solution. We believe the solution is a global framework that allows this stabilisation of concentrations of CO₂. As far as alternatives are concerned, I suppose all activities that emit carbon could be controlled in other ways. We could try to stop people doing things by putting a veto on that activity, we could try to share activity out around the country, or we could try to put punitive taxes to stop people doing certain things.

Q5 Chairman: Mr Wiltshire, the question was, are there any practical alternatives?

Mr Wiltshire: We do not believe that there are politically practical alternatives to this. We believe that people’s ability to fly should not be extraordinarily limited by current attempts globally to control greenhouse gas concentrations. We are looking for the most efficient economic approach and we believe that emissions trading is the most efficient approach.

Q6 Lord Fearn: You mentioned 3 per cent, how high would you expect it to go?

Mr Wiltshire: Aviation is growing by some 3, 4 per cent a year globally and emissions may be growing at 1 or 2 per cent less than that. The proportion depends on what total man-made CO₂ emissions are in the world. I cannot possibly say what the size of that particular whole number will be. I do know from our own experience in aviation that countries like China and India are growing extremely rapidly and they will start to out-emit, so to speak, many other regions in the world.

Mr Buck: If I might respond to something else that Lord Fearn asked? He asked about other alternatives to emissions trading. I would not want emissions trading to be seen as the only possible way forward. It may well be it is the optimum way forward at the moment and it is the view of the airline industry, and I think many others as well, that it is the optimum way forward in terms of capping overall emissions. There are other alternatives which could be explored as well, such as voluntary offsets. A number of airlines and tour operators—I also represent the tour operators sector—offer the opportunity for customers to purchase a voluntary offset at the time that they take a flight which equates to the cost of the carbon which would be emitted on the journey that the passenger is taking. There is a voluntary opportunity there and a number of customers do avail themselves of that opportunity already.

Q7 Lord Fearn: Why is it voluntary?

Mr Buck: Because it is very difficult to compel people to do something to give to the environment. I think it would be wrong to compel people to do that. That could actually increase our prices and make our prices uncompetitive with other competing organisations that do not apply a similar offset situation to those that we would be offering. If we were to add two or three pounds to our fare we could price ourselves above a competitor if it were made compulsory.

Q8 Chairman: Before I turn to Lord Fyfe, can I ask two things. First of all, how many voluntary offset schemes are working now? What proportion of passengers volunteer to pay a higher fare?

Mr Buck: I note that the Association of British Travel Agents—I do not know whether they are giving evidence to you or not—have been offering schemes such as this for some time now. There is a tour operator in my own company, in the First Choice Group, called Exodus, which is a soft adventure holiday company, and they have been offering the option to customers to purchase an offset for the cost of the carbon emitted during their flight. I have to say the take-up is not very great and the reason for that is that generally environmental protection is not one of the highest priorities that people have when they are going on holiday.

Q9 Chairman: My question was not who is offering it but what is the evidence of take-up and the answer is, not surprisingly, not a lot.

Mr Buck: It probably reflects the concerns that many people have while going on holiday in any event.
Q10 Chairman: It could be thought to be a good PR exercise by the airlines, but you could not possibly say that.
Mr Buck: We do try.

Q11 Chairman: Can I ask another question? You said that you thought of capping aviation emissions, but nobody has given us evidence saying they are going to cap them, it is all about reducing the rate of growth of emissions.
Mr Wiltshire: Yes, indeed. The capping applies to the overall scheme. It is important to note that a tonne of CO₂ is the same whether it is emitted from aviation or from any other source.
Lord Haskel: Mr Wiltshire, you mentioned that you saw this within a global framework—your words—do you feel that the scheme has got to be a global one otherwise it will not work, or is that an ideal that you are looking at?
Chairman: Can we come to that later? If we start on that now, it may well cut across discussions later on. Lord Fyfe?

Q12 Lord Fyfe of Fairfield: In your written evidence you referred to “teething problems” within the EU ETS related to the decentralised approach which has been adopted. What are those problems? Why would you think that this is relevant to the entry of aviation into the ETS?
Mr Wiltshire: You probably know the Emissions Trading Scheme started in January of this year, so it is less than a year old. I attended a Green Week event in the Commission in Brussels earlier this year, one session of which was a discussion of the scheme, including the companies and industries that are currently members of the scheme. I am sure you also know that the current allocation under the scheme was through decentralised national allocations. I was quite struck by the number of companies and sectors that were criticising the method of allocation, and the fact there was no international standard applied to the way in which allocations were made and that created perverse effects in the scheme. Some companies were almost encouraged to burn as much fossil fuel as possible. It seems that there is already a groundswell of opinion for a more internationally standardised method of allocation even from companies already members of the scheme. I think this works well within our approach as we are an international industry, anyway, that crosses borders and emits across borders, that our allocation methodology should be on an international and Europe-wide basis at the very least.

Q13 Lord Swinfen: Mr Wiltshire, in paragraph four of your written evidence you say that “It is essential that the initial allocation of allowances is designed to avoid market distortion and applied on the basis of free allocation”. Would you explain in more detail, please, what you mean by “free allocation”?
Mr Wiltshire: As with existing members of the scheme that started in January, we believe aviation should join on the basis of what is called free allocation, which means that current emissions made by that sector are allocated as permits with no cost. There are detailed methodologies, of course, as to how you do that: the methodology we prefer is one called benchmarking which allows an average allocation to an averagely performing industry sector or industry member, in our case an average airline. Those operating with more fuel efficient aircraft would tend to get a benefit out of that approach and those operating with less fuel efficient aircraft would get a penalty. Generally speaking, we believe that free allocation, just like other emitting industries, should be the approach that aviation has. The other industries currently in the scheme account for about 50 per cent of total EU carbon emissions and we are just 2 per cent of that intra-EU, so we do not see that we should be treated any differently from the other industry sectors.

Q14 Lord Swinfen: How could the initial allocation of allowances be designed to avoid market distortion? What would be the basis for calculating the level of CO₂ emissions arising from the aviation operations within the EU? How would the initial allocation be made in relation to individual airlines? You may have already answered that in part.
Mr Wiltshire: Yes, I think I have mentioned it on the basis of benchmarking. It will be an average efficiency figure applied and airlines would then gain permits based on that average efficiency, so some would be slight gainers and some would be penalised. That is the method on which we would do it across the whole of the industry based on airline records of fuel use, which is a well recorded metric.
Mr Buck: I think benchmarking is the only fair and reasonable way for allocations to be made. The alternatives of auctioning or grandfathering have so many disadvantages, and have been shown in other reports, other than the Committee’s recent study, to be so disadvantageous to airlines, particularly leisure carriers which are operating on very thin profit margins and have already taken considerable steps to modernise their fleet. They would be deemed to be emitting very small amounts of CO₂ because they have a modern aircraft fleet and, therefore, under a grandfathering scheme would receive a very low allocation in relation to the lower levels of emissions which would inhibit their ability to grow and expand.

Q15 Chairman: It would be useful for the Subcommittee if you could explain how the grandfathering principle, which would be free, differs
from the other free allocation principles that are being proposed.

*Mr Wiltshire:* As I understand it, grandfathering meant that individual companies proved what they had been using and the allocation was based on that information. Benchmarking would be a much more standardised approach based upon the average fuel efficiency across the industry applied to all airlines' actual fuel use and then you would get a much more subtle result by way of allocation. The same total permits would be allocated, they would just be allocated in a slightly different proportion.

**Q16 Lord Swinfen:** What would be the position with an airline that upgrades its aircraft to a more efficient fleet of aircraft, therefore producing less in the way of emissions? Would they keep the same allowance and have some to sell or would their allowance be reduced to match their more efficient aircraft?

*Mr Wiltshire:* If they were able to invest significant sums of money in the new aircraft that you have referred to they would have the option to grow without the need to buy more permits to a certain extent, to the extent of the efficiency gained by those aircraft, or they could sell their permits if they wished to be static in terms of capacity and operations. We are a growing industry and people's demand for travel seems to grow and, therefore, the airline is likely to wish to use it to grow.

**Q17 Lord Swinfen:** If an airline wants to expand without modernising its fleet, has it got to buy more emission rights?

*Mr Wiltshire:* Generally that is correct.

**Q18 Chairman:** There will be winners and losers on the grandfathering system, or I think what you have designated as the free allocation system. Are all of your airline members agreed on the free allocation system as opposed to grandfathering?

*Mr Wiltshire:* On the free allocation as a general principle, I think they are all agreed that benchmarking is the most appropriate mechanism.

**Q19 Chairman:** Are there are no dissenting voices in the European aviation business?

*Mr Wiltshire:* I can represent the UK airlines. Among the group I represent there are no major dissenters.

*Mr Buck:* That is correct, my Lord Chairman. We represent the leisure carriers which represents a more discrete part of BATA. The fairest way, and the way we have all agreed on, is one of benchmark allocation.

**Q20 Chairman:** A last question before I turn to Lord Haskel. What are you suggesting should be the base year because that is clearly rather important? It is certainly an issue that came up in the ETS scheme generally.

*Mr Wiltshire:* We have not done any work on that. We have not identified which year it should be. The practical difficulty of having accurate verified fuel use records standardised across the industry is something that needs to be achieved. That would suggest that the base year would be very recent or even the year we are in.

**Q21 Chairman:** Unlike some schemes where the base year was seven years ago, which meant that if a carbon emitter improved significantly since then they got an enormous bonus because they were given an allocation on technology that they no longer use, you are not suggesting that the airline industry is all for a very up-to-date base period?

*Mr Wiltshire:* I cannot say we have a position on the base year but there are practical difficulties in achieving one that is far distant from where we are today.

**Q22 Lord Haskel:** You say very firmly that the initial allocation should be made free of payment. Is this so that the airlines would face no immediate big costs for the current levels of their aviation emissions? Perhaps you could tell us what are the arguments for and against some form of payment mechanism for the initial allocation?

*Mr Wiltshire:* We are looking for equity with other sectors that emit.

**Q23 Lord Haskel:** Other sectors of industry?

*Mr Wiltshire:* Yes.

**Q24 Lord Haskel:** Not just of aircraft?

*Mr Wiltshire:* Not just of aircraft, all emitting sectors of activity. We are a small proportion of what is already a part of the European scheme and all those sectors, as we understand it, received free allocation to get into the scheme and we do not feel that we should be treated any differently. In terms of paying already, as an industry and certainly in our trade association, we believe in the polluter pays principle, but we should remind the Sub-Committee that the air traveller travelling from the UK already pays Air Passenger Duty of between £5 and £40 per departure from the UK depending on whether they are travelling short haul, long haul, economy or first class. This generates almost a billion pounds a year to the Chancellor and, as far as we know, not a penny of it is spent on environmental mitigation, although it is categorised as an environmental tax. It equates to some one and a half times the carbon costs of that journey on which it is raised. I do not think there should be any doubt that the air traveller out of the UK already pays their way, but we believe it to be a very ineffective economic instrument.
Q25 Lord Haskel: When you talk about having an allocation free of payment, the air carriers are being given a tradable asset, something which they can turn into money. Why should they be given something that is immediately tradable for nothing?

Mr Buck: Purely and simply to be consistent with the way others in the scheme have received allocations. I think it would be perverse if we were to be given different conditions of entry into the scheme and we had to buy our permits when everybody else has not. That really is a question for the designers of the scheme right from the start as to why they did not start doing that. I think it would be very perverse if new entrants to the scheme had to somehow buy their way in when everybody else has not.

Q26 Lord Fearn: You suggest that the geographical scope of an ETS, including the aviation sector should, at a minimum, cover all intra-EU flights. You do not believe it is practical at this time to include all flights to and from the EU. Would it be practical to include all intra-EU flights and all other flights originating in the EU even though this would impact on non-EU based airlines?

Mr Wiltshire: Our objective is a global scheme, as we said at the outset, and that is always our objective. If we can achieve through this scheme a widening from intra-EU to something wider than that, then all well and good: but we do see rather larger political difficulties for the Commission, for Europe, in implementing this scheme outside the EU for states that perhaps do not have much sympathy with the attitude to climate change and the way it should be dealt with that prevails in Europe. If the Commission can achieve it, all well and good.

Mr Buck: I would certainly endorse the view of the optimum position being through a worldwide Emissions Trading Scheme administered by ICAO, but I suspect that is some way away. If it is deemed to be the best way forward to lead by example then I would support what the Commission is proposing to do, which is to have a scheme as wide as possible within the EU, including all flights departing from the EU. There may well be bilateral difficulties in achieving that, but, as I understand it, at the moment that is the Commission’s stated aim and that is what we would support.

Q27 Lord Fearn: It will be very difficult to set up a worldwide scheme, will it not?

Mr Wiltshire: There may be some opportunity for one or two individual states that are fairly sympathetic to the EU view on climate change to do a bilateral agreement with Europe to include their flights that take off from Europe. That is probably the first step that one could make beyond intra-EU.

Q28 Lord Fearn: Not America?

Mr Wiltshire: That is something I think you would need to address to the US. Having said that perhaps the US are not as averse to this as has been reported. Emissions trading as a mechanism is something that the US has a lot of experience with, very successfully bringing down its sulphur emissions through an emissions trading scheme. It is not a mechanism that they are unaware of and, as it is a market mechanism, it is probably one that they would prefer rather than a tax or a charge.

Q29 Lord Haskel: What sort of advantage would states have that did not enter this scheme? Would it mean that airlines would register their businesses there and this sort of thing? Is there a real advantage to it or is that they just would not be committed to a greener environment?

Mr Wiltshire: I would suggest it is more of the latter. It depends on the travel demand from that state whether the airlines operating from that state would get an advantage. It all depends on the numbers. If the market for travel is high and the airlines could operate from that state without the cost of carbon taking off from that state then obviously there would be an advantage. All airlines could probably operate from that state anyway, at least those who have an agreement to do so. I think it is more the latter part of your question.

Mr Buck: I think it depends on a whole range of cost issues, carbon not being the least of those. If carbon, which appears to be a very volatile priced commodity, was to be extremely expensive then it would no doubt be a factor in airlines’ decisions as to where they should be registering their aircraft.

Q30 Chairman: Would a flight coming from the United States into the EU, landing at one EU airport and going on as some sort of cabotage flight, would that intra-European Union flight have to be registered for and subjected to carbon allowances?

Mr Wiltshire: We believe that by definition this is an intra-EU flight, albeit one operated by a non-EU registered airline and we believe it should be included.

Q31 Chairman: For example, US airlines undertaking such flights, having nevertheless set off from the United States, would they have to be part of the scheme?

Mr Wiltshire: We believe any intra-EU scheme should do that, yes.

Q32 Chairman: As far as you know has there been any resistance to that by American airlines?

Mr Wiltshire: I do not know of any specific resistance but it would not surprise me if there was resistance from one or more sectors of the US aviation industry to this.
Chairman: Lord Swinfen, you asked previously of the Sub-Committee in private whether there is a certain coverage. Do you want to ask that question now?

Q33 Lord Swinfen: I was interested in the position of overseas possessions of European countries; France in particular has a number of overseas possessions that are considered by law to be part of metropolitan France. Therefore, where are the boundaries of the EU? Are they in the Caribbean?
Mr Wiltshire: I really cannot answer that specifically.

Q34 Lord Swinfen: I do not think you are going to be able to answer that but I think it is something that needs to be looked at.
Mr Wiltshire: Indeed.

Lord Swinfen: We will be writing and asking.
Chairman: What about small private jets and private jet services offered?
Lord Swinfen: I was not just thinking of jets, I was thinking of small propeller aircraft as well.

Q35 Chairman: Which is a growing business. Are they included?
Mr Wiltshire: Obviously we are the civil public transport sector of aviation and we would like to include all sectors of civil aviation, private as well as public, in this. I would understand there to be difficulties applying this to airlines that do not have a licence or certificate to carry passengers and, therefore, are not under the same regulatory controls as we airlines are. We would wish to widen the scope to include all sectors because at the executive jet end of the market there is competition between that mode of transport and the public transport mode.

Q36 Lord Swinfen: If only intra-EU flights were to be included in the ETS, what percentage of CO₂ emissions from aviation originating or ending in the EU—forget my Caribbean example for the moment—would therefore be excluded? What would be the figures if all flights originating in the EU were included?
Mr Wiltshire: We have looked at this issue and we have taken as our text the CE Delft report to the Commission dated July entitled Giving Wings to Emissions Trading. Our analysis of the figures in their Executive Summary, table two, suggests that some 75 per cent of emissions would be excluded if only intra-EU flights were included.

Q37 Chairman: Seventy-five per cent excluded?
Mr Wiltshire: That includes departing and arriving flights from other states and over-flying flights, of which there are a few. From the same data we believe about 37 per cent of emissions would be excluded if all flights originating from EU airports were included.

Q38 Lord Swinfen: Would the scheme covering only intra-EU flights distort the market in international aviation?
Mr Wiltshire: There would be some distortion. Applying a change like this which implies a cost to one region of aviation will create some level of distortion. That is why we have always considered that the bare minimum for the introduction of what we hope eventually will be a global scheme is at the European level and not lower than that. There could be a distortion by airlines operating entirely within the EU having a cost burden that is not shared in total with airlines that fly both within the EU and outside the EU and the danger that those airlines in the latter category could bring in lower costs in effect and price uncompetitively with airlines that operate purely within the EU.

Q39 Lord Swinfen: As a matter of interest, you mentioned a moment or two ago over-flying aircraft that did not land or take off in the EU. Quite obviously with an aircraft that is on the ground in the EU if it is not paying its dues the aircraft can be impounded, but how can you ensure payment of dues from an aircraft that over-flies?
Mr Wiltshire: That is more difficult. The same issue applies as to achieving an inclusion of flights leaving the EU to any other state, to the US for example. It is possible to get payment from airlines that over-fly, for example, the air traffic control payments for use of European air space are paid by airlines be they from the United States, Russia, South East Asia or within Europe itself.

Q40 Chairman: Just so the Committee is clear on this: by only including flights inside the EU, 75 per cent of aviation emissions caused by aviation flights that originate or depart from the EU is left out. This scheme will only cover about a quarter of aviation emissions originating from flights into and out of or within the EU, is that correct?
Mr Wiltshire: That is our understanding of the CE Delft work, which seems to be comprehensive.
Mr Buck: It does have the potential to create distortion, as Mr Wiltshire has already said. Certainly in the particular case of my airline I can think of an example of how this could apply. Perhaps 70 per cent of my own airline’s route network is confined within Europe. However, we do compete with some airlines on routes to and from Florida in the United States. Obviously on those routes there would be no emissions trading required so in direct operational costs there would be no distortion, but the overall cost base of my airline with a 75 per cent exposure to an Emissions Trading Scheme compared to this other airline which might only operate flights to and from Florida, which would have a zero exposure to the cost of an Emissions Trading
Scheme, would affect the overall cost base of the two airlines and could distort competition with my airline as opposed to theirs.

**Chairman:** I think we will come to the question of costs and the consequences as we go through.

**Q41 Lord Walpole:** What is your estimate of the additional cost, if any, on airline tickets for intra-EU flights if the ETS scheme is introduced on the basis that you suggest and the cost of carbon was £70 a tonne or, alternatively, at £100 a tonne? Can you give two or three practical examples, like the ones you just have, on routes which are heavily used and what would the differential impact on low cost airlines be and their routes?

**Mr Wiltshire:** Again, we have used the CE Delft report as a text and a source of information on this. In their Executive Summary, table four, they give under option two, which is benchmark allocation, all EU departures, not just intra-EU, and CO2 carbon dioxide only. They estimate this option gives a ticket price impact of £0.7 for short haul and £1.3 for medium haul. I think medium haul refers to Mediterranean flights from this country whereas London-Paris would be in the order of a short haul flight. That is using their CO2 price of €30 a tonne of CO2 which is very similar to the £70 per tonne of carbon that you quoted. That is £0.7 for short haul and £1.3 for medium haul. The other thing about this analysis is that it is based on a four year growth of aviation emissions so the cost is based on purchase of emission permits for that growth, which is assumed to be some 14.5 per cent over a four year period. That does not include payment for existing emissions. In terms of sterling, I suppose we are talking about 50p for short haul and £1 for medium haul.

**Q42 Lord Walpole:** I think you have just answered about the percentage increase and annual cost to the aviation industry.

**Mr Wiltshire:** I did not answer the second part of your question about low cost airlines.

**Q43 Lord Walpole:** Sorry, no, you did not.

**Mr Wiltshire:** The impact on all airlines would be directly related to the fuel they burn but the proportional impact on the prices they can charge and their overall cost base would depend on the proportion of their total cost that is fuel. So an airline that has a high proportion of its total costs as fuel, and all airlines need the same amount of fuel to fly the same aircraft from A to B, the higher the proportion of your costs are fuel costs, the higher the impact emissions trading will have. I cannot give you any specific figures by route, unfortunately.

**Mr Buck:** There is a risk of becoming extremely arithmetical in answering these questions, but I am not sure—

**Q44 Chairman:** That is what the customer wants to know.

**Mr Buck:** Absolutely. This is one reason why we are so concerned about the potential for what sounds like small amounts of money being added to the price of a holiday, because the holiday industry is extremely price sensitive and extremely competitive and a small increase in one company that is not affecting another company or another holiday can distort the pattern of holiday making or the competition between the two companies. I am not sure whether the Committee is aware of a report carried out by a company called “TRUCOST” which was carried out three or four years ago. That contained some considerable analysis which looked into price elasticity of demand and the effects on different types of airlines. I would be very happy to provide you with the reference for that report, if that would be helpful.

**Q45 Lord Swinfen:** I was wondering if you thought it would be fair to low cost airlines if all ticket prices had to show what was actually being charged for the ETS and for other taxes because that would show that they are not exactly the same.

**Mr Wiltshire:** I think it would be very difficult to show for a particular flight what this carbon cost add-on is because the nature of the scheme is that a company purchases permits for the whole of its operation, not for any specific flight. It is a bit like fuel hedging where a company puts some resource into purchasing and managing its fuel cost to minimise it. Similarly, a company would manage its carbon permits and it would be very difficult to allocate the cost of their permits down to a specific flight.

**Chairman:** But, as Lord Haskel said, at the point of entry to the system, depending upon what the level of the quotas were that were allocated, there could be little or no cost, a very modest amount, 50p depending on the quotas that were allocated in the first instance. We will come to the effect of these costs in a moment.

**Q46 Lord Walpole:** What would be the percentage increase in annual costs to the aviation industry of an intra-EU scheme based upon the ETS?

**Mr Wiltshire:** It would depend on the way in which the scheme was introduced. On the assumptions that we have talked about this afternoon, that it is a free allocation with the growth being purchased in the way of carbon permits, we estimate the cost to the industry in round figures as something like £50 million for every year’s growth, so £50 million in the first year, £100 million by year two, £150 million by year three. That is on the basis of about £70 a tonne for carbon. We do not have a total industry cost level, sitting as we do in the UK, for the whole of Europe but the impact could range from anything
between 5 and 8 per cent depending on the price of carbon and the individual airline’s cost base.

**Q47 Chairman:** So an increase of 5 to 8 per cent in the cost base of an airline would result in an average rise in air ticket of about 50p or a pound? I am surprised.

**Mr Wiltshire:** My Lord Chairman, I am very sorry. I am guessing what your supplementary question will be and answering that.

**Q48 Chairman:** Thank goodness!

**Mr Wiltshire:** I was answering a supplementary to myself, which was that if all emissions required the purchase of permits that would be the outcome approximately. The growth basis scenario would be the figures I indicated and the cost percentage would be quite modest, as described by the previous answers in terms of price per ticket.

**Q49 Chairman:** And what would be the percentage increase in annual costs to the aviation industry of an intra-EU scheme based upon the ETS?

**Mr Wiltshire:** I cannot give you a percentage. Our estimate of the total cost to the industry would be something in the order of £50 million per annum of growth, so £50 million in the first year, £100 million in the second and £150 million in the third and so on.

**Q50 Chairman:** Across the EU?

**Mr Wiltshire:** Across the EU industry at intra-EU flights level.

**Q51 Chairman:** And I think you said—though you sought to revise your answer previously—that that would be modest, not the 5 or 8 per cent increase in costs?

**Mr Wiltshire:** That is correct. The 5 or 8 per cent referred to an all-permits and all-carbon cost scenario.

**Q52 Lord Walpole:** Will the impact upon carbon emissions from aviation under the ETS be largely through reduced growth in demand for air travel or through the response of airlines to increasing costs of carbon emissions?

**Mr Wiltshire:** I think the answer is a little of both. The price increase, that would have to be generated through the additional costs that the industry would have to pay, would result in some effect on demand and it would depend to a great extent on the specific travel market we are talking about. It would also act as an added incentive for fuel efficiency. There is already quite a strong incentive in the industry for fuel efficiency but this would add a further incentive in the same grain as current fuel efficiency, which means that we would hope to see more fuel efficient aircraft engines produced in the future, and airlines perhaps purchasing replacement aircraft at a slightly faster rate than they otherwise would have done. We would see the industry as having an incentive to become more efficient but there would be some impact on demand. It is difficult to estimate what the impact would be.

**Q53 Lord Walpole:** Over what time-scale can you see significant reductions in carbon emissions, or can you not see them?

**Mr Wiltshire:** As part of the UK’s Sustainable Aviation initiative I mentioned in my introduction that the manufacturing sector of UK aviation has made a commitment with its European partners to seek another 50 per cent improvement in aircraft fuel efficiency by the year 2020. That covers aircraft and engine efficiency and design, and also improvements in air traffic management efficiency and routings over Europe. That 50 per cent repeats a 50 per cent improvement we have already made in the industry over the last 30 years, so we are looking to new aircraft in 2020 being, as I say, 50 per cent more fuel efficient than aircraft produced in the year 2000. That is the sort of technology move we expect the industry to achieve. It is a regular and steady improvement that we have seen in the past and it is pretty clear that from the new aircraft that are on the drawing board, or about to be delivered, that that promised improvement is continuing.

**Q54 Lord Walpole:** But is there not anything somewhere in the future that is going to be dramatic?

**Mr Buck:** If I may add to that, my Lord Chairman, first of all I will comment on the issue of incentivisation. I would suggest that airlines have every incentive at the moment to operate as efficiently as possible due to the price of fuel in the market, but beyond that, many airlines already operate the most fuel efficient aircraft that they can do, particularly if they operate in a competitive environment. In my own case, First Choice Airway is the launch customer in the UK of the new Boeing 787 aircraft which the manufacturer assures us will offer a 20 per cent fuel efficiency saving. That will be, I suggest, a significant step change in the fuel efficiency of an aircraft and will be one that we hope sincerely is matched in service performance.

**Q55 Lord Swinfen:** But this new technology is not going to come in overnight because aircraft are incredibly expensive, even to change the engine on an aircraft is very expensive as well, so this is obviously going to be phased in over a period. Is this going to start in 2020 or do you anticipate it being completed by 2020 at the current rate of improvements?

**Mr Wiltshire:** The example Mr Buck gave is of an aircraft due to be delivered in, say, 2008 and that is obviously part way to 2020, and that new aircraft
should deliver 20 per cent improvements in fuel efficiency. What we are talking about by 2020 is a new aircraft, together with aircraft traffic control efficiencies, that add up to something in the order of 50 per cent. Yes, we see progressively, as new aircraft come along, greater fuel efficiency. That has historically been the case and it continues to be the case. The new technological ways forward are more subtle than the historical ways of getting there but they are still there; lighter aircraft, lighter weight fuselage, a more efficient burning design in the engines. We also expect to see a contribution from air traffic control. That is why we very much support the moves in Europe to streamline air traffic control routings over Europe and the very complex and cumbersome air traffic system there is, and that is something we look to governments to achieve for us.

Q56 Lord Walpole: Thinking of carbon emission, is it really better to fly or go another way if you are going less than 600 miles?  
Mr Wiltshire: This is a difficult area; it depends a lot on the sources of energy of other modes, of which we are not quite as aware as we are of aviation. My understanding is, compared with the one-person car, that efficient air travel is better beyond 400 kilometres. Obviously, a two-person car would make it 800 kilometres. I do also know from our own experience that flights to places like Florida from the UK on an efficiently filled aircraft generate average fuel efficiency per passenger of something like over 100 miles per gallon. That is something that most people driving a car in London would be very pleased to achieve.

The Committee suspended from 5.23 pm to 5.29 pm for a division in the House

Q57 Chairman: Can I turn back to the question asked by Lord Walpole about whether the impact on aviation would be through reduced growth in demand or through the supply side? All the evidence with motor cars is that people have been willing to keep using them despite enormous increases in fuel prices, a large part of which is taxation. You are talking about the impact of the entry of aviation into ETS in the first few years being in the order of 50p or £1 per journey. I have to say that it defies belief for me that that is going to have any significant impact on the demand for air travel. As a motorist the cost of my petrol in the last few months has gone up a lot more than that. I do ask you again frankly to give me your assessment. Do you really think that for the aviation industry 50p or £1 on a ticket is going to have any impact on the demand for growth in air travel in itself? I do not mean the supply side response, airlines keeping the costs down.

Mr Wiltshire: The 50p figure came from an analysis done by C E Delft based on one of the early years of possible inclusion of aviation in the emissions trading scheme. Nobody is sure what the price of carbon is going to be and nobody is clear about the impact on airline costs. We in the airlines are not overly rich in terms of profit and any cost addition feeds its way through into prices, generally speaking, so no cost increase can be ignored in terms of its potential impact on demand however small it might look from a single analysis of what might happen in some of the early years of the scheme. I think also that the difference between private travel, such as motoring, which you referred to, and other transport modes is that aviation flies pretty efficiently from A to B. Pilots do not put their foot down between one place and the other. They fly a very efficient mode and the aircraft is flown very efficiently. They are very competitive. They are competing with each other on the same routes and so I think there is not a fair comparison between the private decision of an individual who is buying fuel at the petrol pumps and an airline which has fuel as one of its major costs but is competing on that route with other operators.

Mr Buck: The actual cost itself, as you quite rightly surmise, is not going to be that great but it does depend very much on the assumptions that are made as to the cost of carbon. There are many already in the existing scheme within Europe who are very concerned about the admission of aviation to the emissions trading scheme because they believe it will push up the cost of carbon and make it much more expensive for everybody else within the scheme, and it would translate directly through into an effect on the ticket price of some significance. My concern is not so much the cost itself, although it is a factor in terms of overall dampening of demand, but the potential for distortion between those who are operating on routes within Europe and those who are operating routes without Europe, and that can have a significant effect on competition between airlines where there is not an equal effect on their cost base.

Q58 Chairman: So nobody in the industry, as opposed to outside, has formed any view in your association about what the realistic effect might be on ticket prices over, say, the next 15 or 20 years?  
Mr Wiltshire: The industry, certainly in the UK, recognises that this is economically the most efficient route to go down in terms of carbon emission control. Therefore, it is bound to be lower than some of the other approaches but the absolute amount will depend on a number of factors that we have yet to understand.

Q59 Chairman: I will make an observation, which is speculative, and then take your response. On the face of it, with aviation being a small contributor to
Mr Buck: would have a bearing as well? Perhaps you could
Lord Swinfen: Chairman: Q60 Chairman: Mr Wiltshire: equates to one and a half times the carbon cost of the of choice of aircraft for any airline. it is already built into the price they pay.
Q62 Lord Haskel: goes to the Government at the moment and therefore Air would be part of an overall package but fuel demands very rapidly, much faster than we are in this unfortunately I cannot give you information in this country and it is certainly not in the interests of the airlines in the UK tend to turn their aircraft over would be in the business of demand managing UK have quite a young fleet of aircraft, with an amount of money which it is worth investing in this development? From that point of view could you tell us what the costs would be and where you think the developments would come from? Mr Wiltshire: The broad costs would be the purchase of aircraft or new technology on the aircraft. Unfortunately I do not have any information that could quantify that answer. It would be through the purchase of new aircraft which, as we have mentioned, would take place over the lifetime of the aircraft, which can be as much as 25 years. We in the UK have quite a young fleet of aircraft, with an average age in the order of seven years. I believe, so airlines in the UK tend to turn their aircraft over more rapidly than perhaps other states do but unfortunately I cannot give you information specifically about individual aircraft purchases or the general amount of money spent on new aircraft. I will try to research an answer for you on that. The proportion of that spend invested in order to improve fuel efficiency would be a difficult sum to work out. It would be part of an overall package but fuel efficiency would be a major economic driver in terms of choice of aircraft for any airline.

Q60 Chairman: I would like you to do a note for us and explain how air passenger duty, which varies between £5 and £40, does it not— Mr Wiltshire: That is right. Chairman:— is only one and a half times 50p or £1. I am trying to understand the figures that we keep getting quoted to us as a Committee. The average price on a ticket in Europe throughout this emissions scheme would be about 50p or £1, air passenger duty is £5 to £40 and yet that is only one and a half times the cost. That would be extremely helpful to us. As a Committee we will certainly be trying to assess the impact on people outside. This is the thing that people want to know: what is going to be the impact on travelling and on demand and so on?

Lord Swinfen: You have given indications of an ETS charge on trips to, say, Paris or the Mediterranean, but could you also include in your answer the charge to, say the United States and Australia, because that would have a bearing as well? Perhaps you could write that in your note rather than answering it now.

Q61 Lord Haskel: You have explained about the way in which governments can help by more slots and by improving the infrastructure and how aircraft, you tell us, can be 50 per cent more fuel efficient. If you take the 50p or £1 per ticket and multiply it by the number of tickets presumably you would get a large amount of money which gives an indication of the amount of money which it is worth investing in this sort of activity. What would be the broad cost of achieving these developments? From that point of view could you tell us what the costs would be and where you think the developments would come from? Mr Wiltshire: The broad costs would be the purchase of aircraft or new technology on the aircraft. Unfortunately I do not have any information that could quantify that answer. It would be through the purchase of new aircraft which, as we have mentioned, would take place over the lifetime of the aircraft, which can be as much as 25 years. We in the UK have quite a young fleet of aircraft, with an average age in the order of seven years. I believe, so airlines in the UK tend to turn their aircraft over more rapidly than perhaps other states do but unfortunately I cannot give you information specifically about individual aircraft purchases or the general amount of money spent on new aircraft. I will try to research an answer for you on that. The proportion of that spend invested in order to improve fuel efficiency would be a difficult sum to work out. It would be part of an overall package but fuel efficiency would be a major economic driver in terms of choice of aircraft for any airline.

Q62 Lord Haskel: What could governments do apart from making the slots more efficient?

Mr Wiltshire: As I alluded to earlier, the creation of much more straightforward air traffic routings across Europe would be an advantage to airlines that currently have to fly through a whole series of air spaces, often in a very dog-legged way, not directly from A to B. That would save money and time. Governments should also, I believe, treat aviation the same as other sectors that emit and encourage scientific research to develop the technologies that are needed which in our case, we believe, will continue to improve the fuel efficiency of our aircraft in future. I am talking about very long-term, more fundamental engineering research about new technologies. That would also maintain the aerospace manufacturing skills that we have in this country. Also, they could ensure that there is priority given to understanding the climate change impacts of aviation generally and that is something we have also encouraged through Sustainable Aviation.

Mr Buck: There is an extent to which technological advance can get us out of this situation we are in. One
might say that the aviation industry is already very well down the road to being just about as technologically advanced as it can possibly be. There are many other industries within the emissions trading scheme, or which, potentially, could be part of that which are not that technologically advanced, so there are many more savings that could be made in other industries than can be made in terms of efficiency gains within aviation. There is a risk, if costs are increased to aviation on an intra-EU scope, that you would find that certain routes might well become non-viable. I am thinking particularly of some regional routes, for example, that if additional costs were added to those routes one may well find that they are no longer viable. There are inherent risks in applying these costs to aviation which is already operating as efficiently as it possibly can. I cannot think of ways in which I could make my airline more efficient, for example, than these new aircraft that are not yet flying. The aircraft we have ordered are paper aeroplanes that have not yet flown. We are promised these improvements by the manufacturers but we are already operating state-of-the-art aircraft with state-of-the-art engines that could not be more efficient and we are filling them with people on very high load factors of 90 per cent plus, so we are already operating just as efficiently as we possibly can.

Q63 Lord Fyfe of Fairfield: We are interested in your views, gentlemen, or your judgment, if you prefer, of the quality of the impact assessment conducted by the Commission and indeed your views on how they conducted stakeholder consultation.

Mr Wiltshire: I can speak with a little knowledge of this question, my Lord. The amount of consultation in the case of our organisation was quite limited. I think you will have to speak to others about the more detailed consultations in the European scene. We have to push our way through the door in Brussels to get our voice heard in terms of our views on this and to speak to consultants or the Commission themselves so, compared with consultation processes and communication processes between the UK Government and the industry body, I found that the process in Brussels was quite weak. Indeed, they were quite averse to listening to the industry view. As I say, you will have to speak to other organisations or companies who have perhaps better knowledge of the European processes that took place in the early part of this year. Because of that the quality of the impact assessment was not something that we felt was very strong. Having said that, the whole process of emissions trading is very young for all the other sectors that are currently engaged in it in Europe and we are a new sector to it. I think it would be very difficult for anyone to do a high quality impact assessment when it is very difficult to understand the nature of the beast you are trying to move towards.

Q64 Lord Fyfe of Fairfield: I am really interested in that, Mr Wiltshire, because you started off by being, if I may say so, pretty critical and then you were offering some excuses for the Commission as to why the response was not all that you would have liked. How could you improve their response in the future to similar exercises?

Mr Buck: I wonder if I might be allowed, my Lord, to say that the Aviation industry is already very nature of the beast you are trying to move towards well down the road to being just about as technologically advanced as it can possibly be. There are many other industries within the emissions trading scheme, or which, potentially, could be part of that which are not that technologically advanced, so there are many more savings that could be made in other industries than can be made in terms of efficiency gains within aviation. There is a risk, if costs are increased to aviation on an intra-EU scope, that you would find that certain routes might well become non-viable. I am thinking particularly of some regional routes, for example, that if additional costs were added to those routes one may well find that they are no longer viable. There are inherent risks in applying these costs to aviation which is already operating as efficiently as it possibly can. I cannot think of ways in which I could make my airline more efficient, for example, than these new aircraft that are not yet flying. The aircraft we have ordered are paper aeroplanes that have not yet flown. We are promised these improvements by the manufacturers but we are already operating state-of-the-art aircraft with state-of-the-art engines that could not be more efficient and we are filling them with people on very high load factors of 90 per cent plus, so we are already operating just as efficiently as we possibly can.

Q65 Lord Fyfe of Fairfield: That sounds sensible to me, Lord Chairman, if I may say so. Coming back to the point, how can we make them more responsive in the future to representations which organisations such as yourselves make?

Mr Wiltshire: I am not an expert in the European field but it would be helpful if in all cases the Commission was required to speak to industry. It seems that they are not required to speak to industry as much as we expect in the UK and I would hope that that could be made part of any regulation or development going forward.

Q66 Chairman: That is extremely interesting. When I asked about costs and fares and so on you nevertheless quoted the Commission’s papers which implied to me that you accepted those.

Mr Wiltshire: Yes, but there are no other alternative sources of information of that sort. That is at the moment anyway the best piece of information we have.

Mr Buck: I think the consultation that C E Delft, the Commission’s consultants, had with the industry was quite weak. Indeed, they were quite averse to listening to the industry view. As I say, you will have to speak to other organisations or companies who have perhaps better knowledge of the European processes that took place in the early part of this year. Because of that the quality of the impact assessment was not something that we felt was very strong. Having said that, the whole process of emissions trading is very young for all the other sectors that are currently engaged in it in Europe and we are a new sector to it. I think it would be very difficult for anyone to do a high quality impact assessment when it is very difficult to understand the nature of the beast you are trying to move towards.

Q67 Chairman: The conclusion we would draw from that would be that the industry would produce its
own figures on the costs of impact on fares and so on but you appeared not to because you quoted the Commission.

Mr Buck: It depends very much on the parameters that were being used. We did not know exactly what it was that they were going to be considering. We could only imagine the scenarios. Certainly we did seek meetings with the consultants and we did make as much input as we possibly could but it was very late in the day when they agreed to see us.

Q68 Chairman: Can I thank you very much indeed for that? Is there anything you would like to add that we may have missed and that we should have asked you?

Mr Wiltshire: No, my Lord Chairman, thank you very much indeed.

Mr Buck: Thank you very much, my Lord Chairman.

Chairman: Could I on behalf of the committee thank both Mr Wiltshire and Mr Buck. You have been forthright in your replies and we are grateful to you.

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Supplementary written evidence from British Air Transport Association (BATA)

AIR PASSENGER DUTY, EMISSIONS TRADING AND THE CARBON COSTS OF AIR TRAVEL

1. BACKGROUND


A recent study for the European Commission by the consultants CE Delft (Giving Wings to Emissions Trading—July 2005) included EU aviation in the EU Emissions Trading Scheme (ETS). One option they assessed suggested an average cost per short-haul passenger journey of €0.7.

Air Passenger Duty (APD) was introduced in the UK in the mid-1990s. It is categorised as an Environmental Tax and the current duty paid by each passenger departing the UK is £5 for short-haul journeys, £20 for long-haul journeys and double these figures for passengers travelling in a premium class.

BATA has stated that APD is equivalent to over one and a half times the carbon cost of the departing flights.

This note explains the assumptions behind the CE Delft figure and the BATA statement and reconciles the two.

2. APD AND THE CARBON COST OF UK AIR TRAVEL

The ATWP’s estimate of the environmental costs of air travel were based on calculations explained in the technical supporting paper “Aviation and Global Warming” (DfT January 2004)

This paper reported UK aviation carbon emissions of approximately eight million tonnes of carbon in the year 2000.\(^1\), \(^2\), \(^3\) It also assumed a cost of carbon of £70 per tonne of carbon.

Hence the carbon cost of UK aviation in 2000 was 8 million x £70 or £560 million.

APD generated £948 million in 2000–01 (Source HM Revenue and Customs).\(^4\)

Hence APD revenue is £948 ÷ 560 = 1.69 times the carbon cost of UK aviation.

This justifies the BATA statement.

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\(^1\) “UK aviation” emissions are defined by DfT as the emissions arising from all domestic flights and all international passenger departures. In other words, all departing passenger flights.

\(^2\) The carbon emissions figure was derived from an estimate of CO\(_2\) emissions for civil passenger aviation of 30 million tonnes. One tonne of carbon corresponds to 3.67 tonnes of carbon dioxide and the UK total of hence approximately eight million tonnes of carbon.

\(^3\) The technical support paper also accounts for UK aviation’s non-CO\(_2\) climate change impacts by applying a CO\(_2\) multiplier. These non-CO\(_2\) impacts are not well understood scientifically and the mechanisms that are thought to take place are very different to the global warming gas effect of CO\(_2\).

\(^4\) The APD revenue as a proportion of carbon cost is for a financial year whereas the carbon cost is for a calendar year.
3. **Carbon Cost of a Shorthaul Journey**
Assuming the shorthaul and longhaul rates of APD (£5 and £20 respectively) are broadly proportional to the average shorthaul and longhaul emissions per passenger, the shorthaul APD of £5 is also 1.69 times the carbon cost of a shorthaul air journey and we can also deduce the average carbon cost of a shorthaul journey:

\[
\text{Average carbon cost of shorthaul journey} = \frac{£5}{1.69} = 2.96.
\]

4. **Emissions Trading Costs**
The CE Delft report calculated the typical cost per journey for various aviation emissions trading scenarios (see pages 11 and 12 of the Executive Summary (*not printed*)).
The shorthaul ticket price increase of €0.7 was based on Option 2 (Benchmarked allocation, flights departing EU airports and CO₂ only) at an allowance price of €30 per tonne CO₂. The footnote clarifies that this additional cost is based on the cost of purchasing emission allowances after four years of growth. This growth is equivalent to 14.5 per cent of the total aviation emissions in that year.
The cost of CO₂ allowances for all emissions is therefore seven times higher and at €30 per tonne CO₂ the ticket price increase would be €0.7 x 7 = €4.9.

Hence full CO₂ cost for a shorthaul journey is €4.9.

5. **Reconciliation**
The calculation of average shorthaul carbon cost, shown in paragraph 3 above, assumes a cost of £70 per tonne of carbon, equivalent to £19.07 per tonne of CO₂ or €26.7 per tonne of CO₂ (at an exchange rate of €1.4 = £1). Adjusting this carbon price assumption to €30 per tonne of CO₂ in line with the CE Delft report would take the average carbon cost for a shorthaul journey to £3.32 or €4.66. This is close to the figure of €4.9 derived from the CE Delft report.

6. **Conclusion**
The two separate methods of estimating the carbon cost of a typical shorthaul journey, from the BATA valuation of APD using UK Government figures for the year 2000 and from the CE Delft report, produce similar answers with only a 5 per cent variation.

*Roger Wiltshire*

*2 November 2005*
Letter to Sub-Committee B from Mr Peter Gammeltoft, Head of Clean Air and Transport Unit, European Commission

As written evidence for consideration by the Committee I hereby have the pleasure of forwarding a copy of the Communication on Reducing the Climate Change Impact of Aviation (not printed) recently adopted by the European Commission. A key recommendation contained therein is to take steps to include aviation in the EU Emissions Trading Scheme.

Accompanying the Communication is an Impact Assessment report (not printed) setting out in further detail the background for the policy conclusions. Also enclosed you will find a report on the results of the stakeholder consultation (not printed) conducted in spring 2005, as well as a background study on the inclusion of aviation in the EU ETS Giving Wings to Emission Trading (not printed) carried out by contractors CE Delft on behalf of the Commission. The documents are also available on the internet at the following address:
http://europa.eu.int/comm/environment/climat/aviation_en.htm

7 October 2005

Examination of Witnesses

Witnesses: MR PETER GAMMELTOFT, Head of Clean Air and Transport Unit, and MS JANE BARTON, Structural Trainee, Environment Directorate-General, European Commission examined.

Q69 Chairman: Good morning, Mr Gammeltoft and Ms Barton. Thank you very much for coming along. As you would expect, we have read with interest the various documents you have prepared over the months—it probably feels like years. It is very kind and generous of you to give us your time today. We are most appreciative. We only have 45 minutes, I am afraid. I invite you to make an opening statement, but I would be very grateful if you would keep it brief, and then we will go straight to questions.

Mr Gammeltoft: Thank you, my Lord Chairman, for this opportunity to come and explain a little bit about what we are trying to say in our Communication on aviation and climate change. We very much welcome this opportunity to come and explain a little bit about what we are trying to say in our Communication on aviation and climate change. We are grateful for the invitation to come here. I shall be very brief in trying to say a couple of general words about what it is we are trying to achieve. Aviation is a sector which is in rapid growth. It is not covered by the reduction obligations under the Kyoto Protocol and, if we do not address aviation, we will be faced with a significant problem some years down the line. The sooner we get to grips with it, the easier it will be. That is, I think, point one. Point two is that we are trying to integrate the environmental externalities, the environmental costs which are hidden, which are unseen today by the companies and by the consumers, into the cost structure of the airlines and ultimately also into the pricing structure for airlines. The effect of this will be to make sure that the distortion of competition, which is the result of the fact that you cannot see the environmental costs, will be put right, if I can put it in that way. Our examination has shown us that emissions trading is the most cost-effective option for taking this forward, and also, in our view, the most politically realistic option, so that is what we are pointing to at the moment. What we are suggesting is that we have identified a number of key issues, on some of which we have proposed a position, for debate in the European Parliament and the Council of Ministers. Others still need to be resolved. A lot of detail will be done on the impact assessment which is proportionate to the kind of overall conclusions that we have reached at the moment, but more work needs to be done, and we intend to establish a working group to elaborate all the details, because the way this will impact on airlines, ticket prices and so on will depend very much on how we organise the detail in an emissions trading scheme.

Chairman: Thank you. That was a very useful introduction. I should say that in a number of cases we are asking the questions in oral session so that people who read or listen to these things, rather than
read large documents, get some of the key points that otherwise they might miss.

**Q70 Lord Haskel**: The first question is really about how we start this thing off, how we make the initial allocation of carbon emission quotas. The report *Giving Wings to Emission Trading* argues that the actual cost increases would be passed on depending whether permits were allocated free or were auctioned. Could you say something about why the method of sale affects the impact, given that the emissions quoted have an opportunity cost of sale in the market? We are in fact giving an asset to the airlines.

**Mr Gammeltoft**: Yes. Firstly, we need to separate two issues. One is the overall environmental ambition of the scheme, and that is essentially set by the amount of allowances that you put into the scheme. The other issue is the one that you raise, and that is the distributional aspect of it, how we distribute the allowances. It is clear that different ways of distributing this will have different distributional effects. These are part of the issues that the working group needs to look at because it is very clear that there are different kinds of aircraft operators, and we need to look in more detail at how the different groups of aircraft operators are impacted by the decision on allocation. This is why it has been deferred to the working group to look at this in more detail, to find, shall we say, an equitable way forward on this issue.

**Q71 Lord Haskel**: But you do not have any view, do you, about how the initial allocation can be designed to avoid some sort of market distortion?

**Mr Gammeltoft**: I would venture the point that what we are trying to do is to correct a distortion that is already in the market because of the fact that environmental costs are currently not reflected in the cost structure of the airlines.

**Q72 Lord Haskel**: But you do not see any distortion in the way that the initial cost is allocated, whether it is auctioned or whether it is given?

**Mr Gammeltoft**: You have different effects on different groups of airlines. I am not sure that I would call it distortion or to what extent I would classify this as distortion. It would obviously mean a change compared to the current position, and what it will do overall is to ensure that those who have less emissions will become more competitive at the end of the day.

**Q73 Chairman**: So issues like benchmarking versus grandfather rights, and so on, are something on which at the moment you would have a completely open mind?

**Mr Gammeltoft**: We do have a completely open mind on whether it is one or the other. The *Giving Wings to Emission Trading* report highlights, I think, that there are different types of airlines which will be affected differently. High-growth airlines, for example, are likely to, relatively speaking, benefit from benchmarking rather than traditional grandfathering on the basis of volumes of traffic so far.

**Chairman**: That is helpful.

**Q74 Lord Fearn**: The Commission noted in its working paper that the impact might be greater on carriers with low fares than high fares. Would this distort competition across the aviation sector in the EU to any material extent? Is there any way in which the scheme can be changed to achieve market neutrality between them?

**Mr Gammeltoft**: I think we need to be clear about this. Everything else being equal, different types of carriers, low fare or high fare and so on, are in absolute terms affected in the same way. So if you emit the same amount of CO$_2$, have the same starting conditions, you will end up paying the same amount for any allocations that you are buying because there is one price in the market for CO$_2$. It is clear, of course, that if you have a cost increase of X, depending on the cost base of the aircraft carrier, this can have different impacts relatively speaking, but in absolute terms I would suggest that the impact would have to be the same. In that sense, you could argue that low-cost carriers will be more affected but, on the other hand, there are arguments pulling the other way, for example, that low-cost carriers typically have a larger occupancy rate of seats.

**Q75 Lord Fearn**: We have heard in evidence from other parties that the scheme would not exclude or penalise many of the most offending aircraft. Is this a real concern?

**Mr Gammeltoft**: The philosophy behind this kind of approach is that we leave it to the market to decide what should continue and what should not continue, rather than the traditional regulatory approach, where you ban certain kinds of aircraft because of low performance and so on. It is up to the operators. Everything else being equal, it will be less interesting to operate highly polluting aircraft because the costs will be higher and this will discourage the use of the most polluting aircraft. There will be essentially an incentive to renovate the aircraft fleet. Renewal in the aircraft fleet will be pushed by incentives rather than by prohibitions.

**Q76 Lord Fearn**: So at the moment are they taking, or would they take into consideration, the age of the fleet?
Mr Gammeltoft: What is taken into account here is the emissions or the impact on the climate, so to the extent that older aircraft have more impact on the climate, there will be an incentive to replace these aircraft.

Q77 Lord Haskel: Would not the incentive be far greater with an increased cost of fuel rather than the cost of the emissions trading? From the numbers we have seen emissions trading figures are not high, but of course, with oil trebling in price over the last couple of years, surely that is a big incentive for carriers to run more efficient aircraft?

Mr Gammeltoft: That is obviously in itself an incentive, but we do not know how long the oil price will remain at current levels. I think the issue here is that it turns out that emissions trading is a more cost-effective option because if you pay more for oil, you do not get more environment for your money. If you pay for allocations, you get more environment for your money because you are buying allocations from other sectors, which means that, to the extent that there are no cost-effective reductions to be had in the aviation sector itself, the money is channelled into other sectors and paying for CO\textsubscript{2} or other greenhouse gas reductions in other sectors of the economy. You get something for all of your money, which you do not necessarily find with fuel prices.

Q78 Lord St John of Bletso: It is rather an ultra vires question, but is the technology for carbon emissions moving ahead so that engines of the future may have far less emissions than current engines? I had an interesting meeting last week with Rolls Royce, who were talking about the technology of the future, which will be far more fuel-efficient.

Mr Gammeltoft: Indeed, technology is moving ahead, yes. There is a so-called ACA initiative, which is the Advisory Council on Aviation matters, which has set a target which is challenging, we believe, of a 50 per cent reduction of CO\textsubscript{2} emissions or fuel consumption for aviation engines in 2020. These are new engines. Given the fact that aircraft typically very often have a lifetime of 30–40 years, it takes quite some time before this impacts fully on the performance of the fleet. So if you have enough time to wait, yes, you could rely on that only. Our view is that we need to push ahead on technology—that is very clear—because that is the way ahead in the longer term, but in the meantime, the aviation sector has to participate in combating climate change. I would interject here that we have a situation where all sectors are reducing greenhouse gas emissions except the transport sector essentially. The electricity generation, industry and so on have all reduced their greenhouse gas emissions. The transport sector is unfortunately going the wrong way, and I think aviation, in terms of percentages and so on, is in the lead in going the wrong way. Aviation, in our view, not only has to participate but also has to be seen by other sectors as participating in combating climate change.

Chairman: I am tempted to start talking about cars, rail, buses and so on, but I will not.

Q79 Baroness Eccles of Moulton: My question is who should actually be included in the scheme. Could you tell us what your present view is on which carriers and routes should in practice be included? Would it be practical to include all intra-EU flights and all other flights originating in and/or arriving in the EU, even though this would impact on non-EU based airlines? There are obviously some options here.

Mr Gammeltoft: Yes. It is quite clear. Let me make the more general point here that aviation, contrary to the European emissions trading system which we have, offers an opportunity to involve the rest of the world in our efforts to combat climate change. The European Council, when discussing the future effort on climate change in March of this year, highlighted the need to involve the rest of the world and the need for further substantial reductions in greenhouse gas emissions. Our view is that, from an environmental point of view, it is clear that the more routes you can involve in this, the greater will be the impact. So from an environmental point of view, although certainly this would be the preferable option, there are a number of issues that we need to look at more closely, because we open up other issues when we start imposing this kind of thing on airlines in and out of the EU. What we have been looking at is intra-EU flights; we have been looking also at flights leaving the EU; we think that we should be making a system here which could logically be continued by the rest of the world, so we do not think it would be logical to say that we would include both flights to and from the EU, because if everybody did that, some routes would pay twice. If we do it either leaving the EU or arriving in the EU, it is a system which could easily be expanded to include other countries in the world, but from an environmental point of view, yes, it is quite clear. If you look at the intra-EU emissions, they are only about 30 per cent of the total emissions of in and out flights and intra-EU all taken together.

Q80 Baroness Eccles of Moulton: As you continue to work on this problem, is there a possibility that your view might change towards confining the ET just to Europe?

Mr Gammeltoft: At this stage it would not be prudent to exclude that possibility but, as I said, from an environmental point of view, the more we can extend it, the better.
18 October 2005  Mr Peter Gammeltoft and Ms Jane Barton

Q81 Lord St John of Bletso: You have mentioned a bit about the distortion, but does the Commission envisage any material danger of distortion anomalies emerging such as transferring flights terminating at Zurich rather than at Frankfurt?
Mr Gammeltoft: We do not believe that that is a very real danger. There are many issues involved in this. We have done some example cost calculations and impact calculations on ticket prices. The size of the impact that we are talking about—and we have been looking at long-haul, medium-haul and short-haul flights—is nothing that exceeds more than a handful of euros.

Q82 Lord Haskel: Could you be a bit more specific and give us some figures?
Mr Gammeltoft: If you look at Giving Wings to Emission Trading, if you do not pass on the full cost, we are between £0–9 or something like that on the ticket price. If you pass on all costs we are talking about maybe up to €20 on a long-haul ticket. (We need to have a further look at this. This is also an issue generally in the emissions trading system. In particular, in relation to the electricity sector there is a discussion about exactly that issue, about passing on costs.) It is our view that the price increases are not going to make airlines move hubs. There are many other issues, such as whether there is room in another hub. The question was moving to Zurich: what is the capacity to take flights in Zurich? If we say that people from Frankfurt or Munich or places like Milan would have to go to Zurich to get a flight, what would be the extra costs of a train ticket to get there? With the kinds of possible impacts that we are talking about on ticket prices, we do not believe that moving hubs is particularly a risk.
Chairman: We will return to the question of costs and so on in a moment.

Q83 Lord Roper: On this point that we were just looking at, you have already, I think, said that the intra-EU flights would take up 30 per cent of the total, therefore we can assume that there would be something like 70 per cent of emissions from aviation originating or ending in the EU which would be excluded. Is that right?
Mr Gammeltoft: If you take the intra-EU option, yes.

Q84 Lord Roper: So 70 per cent would be excluded. Secondly, what would be the figure if all flights originating in the EU were included? Would it be half of that 70 per cent? Would it be a further 35 per cent?
Mr Gammeltoft: It would be something like a further 35 per cent that you could add to the 30 per cent, so it would be roughly two-thirds.
Chairman: Let us go on to the question of cost and price.

Q85 Lord Walpole: If we can get back to the actual estimate of additional costs, if any, on airline tickets for intra-EU flights if the ETS system were envisaged on the basis you suggest—in other words, carbon at £70 a tonne or alternatively £100 a tonne—can you give one or two practical examples of routes which are heavily used?
Mr Gammeltoft: Firstly, in the Giving Wings to Emission Trading we have calculated a carbon cost of €10 and €30. The current price is, I think, £23 per tonne. I looked it up yesterday. I know it has been peaking recently but this was, in our view, a transient phenomenon. We are not going into making forecasts about the future carbon price. I think it is very difficult to predict this kind of thing and it will depend on a lot of things, but it will notably depend on the kind of cap that you impose on the overall emissions trading system, which is a political decision and which will be based on the environmental needs. In our view, it is not useful at this stage to speculate. This will not be a decision for aviation alone. If there is any increased pressure on the carbon price, this will not be a decision for aviation alone. This will be a decision for the full emissions trading system, and it is certainly not an issue that we should be addressing in the isolated context of aviation. In Giving Wings to Emission Trading there are some calculated examples. I think it is covered in the section which starts on page 135. The consultants have calculated the price impact for a short-haul flight from Amsterdam to Paris, a medium-haul flight from Munich to Palma, Majorca, and a long-haul flight from London Gatwick to Newark in the United States.

Q86 Chairman: Can you mention two or three of those for the record please.
Mr Gammeltoft: Depending on the allocation options and other options that are chosen; on the short-haul flight, if no opportunity costs are passed on, you have ticket price increases from £0.2 to £4.6. For medium-haul flights you have from €0.4 to €9.

Q87 Chairman: Can you give us an example of a medium-haul flight?
Mr Gammeltoft: The medium was Munich to Palma, Majorca.

Q88 Chairman: And that would be about €1 to €9?
Mr Gammeltoft: Yes. On the long-haul, we would have anywhere from zero—and that is the case where you only have intra-EU flights—up to about €7.

Q89 Chairman: An example of a long-haul flight would be?
Mr Gammeltoft: London Gatwick to Newark, €7 maximum under the options chosen or the parameters chosen for calculating these options.
Obviously, this will depend, and this is an issue that will be looked at by the working group. When it comes to the detailed design of the possible inclusion of aviation in the emissions trading system, obviously we will have to go into more detail and come forward with an impact assessment which will assess the impacts on the aviation sector and the different parts of that sector.

Q90 Chairman: Can I just get the figures correct? Did you say that the Gatwick to New York would be lower than some of the medium flights? So going from London Gatwick to New York could result in a lower increase in ticket price than going from Frankfurt to Palma. Is that right?

Mr Gammeltoft: One of the options excludes international flights, so that is one reason. The third option covers only EU airspace. This is one we have looked at. There are many different combinations of options. It is impracticable to look at all options at this stage.

Chairman: Rather than pursue that now, I would be very grateful if you could do a brief note for us on that particular point, why on the face of it the carbon costs of going to New York would be lower. I appreciate the point you have made there but it would be useful.

Lord Roper: Also, what the charge would be if one were paying for the whole of the carbon emitted for the journey from Gatwick to New York.

Q91 Chairman: A note will do.

Mr Gammeltoft: We will do whatever is practicable. Some of these calculations involve economic modelling and so on. We have to assess how much will be paid by buying allocations and how much will be arranged through internal arrangements in the sector, technological improvements and so on. To the extent that we can provide you with something, we will do so.

Chairman: You will understand—and we will return to this theme a bit later on—that when people who are not technical people look at these things, they do want to know what the impact is going to be on prices, and they will suspect that your objective is that although it starts modestly, the aim is to try and spread this system, and they will ask us why we did not ask that question now, because they did not realise that was going to be a consequence. We will come back to that.

Q92 Lord Walpole: Do you think there will be a differential impact on low cost airlines and their routes?

Mr Gammeltoft: I will say what I said before, that the absolute impact will be the same for the same ’planes. The impact will in absolute terms be the same but it will be, relatively speaking, different. If we are talking about low cost carriers with a lower cost base, that is clear.

Q93 Lord Walpole: For whom the fuel is a very high proportion.

Mr Gammeltoft: Yes. I would also add here what I have already said, that depending on the allocation system that you use, you can actually differentiate the impact on different types of carriers.

Q94 Lord St John of Bletso: If we can get a bit more elaboration on the numbers, what would be the percentage increase in annual costs to the aviation sector of an intra-EU basic emissions trading scheme? Secondly, what is the present forecast for the price of carbon by 2015?

Mr Gammeltoft: On the impact on the overall cost base of the airlines, we have not made any calculations at this stage. We have made calculations of how it is going to affect the costs of operating a particular flight. These are the costs that you will find on page 136 in the report Giving Wings to Emission Trading. For example, for a short-haul flight under option one, which was intra-EU only (and covering all estimate impacts) it goes from about €50 to €150 for the flight as such. If you want this per passenger, you need to divide this by the number of passengers on the flight. On the carbon price in 2015, I would also say what I have already said. In our view, the average carbon price in 2015 will depend on the kind of caps that are imposed on the overall emissions trading system, and these are political decisions which are taken on the basis of the environmental needs. We do not have predictions and we do not think that it is the right time and place to discuss this issue now. I think this is an issue that can be discussed when discussing the overall future of the European emissions trading system. There will be a review of the Emissions Trading Directive. I think it is scheduled for next year.

Q95 Lord St John of Bletso: To what degree would these caps and these costs be compared with your counterparts in other parts of the world: America, Africa and other regions? To what degree are they taking similar measures so we can have a global solution here?

Mr Gammeltoft: I think it has to be said here that Europe is taking the lead on climate change, globally speaking. The Commission sees a need also in this area. It is very difficult. There have been ongoing discussions in the International Civil Aviation Organisation, and it is, I think, fair to say that it is very difficult to make progress on these issues. Whatever progress there is is very slow. Our view is that there is a need to show the way forward, and this is part of the way of doing that. The idea of extending it to, for example, all flights leaving the EU would
also make sure that other countries’ airlines are participating in the system and contributing to it. So it gives us an opportunity to involve other airlines in it and get other airlines accustomed to the idea that maybe you have to pay for greenhouse gas emissions.

**Q96 Chairman:** Can I just ask one supplementary question on that? I understand entirely why you prefer not to talk too much about the future. Partly, you say it is a political matter, but is not the situation this: aviation at the moment contributes a very modest proportion of CO₂ emissions? Apart from wanting to have a nice tidy package so everybody is included, the real argument for including aviation is the future forecast growth in aviation. If you do not include it early, it will be very difficult to include it later. That is probably something on which we can agree.

*Mr Gammeltoft:* Yes.

**Q97 Chairman:** So the apparently low impact on prices at the moment really does not tell the whole story of where aviation might be in a few years’ time. Aviation is likely to be a significant driver of the price of carbon in 20–30 years’ time. That is the concern about aviation in terms of emissions. Is that a fair view?

*Mr Gammeltoft:* We have heard from certain industrial groups that they are concerned that aviation as having a net demand for carbon allocations will drive the price up, but that in our view depends on how the system is conceived. We do not know how it will be conceived, so I think we will stick to not venturing any predictions about how this will develop. It also depends on other things that we do not know about. We can have predictions about technological development in the sector. We can see what is currently in the pipeline. We know from companies like Rolls Royce, Airbus, etc, but if there are technological breakthroughs, this could radically change the picture. These are things that we cannot know about. You only know about technological breakthroughs when they happen.

**Q98 Chairman:** Is it not the case at the moment that the forecast growth in air travel is a major driver of future CO₂ emissions?

*Mr Gammeltoft:* They are growing rapidly. That is very clear. But if we get a 50 per cent improvement in fuel economy, there are also people working on other types of fuel—non-fossil fuels for aviation; there is work ongoing on bio-fuels and so on—these will all help bring down the net emissions from the sector. These are things that it is very difficult to predict, so yes, if everything stays the same as it is now, then it will become increasingly important because of the projected continued growth in civil aviation: but what I am saying is that there are many factors that can change this assessment, and the more we go into the future, the less certain are these predictions.

**Q99 Baroness Eccles of Moulton:** Is there a view on what the impact would be upon the competitive position of EU airlines and EU businesses if only intra-EU flights are included in the ETS?

*Mr Gammeltoft:* Thank you for that question. This gives me an opportunity to say something which I probably should already have said. I think it is important to be clear about what this means. The calculations that we have done have just been done over a short time period, a five-year period from 2008 to 2012, and they show that, with business as usual, growth in this period would be 17 per cent. The way that emissions trading might change this is by reducing this growth figure by about 0–2 per cent. So over this five-year period we are talking about whether the growth will be 15 per cent or 17 per cent, in that interval. The first remark is that there will not be a major impact on volumes in the sector as such. That is our view. Secondly, on the question of the differential impact between EU airlines and non-EU airlines, yes, there will be a difference, of course, that if we include only intra-EU flights, this will essentially be EU airlines. There are some foreign carriers operating some lines, but more than 95 per cent will be EU carriers. If we go to flights, for example, arriving in the EU or departing from the EU, it will impact 70 per cent on EU airlines and 30 per cent on non-EU airlines. It is clear that although the impact is small, it is there, and from the point of view of equal impact on EU and non-EU airlines, it would also be preferable to include non-EU airlines in the system by including, for example, flights arriving or departing from the EU.

**Q100 Lord Haskel:** Thank you very much for telling us your views about future technology. Do you see the impact of carbon emissions on aviation as reducing the demand for air travel, or do you think the impact will be to make air travel more efficient, using less fuel?

*Mr Gammeltoft:* Let us return to the growth figures. It will only marginally affect the growth, which means it will only also marginally affect demand. In the longer term it will impact on the environmental performance of aircraft. This will take some time because of the long turnover times in the sector, to the extent that you are improving the performance of engines, 'planes and so on. With the fuels it will happen more quickly. In the meanwhile, it will be by making aviation contribute to efforts in other sectors by buying allocations and essentially financing efforts to reduce CO₂ emissions in sectors where it is cheaper.
Q101 Lord St John of Bletso: With so many of these new countries coming on board, like Bulgaria and Romania, the whole tourism industry is opening up, and with the open skies policy, with Ryanair and Easyjet, it is going to be pretty difficult to cut back on the surge in growth in tourism in some of those areas that up until now have had very little tourism.

Mr Gammeltoft: The high growth figures that we are quoting, 17 per cent over a four-year period, reflects exactly the fact that there is a high growth rate in things like tourism. The introduction of emissions trading will, in our view, not mean any significant reduction in tourism. It may mean some redistribution. Some people may choose to go shorter distances, but it will even out on the tourist destinations. In Spain perhaps they will receive more Spanish tourists who have to travel less, but there will not be a major impact on the aviation sector. You can say the same, I think, for peripheral regions, which is another issue that has been raised in this context. Firstly, we do not believe that projected ticket prices are such as to discourage people from flying to and from peripheral regions, and secondly, we would also point to the fact that you can introduce public service obligations for carriers serving very remote destinations for which there is a need to maintain a durable link with the mainlands to which they belong.

Q102 Chairman: That sounds like the following message to people: "Do not worry about aviation coming into emissions trading and paying for carbon. We will still have growth in airline travel. Do not worry." The system will encourage airlines to be more efficient and so on, so it is not going to cut back on growth in air travel. Tourists need not worry, outlying Member States need not worry, business as usual, except that aviation will become more fuel-efficient and emissions-efficient. Is that a fair summary of your view?

Mr Gammeltoft: That is a fair summary. Our investigations have shown that there will not be a major impact of any kind.

Q103 Lord Roper: If in fact it was felt that introducing aviation into the ETS was not possible, what alternatives are there to try and find ways of reducing aviation emissions in the years ahead?

Mr Gammeltoft: There are a number of options. Let me say once again that this is not the only thing we will be doing. We will be promoting things like technological development because we do believe it is important, and it is important that we make a concerted effort to push technological development. So a push-pull strategy: pull through the emissions trading system and push through things like research programmes. Obviously, research is an avenue which we will have to explore in any case. You can go through a regulatory approach, and regulation of technical standards for airlines is mainly done today through the International Civil Aviation Organisation, which is a very lengthy and cumbersome process. If we were to go that way, I think we would have to wait longer for improvements than we will if we choose to go down the emissions trading route.

Q104 Lord St John of Bletso: What about taxation options?

Mr Gammeltoft: Taxation options are also a possibility. That is clear. But we have a situation with taxation where you are probably aware that there are a number of bilateral air service agreements. We have 25 Member States in the Union. All of them have non-taxation clauses in their bilateral agreements. Each Member State has potentially up to 200 bilateral air service agreements. There may be thousands of agreements that need to be renegotiated before this becomes a way forward to address this. Our view is that, while we should continue pushing for other reasons, for reasons of energy taxation and reducing energy consumption and so on, for opening up the possibility of taxation, this should not be the preferred route for addressing climate change, but it is an option. Charges is another option but it is very contentious at the international level. At the ICAO, the International Civil Aviation Organisation assembly meeting last year there was, shall we say, a major discussion about charges, and the outcome was a compromise, after a very long discussion, that until the next ICAO assembly in 2007 there was a political agreement not to impose environment-related charges on aviation, but the same discussion is going to happen in 2007 and nobody knows what the outcome of that discussion will be. So it is a difficult route to go down.

Q105 Chairman: Are the open skies arrangements between the EU and other countries that are currently under way not having clauses in them about taxation? Are they changing that situation?

Mr Gammeltoft: The Commission is pushing for this kind of change. It is early days to say what the outcome is, but it is on the way. I would say agreements are on the way without non-taxation clauses.

Q106 Chairman: A last question, if I may, and I apologise. We asked a previous witness in oral session what they thought of the impact assessment and the consultation processes that were undertaken so far and they were rather critical of these. I know that in June, or earlier this year, the Commission has issued new guidelines and so on. Have you had any feedback that has had some negative aspects from the
industry and so on about the impact assessment and consultation that was conducted?

Mr Gammeltoft: Yes, we have had critical remarks from the industry but I have to say that we very often have critical remarks from the industry. In some parts of the industry there is an expectation that consultation does not end until industry agrees 100 per cent on our analysis. Our view of this is slightly different: that we undertake the impact assessment, we take responsibility for the impact assessment and we consult with stakeholders on draft impact assessments and so on but, at the end of the day, the decision and the responsibility about the impact assessment is ours.

Q107 Chairman: Mr Gammeltoft and Ms Barton, could I thank you again. You have been, as always with the Commission, straightforward and detailed in your responses and it is greatly appreciated. Thank you very much.

Mr Gammeltoft: Thank you, Lord Chairman. Thank you for the opportunity and we will come back with the note that we promised you on the impact on prices.

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**Supplementary written evidence from European Commission**

This note supplements the evidence given by the Commission to Sub-Committee B on 18 October 2005.

**Summary of the Proposals in the Communication and the Next Steps**

The Commission Communication published on 27 September 2005 recommends the inclusion of aviation in the EU Emissions Trading Scheme. This is part of a comprehensive approach to tackling the climate impacts of aviation and the Communication also emphasises the need to continue or strengthen existing policies, namely research into cleaner air transport, improving air traffic management and making progress towards a more consistent policy on energy taxation.

The Communication identifies the following technical design elements for the Scheme which are crucial if the policy is to deliver its full design potential for environmental and economic efficiency:

- The type of entity made responsible for aviation’s climate impact;
- The extent to which the full impact is addressed;
- The types of flights covered; and
- The approach taken for calculating and apportioning the sector’s overall emissions limitation.

As regards the entity responsible, the Commission considers that aircraft operators should be the entities responsible.

As regards the impacts to be addressed, the Communication states that both the CO₂ and non-CO₂ impacts of aviation should be addressed to the extent possible. To do so at the present stage, a pragmatic approach would be needed and the Communication suggests two options.

As regards the flights to be covered, the Communication points out that in environmental terms, the preferred option is to cover all flights departing from EU airports since limiting the scope to intra-EU flights (which both depart and land in the EU) would address less than 40 per cent of the emissions from all flights departing from the EU.

As regards calculating and apportioning allowances, the Communication recognises that the rules applied to existing participants in the EU Emissions Trading scheme may not be suitable for aviation and that, given the level of integration in the Community’s air transport market, a harmonised allocation methodology should be agreed.

The design of the scheme will be examined by a Working Group to be set up by the Commission. The working group will consist of experts from Member States and key stakeholder organisations including industry, consumer and environmental organisations.

The Working group will report its conclusions by 30 April 2006. The Commission will aim to put forward a legislative proposal by the end of 2006.
Why is emissions trading a better solution than alternatives like taxes or charges?

Unlike traditional regulation, emissions trading does not impose compulsory emissions limits on individual entities or prohibit specified aircraft, instead it sets a cap on the total emissions and allows the market to decide where, how and when emissions reductions can be made most economically.

Compared to a fuel tax or an emissions charge, including aviation in the EU ETS can provide the same environmental benefit at a lower cost to society—or a higher environmental benefit for the same cost. In other words the impact on ticket prices, airline companies and the overall economy will be smaller for a given environmental improvement. This is because, in contrast to a fuel tax or an emissions charge which would be applied to the aviation sector in isolation, the aviation sector would be part of a wider emissions trading system covering other sectors of the economy, which delivers greater cost-efficiencies.

Moreover, emissions trading has been endorsed by the International Civil Aviation Organization (ICAO). The EU believes that emissions charges would also be compatible with the international legal framework for aviation, but they are contentious within ICAO and would anyway be less efficient than participation in the EU emissions trading scheme.

Which airlines and routes will be affected?

The Commission considers that the scheme should apply to all carriers without regard to nationality. The 1944 Chicago Convention on civil aviation requires laws and regulations relating to the admission to or departure from a Party to the Convention of aircraft engaged in international aviation to be applied to aircraft without distinction as to nationality. All aircraft are required to comply with such rules. To the extent that they operate from airports in the EU, foreign airlines would thus be affected in the same way as EU airlines. To the extent that they operate intra-EU routes, foreign airlines would be covered even if the scheme is limited to intra-EU flights.

From an environmental point of view, the preference expressed in the Communication is to cover all flights departing from EU airports, whether to another EU destination or a third country. Narrowing the scope only to flights within the EU would cover less than 40 per cent of the emissions from flights departing from the EU (and only about 25 per cent if compared to the emissions of all departing and arriving flights). It would also favour long-haul over short-haul flights, thus contradicting the strategy’s environmental objectives and raising competitiveness concerns.

How would allowances be allocated to airlines?

This is an important question which will be considered further in the context of the Working Group and in the Commission’s further preparatory work. There are several elements to this question: there is a preliminary question concerning whether the aviation sector will be required to surrender allowances to cover all its emissions or just emissions above a baseline.

Then there are questions relating to setting the overall emissions limitation for the aviation sector and the apportioning of that limitation between operators and the extent to which the methodology and procedure should be harmonised between Member States. Possible options for apportioning the emissions limitation considered in the feasibility study included grandfathering, benchmarking and auctioning or requiring the aviation sector to purchase all allowances on the market. In this context it would also be necessary to consider how new entrants would be treated and whether and if so any early action would be taken into account.

How can airlines reduce their emissions in practice?

Airlines can reduce their emissions in several ways, notably by investing in more efficient aircraft and engines and in optimising operations. Although the biggest improvements would typically arise from accelerated fleet renewal, many aircraft in the current fleets also hold potential for improvements. For instance some aircraft can be retrofitted with technical devices at the tip of the wings (“winglets”), new surface treatments that reduce drag (air resistance) and even new engines. Airlines can also optimise their timetables, route network and flight frequencies to minimise the number of empty seats flown. ICAO, the international body responsible for aviation matters, has published a catalogue of “Operational Opportunities to Minimize Fuel Use and Reduce Emissions.” In the longer term, research into more efficient technologies and alternative fuels may provide additional opportunities.
What will the impact be on the European economy and competitiveness?

The aim of an emissions trading scheme is to incentivise the reduction of emissions in line with the polluter-pays-principle. Therefore by definition it intends to make it more expensive to operate the most polluting aircraft. Since this is the aim of the scheme it is not considered to be a distortion of competition. A scheme should apply to all carriers operating from EU airports without regard to nationality, the rules will apply to all airlines equally and therefore no significant impact on the competitive position of any airlines.

The impact assessment carried out by the Commission concludes that the overall effect on the European economy and competitiveness is likely to be very small both in terms of overall GDP growth and employment. For the aviation sector the main impact is likely to be a small reduction in the rate at which demand grows. In the illustrative scenarios analysed in the background study, the anticipated growth in demand over the period 2008–12 is around 17 per cent, and the reduced growth in demand over this time-scale would vary from 0.1 to 2.1 per cent, assuming CO2 allowance prices of €10–€30.

However, the impact of the scheme is dependent on a number of factors in the design of the scheme which have not yet been decided. A full impact assessment will accompany the future legislative proposal.

What will be the price impacts of including aviation in the ETS?

The feasibility report “Giving wings to emissions trading” assessed the impact on operating costs for airlines and on ticket prices on the basis of 3 options. Under the first option the scheme would apply to intra-EU flights only. Under the second option the scheme would apply to all departing flights from the EU. Under the third option the scheme would apply to all flights (or parts of flights) in EU airspace.

The report assessed the impact of these options on short-haul, medium-haul or long-haul flights. Under the 3 options, the price increase for a short-haul flight between Amsterdam and Paris would range between €0.2 and €4.6 per round trip if it is assumed that no opportunity costs are passed through and between €1.5 and €9.2 per round trip if it is assumed that opportunity costs are fully passed on. For a medium-haul flight from Munich to Palma de Mallorca the price impact would range between €0.4 and €9 per round trip if no opportunity costs are passed through and between €3 and €9 per round trip if opportunity costs are fully passed on. For a long-haul flight between Gatwick and Newark, there would be no impact on prices if the scheme is limited to intra-EU flights. Under the other two options the price impact would range between €1.0 and €6.9 per round trip if no opportunity costs are passed on and between €2.3 and €19.8 per round trip if opportunity costs are fully passed on. It is to be noted that if airlines were to pass on opportunity costs fully and some or all allowances are allocated to aircraft operators for free, it would result in windfall profits for aircraft operators.

Letter to Sub-Committee B from European Low Fares Airline Association (ELFAA)

The European Low Fares Airline Association (ELFAA) brings together the majority of airlines in the European low fares airline industry, with 11 members from nine European countries. ELFAA represents the interests of low fares airlines and their customers, who currently constitute some 30 per cent of scheduled intra-European traffic. ELFAA members themselves will in 2005 carry approximately 100 million passengers between over 400 airports. Our members operate on the basis of maximising efficiency and reducing costs in order to offer the lowest fares to our passengers. This includes having the most fuel efficient aircraft, and carrying the maximum number of passengers on every flight. This efficiency and the use of technologically advanced aircraft leads to the lowest levels of emissions in the industry. Our members therefore maintain the most environmentally sustainable operations in the industry.

We welcome the United Kingdom Government’s initiative to consult with the industry before concluding on the merits of including the aviation sector in the EU emissions trading scheme (ETS). While we are understanding of the case for reduction in emissions, we feel there is a lack of appreciation of the very considerable strides, already made in the aviation sector by the low fares airlines in particular, in investment in new, technologically-advanced aircraft with much reduced levels of noise and emissions, and in highly efficient operational measures which further reduce environmental impacts of aviation. We therefore do not see it necessary or appropriate to extend the ETS to include aviation.

In particular we are concerned at the highly discriminatory nature of the proposal, under consideration by the Commission. We understand that the scheme, as proposed, will not include:
— airlines of non-member European states, except in the highly unlikely of those states’ voluntary consent;
— flights within the EU by airlines from third countries; and
— flights by Member States’ airlines, extending beyond the boundaries of the EU.

Many of the most offending aircraft would thus be excluded from this scheme—akin to having the Commission’s safety blacklist extend to only Member States’ airlines, flying wholly within the EU.

National network carriers of Member States would see all of their long-haul operations exempted from the scheme. Particularly and disproportionately penalised would be the European low fares airlines, whose operations are mostly intra-European.

The European low fares airlines have the youngest fleets in the business, having invested heavily in the most technologically-advanced aircraft, each succeeding generation of which has achieved significant improvement in the level of noise and emission. Also, the operational measures applied by the low fares airlines, which include higher seat density, higher load factors and point-to-point services, reduce fuel burn and emissions per passenger seat kilometre as compared to traditional inefficient airlines. Fleet renewals and environmentally-friendly operational measures should be endorsed by the European Union as the best means to reduce environmental impacts of aviation.

The European Union was formed to promote trade, and mobility between Member States. The low fares airlines have enabled this aspiration for mobility within the EU to be an affordable reality for all, not the previous rich few. Notwithstanding, they now face potential European legislation, which, by its narrow field of application, will impact specifically such intra-European travel. However well-intentioned such legislation, there is a perversity in seeing it applied by the Commission to curb the opportunities for affordable travel of only its own citizens.

Low fares airlines have principally developed services between the regions of Europe, in the main bypassing already congested capital hub airports. In so doing, they have eliminated the need for wasteful multi-sector connecting itineraries for intra-European journeys and also eliminated many millions of miles of unnecessary car journeys to and from distant main airports. The contribution of the low fares airlines to the economic development of the regions of Europe has also been indisputably immensely beneficial.

If, notwithstanding the penalising effects on only its constituents, the Commission continues to pursue this highly discriminatory policy, ELFAA would wish any such scheme to take account of investment to date in new aircraft. Offending aircraft should be penalised and previous and future investment to reduce emissions rewarded.

Proud of their achievement in this area, the airlines further favour the introduction of Eco-branding of airlines and aircraft to enable selection of carrier and aircraft on the basis of its environmentally-friendly equipment.

In summary, ELFAA is opposed to the proposed application of this scheme on the grounds it:
— is not required;
— will have only very partial effect; and
— is highly discriminatory in its effect on intra-European affordable mobility and regional development.

In the event that it is pursued regardless, the Association would wish the factors identified above to be reflected in the design of any scheme.

Our detailed comments are included in the attached position paper “Low Fares Airlines and the Environment, June 2005” (not printed). We remain at your disposal for any additional information you may require for your deliberations.

Stefan Vilner
Acting President of ELFAA and Commercial Director of Sterling

19 September 2005
Examination of Witnesses

Witnesses: Ms Jan Skeels, Secretary General, European Low Fares Airline Association; Mr Jim Callaghan, Head of Regulatory Affairs and Company Secretary, Ryanair, Member of the Executive Committee of ELFAA; and Mr John Hanlon, Director, Flybe, Member of the Executive Committee of ELFAA, examined.

Lord Haskel was called to the Chair

Q108 Chairman: Good morning, Mr Hanlon, Ms Skeels and Mr Callaghan. Thank you very much indeed for coming before our Sub-Committee. I think you have been sitting in on some of the other session, so you know the routine. Before we start, I would just like to make an announcement about Dr Mark Williams, who is our specialist adviser, sitting on my right. Dr Mark Williams works for NERA Economic Consulting, which is a microeconomic consulting firm with 500 professionals around the globe. Many clients of NERA have a direct interest in emissions trading, and a client of Mark Williams is BAA plc, who have given written evidence to this inquiry. I just wanted to say that as it clarifies the position of Dr Williams. We usually start off by inviting our visitors to make a statement, if they would like to. Ms Skeels, would you like to start?

Ms Skeels: Thank you very much, my Lord Chairman. If I can just say first of all, my name is Jan Skeels and I am the Secretary General of ELFAA, which is the European Low Fares Airline Association. As far as I am aware, we are the only low fares airline association in the world. We actually launched the association in January last year simply because existing associations were not taking the needs of low fares airlines and their consumers into account. As you can imagine, with a whole raft of legislation coming out of Europe, it is essential that we can fight our own corner. We represent eleven European airlines, and they come from nine different European states. We have two UK airlines amongst our members: Easyjet, who, incidentally, are not a member of BATA (British Air Transport Association); and also Flybe; and I think it is reasonable that we could also say Ryanair are counted in that as well because they do have a huge operation within the UK. The difference between our airlines— because yesterday we were talking about low-cost airlines and there was confusion between no frills and low cost—our airlines do operate the low-cost, no-frills business model, so we rely on low cost, high load factors, fast turnarounds, many efficiencies that come in, and the results of those are passed on to the consumer through low fares. It has changed air travel from something within Europe which has really been for the rich, into something more of a commodity and has brought air travel within the reach of a lot of people within Europe who otherwise would not have travelled. We do appreciate the opportunity of being able to speak to you today. Our airlines have been the success story of liberalisation of air transport within Europe and we have brought many economic benefits right across Europe, not just to the airlines themselves but to airports and to regions. Unfortunately, the European Commission has not carried out any in-depth study into the exact benefits that we have brought across Europe. It is therefore worrying that they continue to push out legislation without really knowing what the impact is going to be. We are a new sector, we are a very dynamic sector, and I think everyone would agree that we have changed European aviation considerably. It is far more competitive. We do operate only within Europe. There may be the odd flight that goes outside Europe’s boundaries but we do operate only within Europe, therefore, when you talk about a European emissions trading scheme having the same impact on all airlines, yes, if it is applied to all departing flights from the European Union, it does, but of course, what you have to remember is that both ends of our members’ flights are departing from Europe so we will have the full impact. We are therefore concerned that studies have been presented to date without really including us a great deal. We are the sector which will be most affected. We are concerned that the data which has been shown, for example, in the impact assessment is outdated. For our industry it is outdated. Things change very, very quickly and assumptions that are being made now on the effect of this, the effect on prices and everything else, in our opinion are truly outdated. I welcome the fact that the European Commission has said today that there is a lot more work to be done on this. We have applied to be part of the working group and we are awaiting confirmation that we can be included. However, I suspect that the impact will be much greater than is being delivered to us today.

Q109 Chairman: Thank you very much for that. I am sure lots of these points will come out in questions. Mr Hanlon, would you like to say who you are?

Mr Hanlon: Yes. I am John Hanlon. I am Director of Alliances for Flybe, a regional UK carrier.

Mr Callaghan: I am Jim Callaghan. I am Head of Regulatory Affairs and Company Secretary for Ryanair.

Q110 Chairman: Thank you very much. You have actually, Ms Skeels, started off on one of our questions which deals with what you call the highly discriminatory nature of the proposal. You started to
Chairman: You mean up to the European frontier?

Ms Skeels: Yes: so if you had any airline at all operating out of a European airport covered by this scheme, that would help resolve some of the problems that we have. The problem with doing that is that any third party state would have to voluntarily agree to be part of this scheme. What state would willingly subject their airlines to this type of scheme without a quid pro quo? Our concern is, what is the cost of the extra-European airlines being included in this scheme? On the one hand, yes, it makes it more equitable but, on the other hand, is there a hidden trade-off that we are not aware of and how will that actually affect us? It is probably nothing to do with emissions trading, but what would be the cost of that?

Chairman: But if it were airlines operating out of Europe, then all other airlines would have to participate if they are flying out of Europe.

Ms Skeels: Yes, if they fly out of Europe they have to participate, but, for example, if you have an American flight departing from Europe going to New York, the US would have to voluntarily agree to be part of this scheme, because they do not come under the European Union’s jurisdiction. In doing that, and in bilaterals or any US-European agreements, they would probably seek a trade-off—if they do not, they are mad! What would that trade-off be? Would it be in the field of aviation? Would it actually have an adverse impact on our members? We do not know. If the European Union goes ahead with the scheme and finds out at the eleventh hour that it cannot get agreement from all of these states, then what will happen? Will it only be European airlines that are subject to this? Will it only cover intra-European flights? There are a number of concerns that we have. If ICAO cannot get 188 states to agree, we do not see how the European Commission is going to achieve that.

Mr Callaghan: My Lord Chairman, the concern of the low fares airlines is that there have been a number of legislative initiatives coming out of Brussels recently where we have been discriminated against as a sector. I am thinking in particular of the issue of passenger compensation, where the average fare of the low-cost airlines is around €50, and we are now forced to pay €250 in cases where flights are cancelled “within our control”, whatever that means, and that is a matter for debate. We made this concern very clearly in our submissions that this issue is a global issue, and it should be handled at a global level: in particular because I do not think it is beyond the realm of possibility that a system that comes out of Brussels may have, and we would be very concerned that it will have the effect of protecting national airlines, who are less efficient and more polluting than the low fares sector. That is a very strong concern that we would have.

Chairman: In your evidence to us you do suggest that you have a much more modern fleet of aircraft than the other airlines. So you have a comparative advantage as far as that is concerned, and therefore to that extent it is discriminatory in your favour.

Ms Skeels: My Lord, it would depend on how the allocation is made in the first place. If, for example, grandfather rights are taken into account, if some equation is brought in that takes development over time into consideration and improvement over time, we have a problem, because we have gone in from day one with the latest technology. So when you look at improvement over time, for us, there has been none, because we have started off with the most efficient aircraft that we can have.

Mr Callaghan: Can I just give an example from Ryanair’s perspective? Over the past five years we have invested more than €3 billion in our fleet replacement programme. We have replaced the older 200 series 737 Boeing aircraft with the most modern 800 series aircraft, and that has had the impact of reducing our per passenger emissions by 50 per cent. It has also reduced fuel burn by 45 per cent and noise emissions by a further 45 per cent. We are also in the process of investing in winglets, which are the fancy things at the end of the wings, which will further reduce emissions and fuel burn by around 5–6 per cent. Furthermore, we are investing in new engine technology which comes in from 2007, which will have the effect of further reducing emissions by between 15 and 20 per cent. If you take that as an indication of where the industry is going, there is not a whole lot more that we can do from this point on, so...
we would be very concerned about a system of quotas that is based on, for example, last year or the year before, because we have made all the improvements, and we will be penalised, despite the fact that we, Ryanair, and our colleagues in the low fares sector are at the cusp of technology whereas the likes of Alitalia, who are operating with very old aircraft, that are flying half-empty around Europe, will benefit from the fact that they are not growing any further and they are basically quite happy to have a system whereby they would not have to pay for any further quotas.

Q114 Lord St John of Bletso: You say you reckon you can get a 15 per cent reduction in carbon emissions from the new delivered design compared with the old?

Mr Callaghan: Yes, a further 15–20 per cent. That is based on our numbers.

Q115 Baroness Eccles of Moulton: Particularly in the initial stages of their existence, do any of your members buy second-hand aircraft?

Mr Callaghan: I am sure there are some.

Ms Skeels: There must be some.

Q116 Baroness Eccles of Moulton: That would be on the other side of the spectrum, as it were, to the developments that you have indicated.

Mr Callaghan: Not necessarily, because you could have members purchasing newer second-hand aircraft. These would still have quite high standards in terms of fuel burn and emissions. Again, the focus of low fares airlines is on reducing costs, and modern aircraft burn less fuel, which is the major cost.

Q117 Baroness Eccles of Moulton: So you would have to put all sorts of factors into the equation: the initial capital cost, obviously, of establishing your fleet versus the running costs, and it just could be that the equation will come out in favour of lower capital expenditure in the first place. I suppose all this would come out in the way the allowances were granted. The age of the aircraft would presumably be a factor.

Mr Callaghan: Correct.

Q118 Chairman: Presumably if the initial system was by benchmarking, your modern aircraft would have an advantage?

Mr Callaghan: One would imagine that that would be the case. We would be a bit sceptical that this will happen in practice.

Q119 Chairman: So there are ways of taking care of it?

Mr Callaghan: I am sure there are. The question is whether that will actually happen or not.

Chairman: Exactly.

Q120 Lord Fearn: In paragraph 3 of your written evidence letter you say that, on your understanding, the scheme would not include non-EU airlines, intra-EU flights by non-EU airlines, and flights by EU airlines extending outside the EU. Could you please clarify the basis of that understanding? Which airlines and flights should be included if aviation CO₂ emissions are brought into the ETS? Would a scheme covering only intra-EU flights distort the market in international aviation?

Mr Hanlon: My Lord, we understand from our interaction with members of the Commission, the Environment Directorate in particular, that the imposition of the European ETS scheme on non-EU Member States is dependent on voluntary participation by such states. We take a pragmatic view, that that is very far off, if not extremely unlikely, so we have great difficulty conceiving of how this emissions scheme could be made to apply to airlines of non-Member States; which brings us back to the worry that it will be launched as an intra-European operation only, within which there are some grave imbalances, to our disfavour. You may consider that a level playing field between all the European airlines of Member States would be fair, but the distinction to be made really is not so much between traditional full service and low fares airlines; it is between hub network carriers and point to point, the other side of the spectrum, as it were, to the developments that you have indicated. National carriers operate extensive long-haul networks. Were they able to be outside this scheme, or, as we heard one option today, that part of their journey outside European airspace, if I were a carrier, I could see in such a scheme a mechanism that might serve me well to curb the growth of low fares airlines, particularly within Europe, because I would be affected only on that part of my operation. Because of the success of the low fares airlines, you will notice that those traditional airlines have actually been scaling back European operations to the point where they use them primarily to feed the more profitable long-haul routes, that they see their future in being present on those. So we feel particularly vulnerable, and we feel we are the stakeholder within Europe that has the most to protect in this situation and could be the most affected by it. We would urgently like to be a member of the working group because of that concern, to actually consider this, and we have made that request, and repeated it today.

Q121 Lord Fearn: Will it be acceded to?

Mr Hanlon: That is not a decision within our hands, but we will certainly go on making it.

Mr Callaghan: Could I just give an example of where this distortion is already happening in the market at the moment, in an unrelated field, and that is this issue of fuel cost, whereby the majority of traditional
national airlines have imposed significant fuel surcharge, both in Europe and on their transatlantic flights. What is interesting is that British Airways recently again increased their fuel surcharge, but only on their long-haul operations, not on their European operations, because they are no longer able to increase those fuel surcharges and still get people on their aircraft in Europe. So they have increased it only on the transatlantic flights, where there is not a lot of competition, so people will pay pretty much whatever you charge them. If you have a system whereby only intra-European traffic is covered by the environmental trading scheme, what British Airways will do is simply increase their fares on the transatlantic routes, and will use that to cross-subsidise their fares in Europe, ie they will charge lower fares than are economically feasible, and that will create a huge distortion of competition, with low fares airlines that have nowhere else to go being disadvantaged. We are operating exclusively within Europe. We cannot go long-haul; we have no desire to go long-haul. This is an example of where this is already occurring and will certainly occur if this scheme is limited to European flights. It was interesting that Mr Gammeltoft mentioned on the one hand that it would not be fair to double-charge long-haul operators, so we cannot have it on outbound flights, because somehow that would double-charge if you had a scheme somewhere else, but later on in his discussion he said, if I understand correctly, that the intention is to only charge the portion within European airspace. So it should be feasible to have a system whereby all traffic, both arriving and departing, is covered by the ETS to the extent that that traffic is contributing to emissions in Europe. There is nothing that says the Americans cannot have a similar scheme in the US that covers both inbound and outbound traffic, as long as it covers emissions within the US. That is the concern for low fares airlines. I can predict that this will end up being an intra-European system only, whereby the low fares airlines will be seriously compromised.

Chairman: I think that point is very well taken.

Q122 Lord Fearn: In your evidence you note that low fares airlines have higher seat density and higher load factors than traditional airlines. In addition, you note that low fares airlines operate point to point services. Can you explain how point to point services gives any advantage, and to the extent that your members fly fewer miles with more passengers per tonne of emissions, does this not mean that the ETS will be beneficial to your members compared to your rivals?

Mr Callaghan: Again, if this system were to be conducted in a constructive manner that incentivised airlines to reduce their emissions, then yes, the low fares sector would be at the leading edge and would benefit from its investment in new aircraft, etc. On the issue of point to point, in addition to the investments that our airlines have made in terms of technology that limits fuel and emissions, the operational model of the low fares sector is such that we operate on a point to point basis, which means that we do not connect through hub airports. The advantage of that is quite obvious. You basically have one flight instead of two. If you want to get from London to Carcassonne on a low fares airline, you fly from London to Carcassonne, whereas on the likes of British Airways and Air France, you fly to Charles de Gaulle and then down to Carcassonne. That is an obvious benefit from the low fares model, that you are operating direct instead of connecting through congested hubs, where the vast majority of the problem arises due to frequent delays in terms of circling the airport, waiting on the ramp, needlessly burning fuel all this time. That aspect of the low fares model should be incentivised in the trading scheme. The other benefit of the low fares model is that it removes traffic from those congested airports to lesser used airports, and that limits emissions and also noise emissions.

Q123 Chairman: But if you do have a direct flight in a straight line, then presumably you pay less ETS?

Mr Callaghan: Again, the devil is in the detail. If the scheme is set up such that efficiency is rewarded, then yes, that is correct, and it would actually incentivise other airlines to follow a similar model.

Ms Skeels: We are not trying to be evasive and not answer your questions. We want to answer your questions, but we are trying to see this whole issue from more of a holistic point of view; to actually see what the problems are that are going to come out of the whole thing further upstream, and try to pre-empt those problems in formulating our position on these issues.

Q124 Baroness Eccles of Moulton: I think you have already partly answered my question by describing the efficiency of the low cost airlines, the efficiency of the aircraft. There is probably a bit more to be added. You say in your written evidence that many of the most offending aircraft would be excluded from the scheme. Could you elaborate on that point, and is there any satisfactory way of measuring emissions volumes that take into account the age of the fleet? Is engine efficiency taken into account if emissions are measured on a fuel usage basis?

Mr Hanlon: We believe that the older aircraft that pollute more, and generate more noise, tend to come from states that operate into Europe from outside Europe. We do not see them being covered by any stretch by this scheme, on a voluntary or an extended basis, over many years. So in terms of the effect on the environment overall, we are focusing on a sector that,
in our contention, is already driven, partly out of environmental considerations but even more really by economic considerations, to have the lowest seat mile costs. The opportunity for the development of the low-cost sector in Europe arose from the pricing policies of the traditional airlines and the effect that had on curbing the ability of Europeans to travel. The European Union created an aspiration that was there but latent, and it gave every expectation that people could now move and work (within the EU) and travel backwards and forwards to and from wherever they originated. The low fare airlines saw that that need was not being met by traditional airlines, who operated on a different model, so moved in there, and have actually created considerable new market there. You questioned whether some of our members might start off in the business with older aircraft—that is obviously a very sensible way to get into it, but you would not survive long in the low fares sector in particular if your seat mile costs were not the most competitive, because that is the big advantage that you bring to the market, controlling your costs. All these things that 20 years ago would have been considered virtues but now are almost considered vices because they are having the effect of stimulating incremental traffic, by mastering costs, making it possible to apply low fares and giving people the opportunity to travel as they very rarely have before. We see this regulation moving in on the sector that is probably cleanest in that regard and leaving outside its scope of application a lot of the aircraft that will continue to pollute European skies and could by no stretch, from what we have heard today, be brought realistically within the scope of this regulation.

Q125 Baroness Eccles of Moulton: You have touched on the point of non-EU airlines only being able to join the emissions scheme voluntarily. What occurred to me is that within the emissions scheme that already exists, which covers 12,000 industries, there will surely be quite a lot of companies that are part of the scheme that is operating at the minute that will be wholly owned by overseas businesses. Therefore, surely, any non-European airline that is operating entirely within Europe an intra-Europe service would automatically fall within the emissions trading scheme? The fact that it is owned by somebody in the United States or Malaysia would not make any difference at all.

Mr Hanlon: I understand the thrust of the question, my Lady. I think the difference is probably that such operations on an airline level would not be discrete operations, and I would have difficulty envisaging under which state the allocations to such airlines based outside the European Union would be made. So what would be their allocation on whatever methodology is adopted? Having cracked that, what compliance mechanisms would be available to monitor that they were complying in the same way that European Member States’ airlines were? If they refused to comply, I think it not impossible that some of them would say that this is a constraint that does not offer an offset benefit to them. I have seen nothing in the papers that we have read so far—and we are learning with each paper that we are receiving from the Commission—that gives me confidence that a mechanism could be developed that would arrive at a realistic way of assigning a European carbon emission allocation to an airline, only part of whose operation was concerned within Europe. If there is something that is eluding me, I hope that we will benefit from our participation in the seminar on Monday.

Ms Skeels: If I can just add to that, of course, there are airlines outside of Europe which are state-owned and which do operate on relatively older aircraft which would be flying into Europe. Of course, it is those states who would give their voluntary agreement—or not—to become part of this scheme.

Baroness Eccles of Moulton: I think maybe we should not pursue this. I can think of several counter-arguments, but I will keep them to myself for the time being.

Chairman: They could be collected in the form of landing fees or something like that. But I agree we do not need to pursue it.

Q126 Lord Roper: Already today, and indeed in your written evidence, you suggested that those airlines which are also operating long-haul flights would be able to cross-subsidise this and absorb the costs from other parts of their operation, but, for example, take an airline which is operating across the Atlantic in a competitive form with American airlines which would not be paying this at all. How would they be able to upload their fares across the Atlantic, where they were not incurring these costs, if their American competitors were not having the same pressures put upon them? I do not really see how they are going to be able to make these cross-subsidies that you suggest.

Ms Skeels: The point is, my Lord, that they have the scope to be able to do this. There can be agreements on fares. If you are looking at intra-European travel, there actually is no scope whatsoever for our airlines.

It is from that point of view that we are making that point.

Mr Callaghan: The point is that the competition on transatlantic—and is not just transatlantic; it is long-haul in general—certainly is not as fierce as intra-European competition. There is scope, and we would say that the example of fuel surcharges is an example existing today where it is possible for the likes of British Airways to simply increase their fares—obviously there is a limit to that, but they do have the
ability to cross-subsidise which intra-European airlines do not.

Q127 Lord Roper: Perhaps I can just follow up on that point about fuel surcharges, because you suggest, again in your written evidence, that the prevalence of fuel surcharges suggests that ETS costs would be passed on to customers. Does this imply that airlines themselves will not lose out to any substantial degree if they can pass on these costs to their passengers?

Mr Callaghan: There is always the issue of whether airlines can pass on certain costs to their consumers. Again, I think the ability to pass on costs is more limited in Europe because of the nature of competition within Europe. The low fares sector is particularly sensitive to this because our success has been dependent on our ability to grow traffic. In order to continue to grow traffic and to bring benefits to new accession countries, etc, we have to continue to be able to improve efficiencies, lower costs and offer lower fares. If we are forced to absorb the costs of ETS—and quite frankly, I do not have any clue how much ETS is going to cost; and I do not think the Commission has any clue, given its comments this morning, how much it is going to cost—there is going to be an issue of to what extent airlines are going to be able to pass those costs on to consumers.

Currently, with the fuel surcharges, again, British Airways has found that there is a certain limit to which you can pass those costs on to consumers, and they have reached that limit within Europe. So it is a very good question, and it is something that, frankly, the Commission should have looked into before coming out with these proposals.

Ms Skeels: Of course, we are only looking at aviation here, and intra-European air travel is in competition with other modes of transport as well. So it is a case of what the market will bear, and it does not matter where those costs come from, whether they come from trading, whether they come from the airline passenger duty, wherever they come from, there is a limit, and if our airlines exceed those limits, will lose the passengers and they will lose revenue.

Mr Hanlon: If I could add one rider: the profitability of the established airlines comes from their long-haul network, where they incur costs once and have a much higher fare to spread one-off costs over. They have a dependence, as aircraft size gets bigger, on having feed from a number of different points to generate 300–400 passenger loads at a stroke and as frequency of such aircraft mounts. So they will always operate within Europe, not primarily to satisfy intra-European demand, but to tap other markets to actually generate overall loadings on these ever-bigger aircraft. I do not see them, even if the costs of those European operations for them became greater, withdrawing from Europe. I think that they would make more of an effort to opt to reduce the profitability of the long-haul network to keep that valuable feed alive.

Chairman: Can we move on, although we have just heard from Mr Callaghan that he finds it very difficult to make an assessment of costs.

Q128 Lord Walpole: Could we try to see what the additional costs, if any, of airline tickets for intra-EU flights would be if the ETS system were introduced. What price per tonne of carbon would you assume initially? Would there be a differential impact on low cost airlines and their routes? You will have heard the Commission’s views on this. Do you agree with what was said earlier or do you disagree with the figures that were given? What do you think the percentage increase in annual costs to the aviation industry would be, based upon the ETS costs?

Ms Skeels: My Lord, it has been very difficult for us to come up with costs at this stage, because there are too many issues yet to be determined. I am in fear of quoting from the CE Delft report, as did BATA yesterday, for fear of you assuming that I agree with that report, which I do not necessarily. I am not saying I do and I am not saying I do not. As we heard earlier, it is very difficult even for the Commission at this stage to say what the cost is. That having been said, we do believe that, with aviation entering into the market for units, that will actually push the price up on the market quite considerably, and I think that is a real issue that somehow needs to be built into the formulations on price.

Mr Hanlon: In the fabled Delft report there is a suggestion, which is not a conclusion, that the advent of aviation emissions into the trading scheme may not result in an overall increase in the number of allowances, but that the aviation allowances may have to come out of the hide of the overall carbon allocation. That for me would completely discount the reliability of the projections that have been made in that impact assessment of the price of carbon, because we have heard from even the Commission as a witness that growth will continue unaffected, so we are now going to have the aviation sector and that continued growth putting pressure on those carbon allowance values in the future, in a way that is not present in the market now, and I suspect that the figures we heard quoted are based on what they see happening in the first year and today. So it is a very big unknown but one that I do not think has been taken nearly enough account of in the considerations that we were hearing this morning.

Q129 Lord Roper: You have, again, heard what the Commission had to say about the proportion of CO₂ emissions from aviation originating or ending in the EU would be excluded if only the intra-EU flights were included. They took the figure of 30 per cent and
70 per cent. Is your assessment about the same or do you have a different assessment?

Ms Skeels: My Lord, I believe everyone is quoting from the same documents. We have not actually come up with our own views on this. The only thing that I would say is, obviously, as was pointed out earlier, as new states come into Europe, there will be a need for increased traffic between those. Tourism is highly influenced by price, and we heard that from BATA yesterday. The real way to actually integrate a state into the European Union is through air travel. That is going to change the balance of things over time, and what I am saying is that will also change the impact that there will be on European airlines operating only within the European Union. It is not actually part of that question but it leads back into it.

Q130 Lord Roper: If I can just pursue it, as one has seen, some of the low cost airlines have opened up rather rapidly to the new members of the European Union over the last 18 months, and therefore that would suggest again that you were probably replacing with more modern aircraft on those journeys the older aircraft which had previously been run by the state-owned airlines from those countries, so there has presumably been some reduction per passenger in the emissions as a result of your activities.

Mr Callaghan: That is an excellent point. The problem is that has not happened. What has happened is that those more inefficient state airlines continue to operate on those lines. The example of Alitalia is particularly poignant: the Commission has now approved a further €3.2 billion in state aid to keep that airline alive. A huge benefit to emissions would be for the Commission to impose the strictly state aid rules on these airlines. Let them go out of business, because there is enough efficient capacity in the market to replace those services. Unfortunately, we have not seen that happening to date and until we do, we will continue to see inefficient airlines continuing to operate within Europe. There are also other areas where huge efficiencies could be wrung out of the system, and one has to question if the Commission is saying that intra-EU traffic is only 30 per cent of the problem, why these other areas are not being targeted. Inefficient airlines should be forced to exit the market through enforcement of the state aid rules, plus improvements in the efficiency of air traffic control services. I think the figure being used by the Commission is 12 per cent potential benefit if air traffic control inefficiencies are addressed. The Commission has not fully looked at other alternatives to an emissions trading scheme, and what that scheme will bring in terms of actual reduction in emissions levels. The key is that traffic growth into Eastern Europe and other Member States is going to be seriously undermined if the Commission gets its estimates on costs wrong. Clearly, that is the key issue: what is it going to cost the industry? You have an industry that currently only accounts for 3 per cent of emissions worldwide but accounts for 8 per cent of economic activities. There is a huge risk that, if the Commission gets this wrong, it will have a dramatic impact on economic development in Europe.

Chairman: Thank you. We will move on to that whole question of technology.

Q131 Lord St John of Bletso: I entirely agree with your introductory comments that aviation carbon emissions is a global issue. We heard from Mr Gammeltoft that his Unit’s predictions were that there would possibly be a reduction through ETS from 17 per cent to around 15 per cent. Do you agree with his Unit’s forecast that there will be a reduction in demand for air travel from 17 to 15 per cent, or will the impact from the emissions be through the response of airlines increasing costs of carbon emissions? Mr Callaghan, you spoke of Ryanair and your new fleet taking the initiative to reduce carbon emissions, which would have an impact of between 15 and 20 per cent on design alterations. My questions really are: what are the most likely ways in which aviation will reduce the growth in carbon emissions if and when the cost of emissions increases over time, over what time-scale can the aviation industry achieve a significant reduction in carbon emissions and, finally, from your evidence so far I can only presume that these proposed changes will have a major detrimental effect on your particular industry.

Mr Callaghan: In terms of the question of technological development, again, our experience is that we have reached the peak of what an airline can do based on the current technology. There is obviously a relatively significant lead time, in terms of the next development. It was interesting to hear Mr Gammeltoft’s comments in terms of what the Commission’s thinking is in terms of how they see this issue developing over the next year or over the next number of years. Clearly, there is room for existing airlines to update their fleets, to benefit from existing technology, and there is obviously a significant cost involved in that. For example, if Alitalia were to have to completely upgrade their fleet, they would probably need to take another €3.2 billion in state aid from the Italian government. I believe that we have reached the current outer limits of technology, so it is difficult to know where the improvements are going to come from. What is going to happen then is that growth airlines like Ryanair and the other low cost airlines are going to be forced each year to purchase more emissions quotas, because we are growing at an average of 25 per cent per year. This relates back to Baroness Eccles’s earlier point on older aircraft. If you have a system...
of, let us say, grandfather rights, where the likes of Alitalia are basically given their quota of emissions based on their current level of traffic. They are not growing in Europe, so they will quite happily sit back and say, “We don’t need to invest in any technology because we have no intention of growing in Europe,” whereas if Ryanair were to be given a quota based on our existing levels of traffic, we would be put at a huge disadvantage because each year we would then need to go back to the market and buy another 25 per cent, which would be hugely costly and would mean that we would not be growing very much in Europe.

Q132 Lord St John of Bletso: You have answered the question in part. The forecast Mr Gammeltoft gave us was that there was potential through the ETS of a reduction in growth from a forecast 17 per cent to 15 per cent. Would you agree with that?

Mr Callaghan: I would certainly disagree with that number, and again, the difficulty is that the Commission has no clue what this is going to cost the industry, and if you do not know what it is going to cost the industry, there is no way of determining how it is going to impact on growth. To give you an example, certainly in our sector, the price would be highly elastic in terms of demand, so if you increased our costs by one euro, the demand for the service is going to decrease by at least the same percentage. There has been no discussion between the Commission and industry in terms of the impact this is going to have on the low fares sector, because obviously our prices are more elastic than the likes of British Airways and particularly their long-haul traffic, where, if you increase the price by €20 with another fuel surcharge, it has almost no impact on their passenger numbers. So I certainly would not agree that, based on their initial costings, this will only have a possible effect of a 2 per cent decrease in traffic numbers. In any event, we should be alarmed that the Commission is talking about even a 2 per cent decrease in growth, because that has a huge knock-on effect on European industry as a whole.

Q133 Lord St John of Bletso: In terms of time-scale though, you are talking about your new fleet having a 15–20 per cent reduction in emissions. My final two questions really were: over what time-scale do you think the aviation industry can achieve a significant reduction in carbon emissions, not just, obviously, from design features but also from the ETS?

Mr Callaghan: I think it really depends on the willingness of airlines to actually invest in existing technology, and the other issue, that is completely outside of this discussion apparently, is the other area where there is huge inefficiency in the system, which is air traffic control. If the Commission seriously tackled the issue—obviously, there are issues with national unions, which tend to slow things down—there is a potential 12 per cent reduction in terms of less fuel being burned, and also less emissions.

Q134 Chairman: Can I just ask one final question? You have been very critical of the way that the Commission has carried out its impact assessments and consulted with stakeholders. Would you like to say how they could do it better?

Ms Skeels: They can talk to us. That would be a start.

Mr Hanlon: They could include us in the working group.

Ms Skeels: The Commission made it perfectly clear that at the end of the day, it is their impact assessment, but it is the whole issue and anything that comes out of the European Commission will impact on Europe. It is an impact on Europe, and as far as aviation is concerned, we are very much a part of that because we have given Europe in general such a lot. The thing is actually to talk to the industry more, to include industry in the decision-making, which I hope is going to happen after the seminar that we are going to on Monday.

Mr Hanlon: I think the Commission, in our contention, over-estimates the degree of equity about administrations of such schemes within individual Member States. There are interests in play there which are very clear. Some Member States operate extensive domestic networks, which I am sure would be protected in the allocations system one way or the other. They include Germany, Italy, France. They do not include the UK. So if you accept our fear that intra-European traffic in particular is going to be the guinea pig here, and if you accept our further claim that the low fares airlines are the biggest element at risk there, the low fares airlines segment is largely headquartered in the UK, so UK plc is an enormous stakeholder here, and here we have a European initiative that we believe impacts Europe and intra-European travel, and within that, UK interests in particular. The UK is better at playing an even-handed approach to allocations and distributions of those things than we see mirrored in some of the Member States, with whose airlines we compete.

Q135 Chairman: Thank you very much. You have put the case for the low cost, no frills airlines extremely well. Thank you very much for that. You have had the benefit of not only ourselves but Mr Gammeltoft from the Commission. Can I just make one comment on your written evidence? You say that you welcome the Commission’s initiative to consult with the industry. We are not actually the UK Government.

Ms Skeels: I think you will be seeing far more of us in the future.

Mr Lockley: Certainly, yes.

Chairman: Thank you very much indeed.
Thank you for the opportunity to present our views on the merits of including aviation in the European Emissions Trading Scheme (ETS). Aviation is the fastest growing source of greenhouse gas emissions and we believe it is vital that effective mitigation measures are developed and introduced as a matter of urgency.

The Aviation Environment Federation is the principal UK environmental NGO focusing exclusively on the environmental impacts of aviation. We are represented on the International Civil Aviation Organisation’s (ICAO’s) Committee on Aviation Environmental Protection (CAEP). We have seats on the major environmental committees of European and national regulatory bodies, and provide expert advice on aviation issues to our membership (which comprises the local community and amenity organisations around the UK’s airports and airfields).

We answer each question from the Call for Evidence in turn, with the exception of questions 2 and 4, which we consider more appropriate to answer together.

Has the emissions trading scheme worked well so far, and does the current system provide a solid foundation for expansion to include other sectors of industry?

Phase I of the EU ETS has been something of a pilot. It has succeeded in establishing a price for carbon, and has given a good indication of the feasibility of emissions trading. However, it has not been particularly robust in terms of driving emissions reductions. Its chief value is the lessons that can be learnt about how to do things better in Phase II. A number of these lessons apply to the inclusion of further sectors, such as aviation, for instance:

— A cap should be set at the EU level, in order to avoid the “race to the bottom” seen with Phase I National Allocation Plans (the over-generous allocations caused by Member States’ anxieties over competitiveness); and
— “Grandfathering” permits can encourage dirtier industries to delay efficiency improvements until they can realise a windfall profit from them.

Most stakeholders envisage a “linked” scheme for aviation, which will allow the sector to trade with the existing scheme. Aviation is likely to be a net buyer of allowances, since marginal abatement costs are relatively high in the aviation sector compared to others: recent research (CE Delft 2005 p.156) suggests that aviation might buy around 1 per cent of the allowances on the ETS market in 2008. This would lead to a moderate increase in demand, and should be regarded as a welcome tightening of the existing ETS. It cannot be considered likely to cause a significant increase in prices and we therefore see the existing scheme as sufficiently solid to incorporate a linked aviation scheme.

Why include the aviation sector, and what are the possible costs and benefits to the industry of joining the ETS? What are the costs and benefits to consumers and the environment?

Per passenger km, flying is the most polluting mode of travel (INFRAS, 2004). The aviation sector is growing at around 5 per cent per annum, well above the 1–2 per cent per annum efficiency improvements across the global fleet through operational and technological measures. It is important to realise that there is no technology breakthrough on the horizon that will significantly improve this trend in the short to medium-term, leading many commentators to advocate demand management measures. To put the problem in perspective, recent research by the Tyndall Centre (2005) demonstrates that if unchecked, aviation will account for the EU’s entire carbon budget by 2045 if it aims to stabilise carbon emissions at 450 ppm.
It is therefore a matter of urgency to find measures that will control the growth in emissions. To maximise effectiveness, such measures should ideally be introduced at the global level. However, it is extremely unlikely that global measures will be forthcoming before 2012 at the earliest. International aviation emissions are excluded from national commitments made under Kyoto: Article 2.2 of the Kyoto Protocol requests developed countries to pursue the limitation or reduction of emissions from international aviation working through ICAO. Since 1998, ICAO has responded by setting up a working group to look at market-based measures, including emissions trading and charges. Its current work programme is looking at developing guidance for states who wish to introduce either charges or trading, and has a focus on voluntary industry participation in a trading scheme. No global instrument is proposed, and the emphasis on action by states is only likely to be taken up by European countries. In this context, the European Commission has been exploring the role for market-based instruments and has recently published its consultant’s report on how aviation might be included in the EU ETS to complement earlier studies on the potential application of en route emissions charges and taxes. We look forward to the publication of the Commission’s Communication on aviation and climate change later this month.

In theory, trading is an efficient instrument, as it focuses on emissions and allows reductions to be made at least cost. However, it is unlikely to generate significant emission reductions in the aviation sector itself, with most airlines electing to purchase the permits they require to operate and expand from the market. Even in the more stringent scenarios analysed by CE Delft, ticket price increases are relatively modest, and few demand or supply side responses will be seen in the short to medium-term. Consumers will bear a modest increase in price. Given that those flying are mostly of higher socio-economic status (almost four-fifths of UK passengers are ABC1) this will not be excessively burdensome.

As discussed above, the benefit to the environment will depend on the robustness or otherwise of the scheme. One extremely important point to note is that CO₂ accounts for only 25–50 per cent of the climate-change damage of aviation. NOx (Nitrogen Oxides) emitted at altitude and contrails contribute to an overall positive radiative forcing that is 2 to 4 times that of the sector’s CO₂ emissions alone. A scheme tackling CO₂ alone will therefore be inadequate. One option is to use a “multiplier”, counting each tonne of CO₂ as two, for instance, and this may be an attractive short-term option. It might, however, lead to an increase in other pollutants, as there are technological trade-offs involved in reducing CO₂ and NOx simultaneously. The best option is a suite of flanking instruments, which are discussed later in this response.

There will be a severe environmental disbenefit if a weak, least-cost emissions trading scheme is promoted by industry and governments as a full solution to the problem of aviation and climate change. We would recommend setting a target for the aviation sector that is stringent and reflects European climate change objectives of making an 8 per cent reduction in CO₂ emissions below 1990 levels by 2012. However, we are aware that arguments have been advanced to “ease” the industry into a trading regime to make it more politically attractive. Whilst there would be scope to increase the stringency at a later date, we believe this approach would be a mistake. As previously mentioned, the industry is forecasting rapid growth and a weak target or allowance can only delay the need for the industry to make a full contribution to Europe’s climate change objectives.

The issue of a cap requires urgent high level discussion if the Commission is going to progress the ETS concept for aviation. While many stakeholders, including industry, have offered their support for aviation’s inclusion in an ETS, few have publicly stated their preference for a sectoral cap/volume of permits to be allocated. Until this happens we believe it is difficult to assess the environmental integrity of this approach.

What are the possible impacts of the inclusion on the international competitiveness of the EU aviation industry (and its competitive position in relation to other transport modes)?

We would like to see the coverage of any scheme applied to all operators on relevant routes, including those from third-country carriers. This would minimise economic distortion and maximise environmental benefit. If this is the case, the EU aviation industry will be at no disadvantage on routes where it competes with third-country airlines (although only 2 per cent of flights in the EU are operated currently by third-country carriers).

Furthermore, “routes” themselves do not compete with each other in the same way that “goods” do, as they are subject to very limited relocation. A flight from London to Madrid cannot be priced out of the market by a flight from Beijing to Singapore. Therefore the problem of a non-level playing field, and the associated environmental problem of “carbon leakage”, where goods are produced elsewhere with no net reduction in emissions, is greatly diminished.
To a certain extent a flight from London-Madrid competes with a flight from London-Beijing (as a choice of holiday destination, say). To minimise any distortion, we recommend that a scheme covers emissions from all departing flights from the EU, not simply intra-EU flights. As well as the competitive argument, this approach will also bring significantly more emissions within the coverage of a scheme, improving its overall effectiveness.

There is potential for distortion between established carriers and market entrants if allocations are “grandfathered”, ie based on historical emissions, as with the existing ETS. For maximum economic efficiency, allocations should be auctioned, allowing the market to find the true price and conforming to the principle that the polluter should pay.

Finally, on inter-modal competitiveness, let us be clear: any scheme that is environmentally robust will alter the competitive balance towards less-polluting modes of transport. This is an objective. Short-haul flights are proportionally more polluting than long-haul and will therefore be proportionally more affected—and these are the very flights that could be switched to rail, which generates as little as one third of the emissions and has less than half the unpaid externalities of air transport. Currently 18 of the busiest 20 air routes in Europe are under 600 km, a distance where high-speed rail can compete on time and should compete on price.

At what point in the development of the EU ETS would it be feasible to incorporate the aviation sector?

It is technically, legally and economically feasible to link aviation to the EU ETS. We believe that if the Commission brings forward a proposal in 2006, the sector could be included from the start of phase 2 in 2008. Any further delay is largely political.

What other economic or regulatory mechanisms exist to encourage reductions in CO₂ emissions from the aviation sector, and how effective might they be compared to emissions trading?

We believe it is vital that consideration is given to the role of other economic or regulatory mechanisms. Notwithstanding our comments above concerning the EU ETS, aviation’s inclusion cannot be guaranteed, nor indeed, can we be certain whether it will be environmentally effective (ahead of seeing the Commission’s proposal and Member States’ preferences for the design of the scheme). At present, only a handful of EU Member States have expressed outright support for including aviation in the EU ETS. It is also likely that any scheme will be based, at least initially, on aviation’s CO₂ emissions only. As previously mentioned, we would like to see European policy tackling the sector’s total climatic impact. Other economic and regulatory instruments therefore have an important role to play as alternatives to an EU ETS, in parallel with the ETS (for example, for the purpose of fully internalising the external costs of aircraft greenhouse gas emissions) or as flanking instruments to control the sector’s non-CO₂ impacts on our climate. Potential measures are set out below:

Fuel Tax—currently kerosene is exempt from tax on international flights (although several countries tax domestic flights, most notably in the US). The Chicago Convention exempts fuel already on board an aircraft from tax, but the many bilateral air service agreements in force extend this to a general exemption. We believe it is desirable to end this anomalous and distorting exemption and support the Commission in its attempts to remove exemption clauses in its renegotiation of bilateral agreements on behalf of EU states, but acknowledge that this is unlikely to be completed in the short-term. Nevertheless, we would remind EU states that the Energy Products Directive permits states to enter into bilateral taxing arrangements if they so wish. There is nothing to stop the UK imposing a tax on the fuel used for domestic aviation and we recommend that this is done immediately. Most journeys within the UK could be switched to rail and there is no issue of international competitiveness. Recently, France and Germany recommended taxing fuel or tickets for international flights, albeit for the purpose of funding international development, implying some political support amongst EU Member States for this approach.

Other taxes—European measures require political agreement that cannot be guaranteed. Although crude in comparison to measures that directly target consumption or emissions, national taxes aimed at the passenger can and should be applied as interim measures, including VAT on tickets for domestic flights (aviation pays no VAT on tickets, the purchase of new aircraft, or the fuel consumed,
and while most EU countries levy VAT on domestic flights, the UK does not), and amending Air Passenger Duty to reflect environmental performance.

**Emission charges**—En-route charges are a feasible alternative or complimentary measure to the EU ETS. En route charges are based on either the damage or mitigation cost of an aircraft’s emissions (eg CO₂ or NOx) emitted on any given route. While they can be revenue-neutral, we would recommend that they are revenue raising (up to, but not exceeding the full damage cost) to contribute to a fund that is used to deliver additional environmental improvements. In a global context, charges are politically controversial and Europe fought hard at ICAO’s 2004 Assembly to retain the flexibility to use them as appropriate. ICAO is currently looking at a range of legal issues surrounding the use of emission charges, and we believe it is important for the EU to continue to maintain its tough stance.

All the above economic instruments will generate supply and demand side responses proportional to the increase in cost, driving a reduction of emissions within the sector. However, the elasticity of demand for aviation is very uncertain. The modelling carried out for the Aviation White Paper in 2003 assumed a price elasticity of \(-1\), ie a 1 per cent price increase led to a 1 per cent reduction in demand. Other studies have used figures of \(-1.4\) or \(-0.7\), with demand for premium class seats assumed to be much less elastic. The likely impacts of a tax and charge in Europe have been assessed in studies for the Commission by Resource Analysis (1999) and CE Delft(2002) respectively.

### Examination of Witness

**Witness:** Mr Peter Lockley, Head of Policy Development, Aviation Environment Federation, examined.

**Q137 Chairman:** Good afternoon, Mr Lockley. Thank you very much indeed to you and your Federation for submitting written evidence and for being with us this afternoon. It is greatly appreciated by the Committee. We know you always respond to tight timetables, and we are grateful to you. We have obviously read your written evidence with care, and we have some questions following on from that. Would you mind if we go straight into questions and at the end, if we have missed anything you feel we opposed to aviation joining the European emissions trading system?—it that agreeable to you?

**Mr Lockley:** Certainly, yes.

**Q138 Chairman:** When you take away all your reservations—and we will be dealing with many of those matters later on—despite your reservations, given that the EU is committed to reducing the overall level of carbon emissions over time, do you think that this is probably the best way to do the work at the moment, if one is going to get a comprehensive carbon emissions trading system?

**Mr Lockley:** Looking 10–20 years down the line, we would certainly agree that an emissions trading scheme that covers all sources of greenhouse gases, that is capped overall in line with the EU’s agreed stabilisation targets and that has limited scope for cheap carbon credits through clean development mechanisms and joint implementation would be a thorough and effective way of dealing with the EU’s emissions problem. Unfortunately, at the moment that is a very distant possibility, and so we feel that, whilst working towards that goal, it is important also to keep other more short-term measures in mind.

**Q139 Chairman:** You sound like a politician.

**Mr Lockley:** I will take that as a compliment.

**Q140 Chairman:** It is, in this venue. Are you opposed to aviation joining the European emissions trading system?

**Mr Lockley:** Not at all, although, as you mentioned at the start, we have certain conditions and reservations.

**Q141 Lord Fearn:** You say in your written evidence that an EU-wide cap should be put on aviation emissions of CO₂ if it joins the ETS. You recommend setting a target for aviation that is stringent and not one that is weak. What do you mean by a “weak” target and by a “stringent” target?

**Mr Lockley:** The EU is committed to an 8 per cent reduction below 1990 levels across the period 2008–12. We see no reason why aviation should not be included in a framework that would help the EU to achieve that. That is not saying that aviation per se would have to make those reductions, but we would like to see a framework drawn up whereby the burden of making that reduction could be shared and aviation play its part. That is what we mean by a stringent target, and anything less would be a weak target.
Q142 Lord Fearn: How should that cap be determined and how should the overall cap on emissions be distributed to individual airlines?

Mr Lockley: I think we have seen in our experience with the first phase of the existing EU emissions trading scheme that applying the principle of subsidiarity and allowing national governments to set the cap has had problems. I think all stakeholders in the aviation sector agree that it should be set centrally at EU level. I have just described the level at which we would like to see it set, in line with reduction targets. As to distribution, we would like to see those permits auctioned to the industry. That would be in line with the “polluter pays” principle, and it would also generate a double dividend, because you would have a pot of revenue that could be used for environmental mitigation or research into cleaner aircraft or the associated climate science, for instance. So we feel that auctioning the permits would be both the most economically efficient way of distributing them and the fairest and the most environmentally robust.

Q143 Lord Fearn: Would you wish to see the overall cap for aviation included within an overall target level for all carbon emissions within the EU?

Mr Lockley: Absolutely.

Q144 Chairman: Could I just follow that with two things? I hear what you say, that you would like to see them auctioned. Does that have any precedent in the ETS that has been established so far with other industries?

Mr Lockley: It does not. As you know, the allocations were handed out, but we have to ask ourselves what the existing ETS has achieved and how we could do better. For the reasons I have outlined, I think auctioning would serve the environmental cause better.

Q145 Chairman: But the ETS has only been in operation since January of this year. Are you saying that you have already formed the view that ETS is failing as a mechanism?

Mr Lockley: I would not say the mechanism has failed but I think the parameters that have been set for the first phase, which we described in our written evidence as very much a pilot, will not result in a large net reduction in the EU’s emissions.

Q146 Chairman: So as a Federation, your position is that the initial allocations should be auctioned; there is no evidence that auction has been acceptable to industry so far, and you have no fallback position at all. If I may say, you have put forward an ideal proposition but you have no view and the evidence so far is that that will not be accepted.

Mr Lockley: It comes as no surprise to me that the industry would prefer to have the allocations handed out free of charge, but we see it as very much our role to propose an ideal ETS. Auctioning does not have to be an all or nothing. Fifty per cent of the credits could be auctioned, 20 per cent of them could be auctioned. We would like as an initial position to see all of them auctioned, and that can come in as part of the horse-trading.

Q147 Chairman: I am not entirely sure what you mean by “weak” and “stringent”. You said weak would be if aviation was not included and stringent would be if they are? You made quite a bit in your evidence that it should be a stringent target. What is a stringent target? What do you mean in principle by it?

Mr Lockley: We have to ask ourselves what we are trying to achieve by an emissions trading scheme, and if we go at it from the point of view that we simply want to set one up, then the question of a target is very much a side-issue. But as an environmental organisation, we would like to see the emissions designed with a particular end in mind and that end is a given amount of emission reductions, which has been set at EU level, and which we would like to see allocated amongst the sectors, aviation included. So a stringent target would be one that is in line with that.

Q148 Chairman: Because the detail is important in this issue, and these are all yet to be resolved, do you mean by “stringent” that aviation should be allowed to emit more relative to other industries, or do you mean by “stringent” that aviation would have to fit into the existing overall cap that has been set for all industries, in other words, the cap for all industries should not be raised to permit the entry of aviation?

Mr Lockley: No, I am sorry if I gave that impression. That is not what I intended. We accept that a certain extra amount of allocations will be granted to the aviation industry. That said, we would like the overall framework for the EU’s emissions reductions to take that into account. Mitigation for the aviation sector is going to be more expensive than it is for the other sectors, so there is a case—and I am sure you will hear it put more forcefully this afternoon—that aviation should be allowed to emit more relative to the other sectors. That said, the overall framework should take into account the reductions that we need to avoid dangerous climate change.

Q149 Lord Haskel: You say in your report that you do not support grandfathering, and you have just told us you prefer auctioning. What is your objection to allocating on a benchmarking basis?

Mr Lockley: Benchmarking we regard as certainly better than grandfathering. Grandfathering rewards dirtier industries which delay before making improvements. Benchmarking is still incompatible with the “polluter pays” principle because allocations are distributed free of charge, and it does not
generate the double dividend effect that I mentioned earlier.

Q150 Lord Roper: They are issued free of charge initially, but not necessarily throughout the whole period of the operation. Are you suggesting they are issued free of charge, but not necessarily for all time? Mr Lockley: No. I am suggesting they are auctioned from the beginning.

Q151 Lord Roper: No, but if they were benchmarked? Mr Lockley: Yes. If they are to be allocated free of charge, we would prefer that they were benchmarked.

Q152 Lord Haskel: You could have a benchmarking system presumably where people pay as well. Mr Lockley: I do not think that is what the industry means by benchmarking. They mean a level fixed according to industry best practice, and then permits allocated free of charge from there; and while we would support determining the levels by benchmarking rather than grandfathering, we would not support giving out the credits free of charge.

Lord Haskel: In your opening statement you referred to "other short-term measures". Could you tell us what they are?

Chairman: Lord Haskel, to avoid duplication, I am happy for you to ask that question at the end, but I think you may find you will have the opportunity of obtaining answers to that beforehand. If you do not, I promise we will take that as the last question.

Q153 Baroness Eccles of Moulton: Good afternoon. Do you agree that the inclusion of aviation in the ETS—and I imagine by whatever means, whether it is auction, benchmarking, grandfathering—will not actually result in an absolute reduction in CO2 emissions from aviation but will result in a lower rate of growth in such emissions?

Mr Lockley: At best, some slowing of growth will be achieved, and that is what we are aiming for, but at the ticket prices identified in the consultants' report, Giving Wings to Emission Trading, the report by CE Delft, we are very doubtful that any reduction in the demand side for air travel or from the supply side responses to efforts to reduce emissions in the air transport industry?

Mr Lockley: Levels of emissions are very closely linked to levels of fuel burn, and historically, the industry have done everything they can to reduce the level of fuel burn, naturally, because that cuts their costs and, in an age of high oil prices, we will continue to see that happening. An emissions trading scheme may enhance that effect to some extent, but it is important to realise that all the technological and operational measures that the industry is promising only achieve an improvement in fuel efficiency of
around 1 to 2 per cent per year. That is fuel burn per passenger kilometre. In the meantime, passenger numbers are growing at 3 to 4 per cent per year and passenger kilometres are growing even faster than that, so in the long-term it is going to be necessary to manage demand in order to close that gap.

**Q161 Lord Roper:** What do you think the shape of the demand curve is? Do you think it is relatively inelastic or do you think that the increase in fares which might result from emissions might lead to a significant reduction in demand?

**Mr Lockley:** The model operated by the Department for Transport to predict passenger numbers works on price elasticity of one: 1 per cent price rise, 1 per cent decrease. In the run-up to the White Paper the NGOs asked the Government to re-run the model for predicting passenger growth with the parameters that we would like to see imposed on the industry, which are VAT and fuel duty paid at the rate applicable to motor cars. That might seem like an enormous price shock, but if it is introduced gradually up to 2030, it only represents a 1 per cent price rise per year, which exactly offsets the 1 per cent price fall in real terms that the DoT envisage under a business-as-usual scenario. When they re-run that model with those parameters, they found that passenger numbers did continue to grow, what we would term sustainable growth, up to 320 million passengers—this is just for the UK now—in 2030 as opposed to a business-as-usual scenario of 500 million passengers, and, just for reference, there were 217 million passengers in the UK last year. So yes, we do believe a given level of price rise would result in a desirable reduction in the growth of passenger numbers and emissions.

**Q162 Lord Roper:** How do you expect the aviation industry to respond to a rising price of carbon?

**Mr Lockley:** If I can be frank, rather like I often go about buying my Christmas presents; which is to do nothing for most of the year, and then, at the last minute, run down to the shops and comply with my obligations at the least cost possible. In the case of the aviation industry, this is going to mean a shopping spree at the clean development mechanism (CDM) supermarket, because it seems fairly clear that, whatever the price of carbon on the market, the price of a CDM credit will be a great deal lower, and that is one major concern that we have with the emissions trading scheme as envisaged. It has this cheap get-out clause which will mean that emissions are not reduced in the EU as a whole.

**Q163 Lord Haskel:** Is the increased price of fuel then a greater incentive to improving the efficiency of the aircraft than the emissions trading scheme?

**Mr Lockley:** Again, that depends on the design parameters of the emissions trading scheme, but the block on improvement in fuel efficiency is the possibility of technology. Given that we have reached a situation with aircraft design whereby it is difficult to make an improvement in fuel efficiency without worsening performance on other pollutants, such as NOx, and worsening the noise performance of the aircraft—and I am not an expert on the design—it does seem that we have reached the point where there are significant trade-offs.

**Q164 Chairman:** So you would accept the argument that fuel use is a good proxy for carbon emissions?

**Mr Lockley:** Yes.

**Q165 Chairman:** Therefore, there is no danger that some aircraft might use the same amount of fuel as others but in fact emit more emissions? That is not broadly the case. Fuel use is a good proxy for carbon emissions.

**Mr Lockley:** We have a slight concern over levels of nitrogen oxides in that if an emissions trading scheme is going to be implemented that uses a multiplier to take account of the non-CO2 effects of aviation, one of which is the effects of NOx emitted at altitude, then the supply side response will be to optimise aircraft for fuel burn and let the NOx question go by the board, and that will have a sub-optimal effect, although there are already airport charges at certain airports for NOx, so that effect would be mitigated somewhat.

**Q166 Lord St John of Bletso:** Mr Lockley, a lot of your evidence so far hinges around cost and a certain cynicism about the extent to which there is going to be a reduction in carbon emissions. In your evidence, you say that “In theory trading is an efficient instrument, as it focuses on emissions and allows reductions to be made at least cost. However, it is unlikely to generate significant emissions reductions in the aviation sector itself...” Can you elaborate on the practicalities of real reduction?

**Mr Lockley:** First of all, our concerns are in the political arena. Although we would like to see action from 2008, and that is the Department for Transport’s objective, there is a real danger that nothing will happen until 2013, eight years in the future, and most predictions are that we need to turn our emissions round in the next 10-15 years. So we are worried about the speed at which any trading scheme would be set up, given that the wheels of European bureaucracy grind slowly. We are also concerned that emissions avoided in developing countries, which is the premise of a lot of clean development mechanism projects, are no real substitute. In developing countries where you do not, for instance, have a framework or a cap on emissions,
including the aviation sector in the European Union emissions trading scheme: evidence

those are emissions avoided—not reductions made, but growth avoided that otherwise might occur, “emissions foregone”. We just do not see those as of the same value as genuine reductions made within the EU. I think it is an opportunity for the EU to show international leadership by setting its own carbon emissions on a downward path, and the emissions trading scheme as currently envisaged will simply allow too much of a get-out clause.

Q167 Lord St John of Bletso: I totally agree with you. We are talking really about a pilot study here in a way, where the EU is trying to take the initiative in terms of setting a global target. Do you think, in reality, that by taking this initiative in global leadership it will result in other authorities around the world taking a similar strong line on such emissions? We are talking about 3 per cent, basically, in terms of total emissions.

Mr Lockley: I do not see that we can do anything else, first of all, and secondly, there have been encouraging signs from the existing trading scheme. For instance, I know that Canada is interested in joining the EU emissions trading scheme and that seems to be a very positive step towards a more global carbon market.

Q168 Chairman: In your initial answer to Lord St John of Bletso about “In theory trading is an efficient mechanism . . .”—this is not a challenging question at all; it is to try and understand where you came from—you continue in various parts of your evidence to appear to say you do not really trust a market trading system. Is that because somehow you think that it cannot work or really you would sooner have other instruments than that?

Mr Lockley: No. As I said at the outset, I believe, in theory, emissions trading can be the best option, but we are talking about a scheme that is radically different from anything that has been envisaged so far, a scheme that genuinely caps the number of emissions that the EU can put out rather than allowing too many cheap get-outs with CDM and so forth. My problem is not with the theory of emissions trading; it is with the practical implementation.

Q169 Chairman: Are you saying that you do not believe that the European Union and its Member States are serious about having a cap on the growth of CO2 emissions?

Mr Lockley: In the original draft for the emissions trading scheme there was a cap on the amount of CDM but it was lobbied out. There are different actors within the EU and they want different things.

Q170 Chairman: So is your position on CDM that you do not want it included at all, you do not want that to be an alternative to reducing emissions in this country, or are you saying you want it included?

Obviously, that is part of a global way of dealing with emissions. You do not want it included at all, or you want it included, but somehow you want the equivalent price of those brought up to the CO2 price?

Mr Lockley: I think the most feasible solution to begin with would be to allow a proportion of credits to be bought via CDM. That would force a given amount of reductions within the system, and it would also increase the price somewhat, which would have an effect on managing demand.

Q171 Lord Swinfen: Mr Lockley, you argue that emissions from all flights departing from the EU, not just flights entering the EU, should be included in the emissions trading scheme. Do you judge it to be a practical position for aviation to be included from the start of phase two in 2008, and if so, what evidence do you have for that?

Mr Lockley: Firstly, on the question of the legality of doing that, I would like to quote from the consultants’ report, and I have brought a copy along. “Emissions trading does not relate to the operation of aircraft. It would establish obligations relating to arrival and/or departure of aircraft within EU territory. The regulation of these conditions needs to be in compliance with international public law and EU law”, which they later demonstrate that it is. “The quantity of aircraft emissions within or outside the EU only serves as a calculation parameter for determining how many allowances the aircraft operator must surrender with the competent authorities within the EU. Consequently, coverage of international aviation by an EU emissions trading scheme would not interfere with the sovereignty of other states or have any other regulatory impact on other territories outside the EU, including the high seas.” In other words, it would in fact be legal to include all departing and all arriving flights, and in fact, we would like to revise our position slightly and state that we would like to see all departing and all arriving flights included in the emissions trading scheme. Your Lordships might be interested to know that in Brussels this morning the low cost airlines came out in favour of exactly that option. They understand that the broader a scheme is, the more non-EU carriers will be included, because intra-EU routes are operated largely by EU carriers, so the relative burden would fall less heavily on the EU carriers. But they are also concerned that the EU scheduled airlines, from whom you will hear more later this afternoon, will operate a form of cross-subsidy by flying their cleanest aircraft on the intra-EU routes, in the scenario where you have only an intra-EU scheme. The scheduled aircraft which also fly to other countries would operate their cleanest aircraft on those routes and so gain an unfair advantage over low cost carriers, who only fly those routes and do not have that option. Their position to
date has been that an intra-EU scheme is illegal but that is flatly contradicted by the consultants’ report, and I will leave your Lordships to judge why the scheduled carriers have been spreading that opinion.

Q172 Lord Swinfen: I am not a lawyer so I am not going to take up the legality, but do you think it practical?
Mr Lockley: Absolutely. That is the way in which safety and security obligations are levied at the moment and it seems to be the simplest way.

Q173 Lord Swinfen: You have been arguing around the legality of it, but do you actually have any evidence to give us?
Mr Lockley: My evidence would be exactly that, that this is how security charges are levied at the moment, and the system operates very smoothly, so I see no reason why emissions charges could not be levied in the same way.

Q174 Chairman: So your answer to the question of whether it is practical is that in your view it is legal?
Mr Lockley: It is legal and practical.

Q175 Lord Walpole: You appear in your evidence to cast doubt on whether or not air fare rises will significantly reduce the growth in demand for air travel, yet you still propose that fuel tax and VAT be levied on aviation within the UK. Is this a means of reducing CO2 emissions? What rate of tax and air fare rises do you suggest would be necessary to have any impact on the emissions?
Mr Lockley: Firstly, just to clarify, what we meant by that in our written submission was that on the price rises likely from the conditions of the emissions trading scheme—and this is going on the consultants’ report, the CE Delft report—we would be sceptical that there would be any reduction in demand for air travel, but I told the Committee earlier about the experiment we did for the White Paper, re-running the Department for Transport’s model. That is the NGOs’ position, that taxes at those levels would generate a significant reduction in the growth in demand, which is why we are surprised that the Government still continues to insist that a tax would have no effect, when its own model says otherwise.

Q176 Lord Swinfen: I think you suggested earlier that the tax should be introduced over a period of years gradually?
Mr Lockley: That is correct.

Q177 Lord Swinfen: If you want to reduce emissions, why not introduce it all at once?
Mr Lockley: Political acceptability. If I could come back to that, I think a price shock of that magnitude introduced all at once would be damaging to the industry, and we are not out to damage the industry; we are out to help them grow in a sustainable fashion, and I think introducing that over a 25-year period would be reasonable.

Q178 Lord Walpole: Yes. They are damaging the atmosphere, are they not? You have to admit that.
Mr Lockley: They certainly are.

Q179 Lord Walpole: That is basically unacceptable.
Mr Lockley: I can only agree with you.

Q180 Lord Walpole: I do not know whether you would answer a slightly more technical question: are Nitrous Oxides the result of fuel quality or the engine burn quality? I am never quite clear. Can you get rid of Nitrous Oxides by having cleaner fuel?
Mr Lockley: No, I do not think it is possible.

Q181 Lord Walpole: Is it a function of the engine?
Mr Lockley: Yes. There is nitrogen in the atmosphere and that combines to form NOx.

Q182 Lord Walpole: You cannot, of course, scrub them in the air. You can on land but you cannot in the air.
Mr Lockley: No, I do not believe so, otherwise we would have heard about it by now.

Q183 Chairman: I think I am right that your organisation is only concerned with aviation, is it not?
Mr Lockley: That is correct.

Q184 Lord St John of Bletso: In answer to my previous question you made a big play of the fact that there needs to be political support in this drive for reduction in carbon emissions. Other witnesses have told us that Government policies aimed at reducing emissions should support investment in research and development and recognise the need for continued improvements in infrastructure and air traffic management. Last week we had evidence from Ryanair, and they were saying that the design of their new fleet potentially could reduce emissions from their fleet specifically by between 15–20 per cent. Another witness said that by simply having more efficient air traffic control, this could reduce emissions by another 12 per cent. Do you agree with these figures?
Mr Lockley: Certainly, but it is important to realise firstly, that that improvement is aspirational; secondly, it is only in the best new 'planes, and it takes time for the fleet to be renewed and for those best new 'planes to become the norm throughout the fleet, so the year on year improvement is nothing like the dramatic 15 per cent. Certainly we would agree that there needs to be more research into improved logistics
Mr Lockley: The emissions trading scheme would be one way of doing fleet in the same way as other airlines, and an what I said earlier, that all these technological like to see brought in in the long-term. To deal with the route

Q186 Lord St John of Bletso: Then you have a problem with some airlines like Alitalia having a pretty old fleet and there being no particular demands on them to reduce emissions to the same extent as a more advanced, cheaper airline like Ryanair. What I suppose I am trying to get at is, of the areas where there is research and development, what do you think are going to be the most effective in reducing carbon emissions?

Mr Lockley: I have some figures here. The 1999 IPCC special report suggests that in the period up to 2050 ATM (Air Traffic Management) improvements could contribute 18 per cent gains worldwide, while technology could contribute up to 50 per cent efficiency gains. Over the same period, traffic is predicted to grow 250 per cent or more. That gives you an idea of the relative scale of the efficiency improvements as against the growth. I would agree with you that Alitalia should be forced to renew their fleet in the same way as other airlines, and an emissions trading scheme would be one way of doing that.

Q187 Lord Swinfen: Mr Lockley, you suggested that Alitalia should upgrade their fleet. Fine. What are they going to do with the aircraft? Are they not going to sell them to airlines based in countries which do not worry about the emissions trading scheme and just pass the pollution on to another part of the world? What goes up in the air in one part of the world is passed round to others.

Mr Lockley: That is correct, and the appropriate arena for dealing with that is ICAO (International Civil Aviation Organisation), which sets the international standards for aircraft, and we would certainly encourage those to be tightened at every opportunity. That said, I do not see what the EU can do about that. We would like to see a trading scheme brought in more widely but at the moment there is little appetite for that beyond Europe, and therefore we feel that Europe should take a lead.

Chairman: Are there any other questions? I suspect your question, Lord Haskel, has probably been answered but, by all means, ask the question.

Q188 Lord Haskel: I would just like to come back to the point that you made at the very beginning, when you said there were some short-term measures. I wonder if you could just list them.

Mr Lockley: Largely, what I mentioned just now: domestic fuel tax and en route NOx charges.

Lord Haskel: You referred to those as in the long-term.

Q189 Chairman: Twenty-five years, I think you said.

Mr Lockley: No, no. Domestic fuel tax can be applied tomorrow, and we would like it to be applied tomorrow.

Chairman: At what rate?

Mr Lockley: We would start with the rate of VAT.

Chairman: A fuel tax of 18–20 per cent.

Q191 Lord Roper: Or applying VAT to fuel.

Mr Lockley: Or indeed to tickets. We are currently working on a proposal for domestic taxation, and I would be happy to submit a Memorandum on that basis to the Committee.
Q192 Lord Swinfen: I know all aircraft are different, as all ships are different. Just taking the question of freight for the moment, what is the comparative pollution for airline mile compared with ship mile? Mr Lockley: The relevant figure would be in tonne kilometres, and I do not know it off the top of my head, but I would be very happy to supply it to you, because it is something like 100–200 times less for maritime transport than for air transport. I would be very happy to supply you with the exact figure though.

Q193 Lord Swinfen: What about lorries? Mr Lockley: For lorries it would perhaps be five times less, 10 times less, although, again, I would like to brush up on my figures and submit those afterwards.

Q194 Chairman: Thank you very much. I promised that if we missed anything you felt we ought to ask you, to give you a chance to raise a point. Is there anything you would like to add before we finish?

Mr Lockley: I do not think I have anything new to add, but I would simply like to reiterate what I said at the beginning, that if we are to go into an emissions trading scheme, we need to go into it with a target in mind. I read this morning in the paper about a new concept called back-casting, which is being employed apparently in some blue skies unit in the DTI, where they do not ask themselves what current trends are and how they can be tweaked; they ask themselves “Where do we need to be in 20 years’ time and how can we design policies to get there?” That is the sort of thinking we would like to see applied to emissions trading. To be meaningful, it has to be consistent with the wider climate policy which is in place in the EU and which stipulates that the EU must set itself on a downward course with emissions.

Chairman: Can I thank you very warmly indeed, Mr Lockley. You have been very forthcoming in your responses, and we greatly appreciate it. Thank you.

Supplementary memorandum by Aviation Environment Federation

The Aviation Environment Federation would like to express its gratitude to the Committee for the opportunity to give oral evidence on the topic of aviation and its inclusion in a European Emissions Trading Scheme. During the session we agreed to submit to the Committee further clarification on a number of points.

AEF Proposal for Domestic Fuel Tax (Ref Q190)

We recommend that for domestic air transport fuel tax be introduced incrementally so that by 2030 it reaches the same rate paid on petrol (currently 47.1p per litre). In the same way VAT at 17.5 per cent would be introduced incrementally over the period to 2030.

UK domestic aviation produced 2.1 MtCO₂ in 2003 (DfT 2003), and is expected to grow to around 3.5 MtCO₂ by 2030 under a Business As Usual scenario.

Most journeys around mainland Britain are under 600km, a distance at which rail can compete with air on time and would compete on price if external costs were met by both modes. Furthermore, there exists great potential for business travel to be replaced by video-conferencing, which saves time and money for business and has negligible impact on the environment. We therefore believe that the measure outlined above would generate substantial environmental benefit without harming the UK economy: it would dramatically reduce the growth, and could well lead to an overall reduction in emissions from domestic aviation.

Impact on Freight Prices of Aviation’s Inclusion in an Emissions Trading Scheme (Ref Q158)

It is extremely difficult to place a figure on the cost increase for freight resulting from aviation’s inclusion in an ETS. Firstly, freight is of greatly different densities, and so a per-tonne figure is hard to ascertain, since an aircraft can be full up with only a few tonnes of loosely-packed freight (eg lettuces) or can carry many tonnes of denser cargo. In addition, some 70 per cent of freight is carried in the belly-hold of passenger aircraft, and it is unclear whether aircraft operators would share the cost of their carbon obligations between freight customers and passengers, or whether the burden would fall solely on the latter. Accordingly we have only attempted calculations for dedicated freighters.

The price increases identified per aircraft in the CE Delft report are in the ranges as follows:

- Short-haul (c.500 km): £23—£481
- Medium-haul (c.1500 km): £46—£948
- Long-haul, if included (c.6000 km): £228—£1,638.
Taking the reference aircraft used by CE Delft, and assuming they operate as dedicated freighters at maximum payload (and it must be stressed that this would be unusual for short-haul, where freight tends to go by road), the price increases per tonne and per 1,000 tonne-km are as follows:

Short-haul: €1.40—€30; €3—€60
Medium-haul: €1.50—€31; €1—€20
Long-haul: €2.20—€16; €0.40—€3

In sum, as with passenger air travel, the modest cost increases for freight are unlikely to harm the industry: as a comparison we note that Lufthansa’s current fuel surcharge stands at €500 per tonne. Equally they are unlikely to drive significant emissions reductions or fully internalise costs: the external costs for aviation freight estimated by INFRAS (2004) are €270 per 1,000 tonne-km.

**Comparison of the CO₂ Emissions from Different Modes of Freight Transport (Ref Q191 & Q192)**

Estimates vary quite widely and are dependent on sets of assumptions that differ for each mode. The following figures represent central estimates and give a good indication of the relative scale of emissions but should not be regarded as exact. The unit is grammes of CO₂ per tonne km; no “uplift” factor has been applied to aviation, which should be multiplied by between two and four times to give an estimate of total climatic impact (other modes should be multiplied by 1.3 to compare like with like)

Rail: 20 (electric); 40 (diesel)
Road: 100
Maritime 10–20
Air: 650


**17 November 2005**

**Memorandum by British Airways**

**Summary**

1. British Airways welcomes the opportunity to submit evidence to the Sub-Committee. British Airways is the fifth largest airline in the world, measured in terms of passenger kilometres travelled, and the largest outside the United States on this measure. BA employs around 47,000 employees worldwide, 80 per cent of whom are based in the UK, and generates annual revenues of £7.8 billion (2004–05).

2. This evidence presents British Airways’ response to questions raised by the Sub-Committee about the merits of including the aviation sector in the EU Emissions Trading Scheme (EU ETS). We believe that including air transport within emissions trading—initially within the EU but eventually within a broader international scheme—is the most environmentally effective and economically efficient mechanism for dealing with carbon dioxide (CO₂) emissions from air transport.

3. To ensure that emissions trading can be introduced for European air transport without distorting international competition or imposing unreasonable cost burdens on airlines, a practical and pragmatic approach to the scheme design is needed. In particular we highlight the following design elements:

   (a) Emissions allowances should be distributed without cost using a benchmarking method to avoid high financial burden.

   (b) Allocation and target setting should be harmonised at EU level to avoid competitive distortion.

   (c) Coverage should initially focus on emissions from intra-EU air services to avoid international disputes and competitive distortion.

   (d) An international solution to integrate air transport into global policy action on climate change should be sought.
BACKGROUND

4. There is little doubt that air transport brings major economic and social benefits. However, if air transport is to be part of a sustainable economy, we must ensure that economic and social benefits are delivered in an environmentally responsible way. That is a key challenge facing our industry as we look to its future growth and development.

5. British Airways accepts that air transport’s climate change impacts must be addressed. We also recognise that if practical solutions are not found to address the impact of aircraft emissions in flight, there is increased risk of punitive measures being introduced, damaging competitiveness and delivering limited environmental benefit. We understand that EU and national policy makers need to act to address air transport’s contribution to climate change and that the option of doing nothing is not acceptable.

6. The scope of any policy to address aircraft emissions should take into account technological progress both past and future, support for investment in research and development, and the need for continued improvements in infrastructure and air traffic management. In addition to these elements, the use of economic instruments will play an important role.

7. British Airways does not accept that the right way to limit emissions is to discourage flying—by punitive taxes or constraints on industry growth. This has not been effective in curbing road transport growth and, if applied to air transport, would lead to extremely negative social and economic effects for the European economy.

8. Instead we believe that a well-designed emissions trading scheme is a cost-effective and environmentally beneficial policy instrument. Whilst an international approach through ICAO must be the ultimate objective, we recognise that some regions may need to move faster than others in developing measures to address climate change.

Has the emissions trading scheme worked well so far, and does the current system provide a solid foundation for expansion to include other sectors of industry?

9. The European Union Emissions Trading Scheme (EU ETS) began operation in January 2005 covering more than 12,000 installations in the 25 Member States. It is to be expected that a scheme with such complexity and scope will require a period of bedding down, learning and adjustment. The European Commission envisaged this when they introduced the first phase of the scheme as a trial phase. A number of changes have already been identified by industry as necessary to improve the scheme. These include removing complexity by simplifying the operation of the scheme and reducing the potential for distortions in competition by increasing harmonisation of the scheme across EU Member States.

10. In relation to the air transport sector, the existing scheme provides a good starting point for expansion. However, it will be necessary to adapt some existing elements of the scheme, and develop some new elements, in order to achieve simple, workable and equitable incorporation of the sector. It is important to recognise that emissions trading in Europe is a potential stepping-stone to broader international inclusion of air transport in an emissions trading system. Key design elements for incorporating air transport are outlined in the remainder of this evidence.

Why include the aviation sector, and what are the possible costs and benefits to the industry of joining the ETS?

11. Based on historical and forecast growth rates, fuel efficiency improvement will be insufficient to prevent the growth of carbon dioxide emissions from aircraft. This has led some to suggest that the growth of the industry be restricted in some way, relative to the likely growth trend of 3–4 per cent. A number of environmental campaigning groups have argued for large increases in taxation of air travel to achieve this.

12. However, punitive tax policies of this sort would be socially and economically undesirable, requiring significant rises in the cost of air travel and a reduction in the economic benefits it brings. Instead, British Airways believes that the way forward is not to artificially limit the industry’s growth, but to ensure that if air transport does increase its emissions, this rise is funded by cuts in other sectors. This can be achieved by incorporating air transport emissions within an emissions trading scheme.

13. In an emissions trading scheme, the overall total of emissions are capped and companies must hold permits to cover their emissions. Each company receives an allocation of emissions. If it wants to exceed that allocation, it must buy excess permits from companies emitting less than their allocation.
14. Under such an emissions trading regime, the market will determine the cost of carbon necessary to meet the agreed target. Unlike a tax, where the level of tax needed to achieve the environmental objective is unclear, the overall cap—enforced by a system of permits—ensures that the required emissions reduction is achieved.

15. While there are some risks attached to emissions trading, these pale into insignificance when we consider the alternatives—which are generally based on punitive taxes and charges. Taxation applied to emissions, fuel usage or directly to air travel would not only be bad for the economics of our industry, it would also be bad environmental policy. A tax which doubled the cost of aviation fuel—costing airlines and their customers $50 billion a year—would cut less than 0.5 per cent off the growth rate of air traffic over a 30-year period. We are daily reminded of the ineffectiveness of a tax-based approach on the roads in the UK and the rest of Europe. Very high motor fuel taxes have not prevented the continued growth of traffic and emissions and the associated problems of congestion.

16. Whilst emissions trading is potentially the most cost-effective instrument for reducing the impact of air transport on climate change, the design of a scheme will have significant impact on the extent and distribution of costs. The objective should be to minimise costs and maximise benefits through careful instrument design.

17. Emissions allowances should be distributed without cost using a benchmarking method. Unlike the standard grandfathering method that uses historical emissions data, benchmarking does not penalise operators that already use fuel-efficient aircraft and provides incentive for future investment in such aircraft. British Airways is against the use of auctioning as a method to distribute emissions allowances. Auctioning would not be consistent with the allocation approach for all other sectors in the EU ETS, and would create a significant financial burden for air transport operators.

18. The costs associated with emissions trading may be characterised as fixed or variable costs. Fixed costs include those associated with administration, monitoring, reporting, verification and Government agency charges. Variable costs are linked to allocation methodology, market price of allowances and emissions growth.

19. Based on our experience in the UK ETS and the EU ETS, the administrative costs are a relatively small proportion of the overall costs of emissions trading. Significant costs would arise if auctioning were selected as the method for distribution of emissions allowances. A well-designed scheme should result in costs to an operator increasing in proportion to the growth of its emissions.

What are the possible impacts of the inclusion on the international competitiveness of the EU aviation industry (and its competitive position in relation to other transport modes)?

20. The ultimate objective should be a policy approach at international level. An international approach should be guided by the International Civil Aviation Organisation (ICAO) and United Nations Framework Convention on Climate Change (UNFCCC) processes. It is however recognised that there are differing regional pressures to address climate change. Linking air transport CO2 with the EU ETS would be a significant first step towards the global objective.

21. As air transport operates in a highly competitive international market, it is crucial to the acceptance of an ETS that any associated market distortions are minimised as far as possible. Clearly, differences in the characteristics of fleets, operations, cost structure, market mix, and so on preclude the total avoidance of any distortion, but steps must be taken to minimise the effects.

22. As with costs, the impact of a scheme on international competitiveness will depend to a large extent on key design elements of the scheme as related to air transport. To avoid unnecessary competitive distortion, emissions allowances should be distributed free of charge, this approach is consistent with the approach to all other sectors in the EU ETS and avoids placing high financial burdens on EU air carriers.

23. The distribution of emissions allowances and setting of reduction targets in the current scheme is managed by each Member State, based on the Kyoto Protocol concept of subsidiary—each state has the right to decide how emissions reductions are shared among its emitters. However, if this approach were applied to air transport, significant distortions in competition would occur. Given the mobile nature of air transport emissions and the provisions of the European Open Aviation Area, whereby EU air carriers are free to operate air services between any two points in the EU, it is essential that a harmonised EU-level approach to allocation and target setting is adopted for air transport. There would clearly be benefits in terms of operability and simplicity if domestic emissions could also be captured by this harmonised approach.
24. It is appropriate that an emissions trading regime would capture flights operating within the EU that are both domestic and intra-European. We also accept the proposition that Switzerland, Norway, Iceland and that the near Ultra Peripheral Regions—Canary Islands, Azores, and Madeira—be included in the scope of the scheme.

25. Attempts to include all flights from and to non-EU countries (extra-EU) would result in international disputes, leading to retaliatory action and high risk of disruption to the British Airways operation. Legal action has the potential to significantly delay full implementation of an extra-EU scheme and may lead to exemptions and compromises for particular countries, opening the potential to significantly damage the competitiveness of EU based carriers.

26. At this stage, the EU should focus on implementing emissions trading for air services within the EU domestic block. In the long term, international air transport emissions should be included in an international policy framework to address climate change. However, this must be agreed through the appropriate international bodies—ICAO and UNFCCC.

27. In relation to other transport modes, a policy instrument that addresses the climate change impacts of air transport whilst not encompassing other transport modes will inevitably distort the inter-modal competitive position to some extent. Policy measures should be developed to address the climate change impacts of all transport modes across Europe in an equitable way.

What are the costs and benefits to consumers and the environment of including aviation in the ETS?

28. It is a reality that in order to achieve the necessary reductions in greenhouse gases, the cost of economic activities and products that are energy intensive will need to rise.

29. Given that a well designed emissions trading scheme offers a least cost approach to addressing the climate change contribution of air transport, this translates directly as the least cost approach for consumers.

30. Some of the costs associated with emissions trading will be absorbed by operators and some will be passed on to consumers through higher air fares. In an emissions trading regime the costs to consumers are likely to be much lower than with a tax system that aims to achieve the same environmental objective.

31. Since emissions trading is a quantity based instrument, the environmental outcome is fixed by setting an upper limit on economy-wide CO₂ emissions. However, certainty over the environmental outcome comes at the expense of certainty over the market price of CO₂ allowances. Therefore the actual cost of emissions trading cannot be predicted.

32. Although environmentally beneficial, unilateral EU action cannot be sufficient to address the issue of climate change over the long-term. Hence, as with other sectors of the economy, an international approach is needed. In order to secure the environmental improvements necessary, it is vital that continued efforts are made to engage all countries in efforts to address climate change at a truly global level.

33. Ultimately, consumers will benefit from the application of emissions trading to air transport over the long term as it offers the most economically efficient means of achieving emissions reductions.

At what point in the development of the EU ETS would it be feasible to incorporate the aviation sector?

34. There are a number of challenges to incorporating air transport in the EU ETS, however we believe none of these is insoluble. Whilst there is no technical constraint, it is clearly important to secure political acceptance for this approach in order to achieve a timely outcome. British Airways supports the UK Government objective to seek incorporation of air transport in the EU ETS by 2008 or as soon as possible thereafter.

35. In order to avoid continuing international competitive distortion and to effectively address the global issue of climate change, it is imperative that an international solution for addressing air transport climate change contribution is determined in time for the post-Kyoto international regime. Work towards this objective must begin immediately in order to integrate the sector into global policy action in the post-Kyoto period from 2013.
What other economic or regulatory mechanisms exist to encourage reductions in CO\textsubscript{2} emissions from the aviation sector, and how effective might they be compared to emissions trading?

36. The scope of any policy should take into account technological progress both past and future, support for investment in research and development, and the need for continued improvements in infrastructure and air traffic management. In addition to these elements, the use of economic instruments will play an important role.

37. Taxation applied to emissions, fuel usage or directly to air travel would not only be bad for the economics of our industry, it would also be bad environmental policy.

38. Since emissions trading is, in principle, the most effective and efficient instrument for limiting air transport CO\textsubscript{2} emissions, it is important that every effort is made to use this instrument in preference to any others. If air transport is successfully integrated into the EU ETS, this would ensure that no other instruments (such as taxes or charges) would need to be applied to intra-EU air transport CO\textsubscript{2} emissions. Equally, there should be agreement that if air transport is successfully integrated into an international or ICAO emissions trading regime, any EU scheme would become redundant and be terminated as regards air transport.

39. British Airways has recently launched a CO\textsubscript{2} emissions offset scheme that gives passengers the option of paying a third party organisation to invest in projects that reduce emissions elsewhere in the world. Carbon offsets may be a useful interim initiative for raising awareness of the issue, but cannot substitute for a comprehensive international framework based on emissions trading.

Dr Andrew Sentance
Chief economist & head of environmental affairs

16 September 2005

Examination of Witness

Witness: Dr Andrew Sentance, Chief Economist and Head of Environmental Affairs, British Airways, examined.

Q195 Chairman: Good afternoon, Dr Sentance. Could I thank you on behalf of the Sub-Committee for the written evidence British Airways has submitted and for your attendance this afternoon? We have read your evidence with care and we are grateful to you. There are a lot of questions to ask you. At the end, I propose to give you the opportunity, if you think we have missed anything, to come back to us and tell us what we should have asked you, with your answer. Unusually, I do not want to invite you to start with an opening statement because you may cover things we are going to ask you anyway. I shall go straight into questions. You say in paragraph 10 of your written evidence that aviation emissions should go into the ETS, and it is a good framework of caps and targets that currently exists from the Kyoto Protocol. The second issue that we are going to apply in international aviation, and I think most people would see some elements of international aviation being covered in an EU emissions trading scheme, you need to find some way of developing an equivalent structure that currently exists under Kyoto, based on some form of targets or some measures which we are going to apply in international aviation. That is the first issue: bringing part of international aviation under the same framework of caps and targets that currently exists from the Kyoto Protocol. The second issue that we have in mind is that, in looking at international aviation, we think it is very important that some form of allocation is developed that operates internationally and is harmonised across Member States rather than just being based on national allocation, which has been the basis so far within the EU emissions trading scheme, and there are various reasons for that. We operate in a very competitive industry, and if there are distortions introduced by having different national allocation approaches, that is potentially quite a problem in our industry. The third issue that needs to be dealt with is an obvious one. Currently the emissions trading scheme works with ground-based sources, and ground-based
sources are relatively straightforward to deal with, in the sense that you know where they are all the time and they are pinned to a particular national, geographical place. When you have mobile sources, clearly that is not the case, but we have some experience of our own to contribute here. British Airways, as you may know, is a member of the UK’s voluntary emissions trading scheme, and one of the reasons for us joining that was to get some experience of some of the issues of involvement in emissions trading, and we have developed a protocol in that emissions trading scheme that attempts to deal with this issue. Effectively, what we have concluded through that experience is that the emissions sources need to be identified in terms of the routes on which aircraft fly. You cannot necessarily pin down the aircraft, because aircraft fly outside of the geographical scope which you are looking at, but we have developed a data collection mechanism and a measurement mechanism based on routes for the UK domestic market, and you could extend that within Europe, we believe. Those are the three main issues. It is a question of dealing with the fact that international aviation is not covered under the Kyoto caps, a more international basis for allocation of permits, and dealing with mobile sources.

Q196 Baroness Eccles of Moulton: Why does it matter how initial emissions allowances are distributed between airlines? Secondly, could you explain the difference between basing the initial allocation upon grandfathering rights or upon benchmarking? What are the arguments for and against each basis?

Dr Sentance: Perhaps I could just deal with the general issue of allocation. There are three mechanisms that people talk about: grandfathering, which is looking back at historical emissions patterns; benchmarking is trying to look at what the most efficient producer might do and setting allocations based on that; and the third method is auctioning permits. If I could deal with that one first; we do not think that is a particularly good idea, and the reason is that it takes resources away from the airlines which they really need—and we are not a particularly financially successful industry—to make the investment in the technology and in the emissions reduction. Basically, an auction system creates a flow of money that generates no environmental benefit, whereas with the other systems the money generally flows where the environmental benefits arise.

Q197 Baroness Eccles of Moulton: Could there not be a scheme designed whereby the money flows from the auctioning goes in the same direction as the flows from other ways of allocating them?

Dr Sentance: People do talk about that. They talk about hypothecating revenues. My experience as an economist is that this hypothecation is much discussed but really very difficult to achieve. Once a flow of money is generated, it is wonderful the number of different uses to which people try to put it to, and our worry is that it will not actually find its way back to help our industry in particular deal with its environmental issues. Between grandfathering and benchmarking, there are arguments on both sides, but I think the more compelling argument for a benchmarking approach is that it does not penalise early action. So if you already have a relatively fuel-efficient fleet, as British Airways has—our fleet is younger than the international average and our fuel efficiency figures are better than the average for airlines internationally—you are not penalised coming into a scheme because your historical performance is giving you less emissions permits if there is an element of benchmarking, so you get the amount of emissions permits that an efficient producer would get. I think there is a lot to be said for it, but that does add an extra element of potential complexity, and I think at the end of the day, if we get into the actual practicalities of this, there will be a trade-off between that extra element of complexity and the benefits that it brings in terms of really better design for a scheme. Have I answered all your questions?

Chairman: We will deal with auctioning in a moment. We will come back to auctioning.

Q198 Lord Roper: What I want to examine for a moment is a rather more general question as to whether you really do feel that fuel use is a good proxy for measuring emission generation?

Dr Sentance: I think for carbon dioxide emissions it is an extremely good proxy. The chemistry means that there is a factor of 3.15 by which you multiply your fuel use, and that tells you how much carbon dioxide you are emitting. So BA generates just over 15 million tonnes of CO₂ and we burn about 5 million tonnes of fuel. I think where there are other emissions that people are talking about such as NOx, it is much more complicated. Our view is that those cannot very simply be brought into an emissions trading scheme. If you want to deal with those issues, first of all you need to improve the state of knowledge about exactly what they are doing to the climate and how they can be reduced, and then you may want to use other measures to deal with them.

Q199 Lord Roper: Going a little bit further; we heard in evidence last week from other parties that the scheme would not exclude or penalise many of the most offending aircraft because of the way it is drawn up. Do you feel this is a real concern?
Dr Sentance: No. I think an emissions trading scheme means that the more emissions you create, the more permits you have to buy, and therefore it does link the penalty, if you like to use that word—I prefer to use the word “incentive”—to doing the right environmental thing. I think there is a school of thought that says “pain is gain” but in this area I think you can get quite efficient reductions.

Q200 Lord Roper: That is true about European aircraft, but it may be that there are some very inefficient aircraft flying into Europe from outside Europe which would not be caught and therefore might be the worst offenders.

Dr Sentance: Yes. Our view is that if we are going to extend emissions trading to flights coming in from outside Europe, we really need to have agreement at the broader international level through ICAO.

Chairman: We will come back to that.

Q201 Lord Haskel: You have already told us about your views on how the scheme should be started and your concerns about grandfathering and benchmarking and auctioning, but in your written evidence you say that the initial allowances should be distributed free of charge to avoid competitive distortion. If they were not distributed free of charge and everybody paid the same, how would that distort the competitiveness?

Dr Sentance: What we are thinking about there is the competitive position of European airlines and airlines that have quite significant operations in Europe versus other carriers. Even if you limit the geographical scope to intra-European flights, we compete, for example, taking a passenger from, let us say, Barcelona to New York. British Airways could take that passenger via Heathrow, and therefore part of that flight could be an intra-European flight, and the more that you load costs on to those flights within Europe, the more we are potentially at a disadvantage versus an American carrier who could take that passenger from New York to Barcelona straight, and would not in our view be included in the emissions trading scheme.

Q202 Lord Haskel: Would the same apply to freight?

Dr Sentance: I think the same would apply to freight. We believe that, if you are going to apply emissions trading within aviation within Europe, all commercial aviation should be included, because we carry freight in the belly-hold of our aircraft, so we want to make sure that within the geographical scope that we are talking about, freight and passenger aircraft were covered.

Q203 Lord Swinfen: Would it not therefore pay airlines to start or finish all their flights outside Europe?

Dr Sentance: This is one of the worries people have, that there might be some diversion, but I think this worry would be greater if there were suitable hubs on the periphery of Europe. I am not aware that there are hubs that really would develop in a substantial way on the basis of that traffic. It is also the case that passengers will in general prefer a direct flight to an indirect flight, and so in our view, where emissions trading is applied to intra-EU aviation, you could think theoretically that someone who wanted to go, say, from eastern Europe to southern Spain could go via Morocco, and they would technically avoid emissions trading, but there would be lots of other inconvenience for them, not least the fact that Morocco is not a very good hubbing destination.

Q204 Lord Swinfen: If the cost were considerably different, that might have a bearing.

Dr Sentance: I think if emissions trading made a very big difference to ticket prices that would be true. In our view, it would not make a massive difference to the ticket prices on the basis of the figures that have been calculated by the European Commission.

Q205 Chairman: I will raise a matter now and if it comes up later, I apologise to Members of the Committee. Some arguments have been put to us that in whole or in part, the initial allowances should be auctioned. It may not be all; it could be 10 per cent, 15 per cent, 50 per cent. That would have the merit of recognising and putting a price on existing levels of emissions. What is your answer to that?

Dr Sentance: I think if that is the route which the emissions trading scheme goes generally for industry, then it is something we would have to consider. We do have concerns whether that is the right thing to do, because if you have a system that does not have auctioning, as I said before, all the flows of money go with the environmental benefits. If you achieve a better environmental outcome than your allocation would suggest, you actually make money, and if you cannot achieve it, you have to pay. Once you introduce an auctioning mechanism, there is a flow of money going somewhere else which is taking money away from the producers—it is not just aviation; all the participants in the emissions trading scheme— who you really want to invest to reduce emissions. We believe that money is best left with the producers in order for them to make that investment. So I think the case would need to be very strongly put by those who favour that auctioning mechanism. How will that auctioning generate environmental benefits? They would need to persuade me that this is not just a slush fund for governments and that some real environmental benefit is going to flow from this.
Q206 Lord Fearn: I think you have probably answered part of this. In paragraph 22 of your written evidence, you talk about distributing initial emissions allowances free of charge. At the present price of carbon, if aviation was charged for its existing emissions on intra-EU flights, including domestic flights, at the current price of carbon, how much would that add to your costs?

Dr Sentance: The consultants who work for the European Commission produced some estimates, and they show that there is a big range that depends on exactly, in a sense, how these schemes are operated. Obviously, the price of permits is a factor; you have said at current prices, but there are two key variants: the coverage of the scheme, and, as you know, the European Commission want to consider bringing flights outside the EU in. You have said we should just talk about intra-EU flights. But the other big variable is how much you get through what is called perhaps misleadingly a free allocation—nothing in life is free, but an allocation that is given as of right to participants will cause the costs to vary quite considerably. I think for an intra-EU scheme, and for one using a grandfathering approach or a benchmarking approach, the lower types of figures that the European Commission quoted in their study would seem to us to be realistic, somewhere around €1 or €2, not €9, which I think was the highest figure they came up with.

Q207 Chairman: The question, if I can remind you, was not at the margin. This is if the initial allocation was paid for, whether by auction or otherwise. In paragraph 22 of your written evidence one of the reasons you gave for not paying for the initial allocation was that it would be a high burden. Our question is: what is the burden? Convince us.

Dr Sentance: I now understand where you are coming from, my Lord Chairman. Apologies for being a bit slow. I will perhaps give you the ingredients which would allow your advisers to do the calculations.

Q208 Chairman: British Airways said to us in evidence they should be distributed free of charge because that would avoid high financial burdens. If you say it is a high financial burden, convince us it is a high financial burden. Do not ask us to do the figures.

Dr Sentance: All right. We estimate—this is a very broad brush figure—that for our intra-EU flights it is about 2.5 million tonnes of CO2. If you multiply that by €23 per tonne, you get up to about €50–60 million.

Q209 Chairman: Just for British Airways alone?

Dr Sentance: Yes, so that is the sorts of figure you are talking about. We are much more cautious because when you set out the assumptions like that, we are very happy to give you a figure, but we obviously do not want to be seen, for commercial and financial reasons, to be putting out estimates which the market might misinterpret about exactly what this will cost British Airways, because that depends on all the various factors I have talked about.

Q210 Chairman: We understand the difficulty in being precise, but it does give us a ball park figure. Without that, one does not really know quite what one is talking about.

Dr Sentance: We can perhaps do a more exact calculation. Is that sufficient for you?

Chairman: Perhaps Lord Fearn could ask his second question on that.

Lord Fearn: What would that add to the price of flights if the whole cost was passed on to the consumer?

Q211 Chairman: Again, ball park figures.

Dr Sentance: I think I am going to have to come back to that, if you do not mind, but on the assumptions you have set out, we can come up with an estimate. I think it would obviously be towards the higher end of the figures the European Commission began to quote. I think their highest figure was €9. That may have been relating to a flight outside the EU. If we can come back to you on that, we will send you a short note, and we can then clarify the exact figures.

Q212 Chairman: I have to confess I thought the Commission’s figures were assuming that they are distributed free of charge, and what would be the consequence of introducing the emissions cap, and the fact that you would then have to start paying at the margin for quotas, and gradually there would emerge a price. I thought that was the case. Their €9 I thought was even at the top end. This is terribly important for the Committee, because we rather formed the impression that costs were quite modest, and if you told us that €9 would be the cost on tickets if emissions were charged for right from the start, that would not strike most people as being an exorbitant figure to pay.

Dr Sentance: I think we have to remember that margins in the airline industry are very slim, and that would more than wipe out the profit margin on many European flights. Then there is the assumption about how much you can pass on to the consumer, but the consumer is very price-sensitive, so I think it still causes quite an issue for the airline industry. We can glibly sit here and say the consumer will pay more, but all our experience in the commercial marketplace is that the consumer is looking to pay less and is very price-sensitive. We would be concerned at those sorts of figures.
Q213 Lord Roper: Your competitors will also pay. Dr Sentance: They will, and that will make it “easier" to pass on the price, but it does not guarantee it, because we see this with fuel prices at the moment. We are not able necessarily to pass on the full amount of the extra fuel costs, and it is a really large potential threat to the profitability of the airline industry.

Q214 Lord Roper: But you are passing it on to certain groups of consumers rather than others, which suggests there may be some variation in the competitiveness of the different markets in which you operate. Dr Sentance: There are variations in competition. There are other factors that affect the consumer’s willingness to pay extra fuel costs and extra surcharges, yes.

Q215 Lord Haskel: Looking at these sorts of prices, how effective do you think these figures that you have mentioned would be in raising the awareness of your passengers about the importance of climate change? After all, that is what we are setting about to do. We are trying to persuade people that climate change is something that we have to tackle and this is one way of doing it. Do you think it would be effective in making them aware of the need for this? Dr Sentance: There are various mechanisms that we have to make people aware of the climate change issue, and I think British Airways has perhaps been more vocal than other airlines in actually talking about this issue in public and with its customer base. But what the passenger is perhaps more legitimately looking for is the most cost-effective way of addressing the problem. We feel that we are caught between two very big social pressures: one social pressure is to deliver the economic benefits that to run aircraft in a different sort of way that does not involve burning fuel.

Q216 Lord Walpole: If aviation enters the ETS on the basis of free allocation of quotas based on benchmarking, do you agree with the European Commission’s published estimates of the impact that will have on short, medium and long-haul air fares within Europe, and are such fare increases likely to have any noticeable effect upon air travel? Dr Sentance: I think the figures produced by the Commission, which are based on their consultants, CE Delft, are realistic. There is obviously scope for varying the assumptions but they seem to have done a reasonably thorough job. They are not that far away from our own internal calculations. I think they will have some effect upon air travel. Assuming that some of this cost is passed through to the passenger, that will have an effect on air travel. Also, airlines will have to think much more carefully about their capacity expansion, because when you put in place capacity, buying new aircraft, you have to buy the permits for that aircraft, assuming emissions trading is going to be with us, for the whole lifetime of that aircraft.

Q217 Lord Walpole: And you have to fill it for the whole life. Dr Sentance: Yes. You have to balance those revenues and costs, and you have now imposed an extra cost, which is going to obviously have some impact on that investment decision. I think the impact on air travel is not the only benefit of emissions trading. Obviously, it has some impact on technology as well. It will give an added incentive, though not necessarily the only incentive, because the cost of fuel itself is an incentive to develop more fuel-efficient aircraft, and it also provides the scope for the aviation industry to perhaps find emissions reductions in other sectors if it is more cost-effective to do so. We cannot guarantee that, but that is what many of the projections suggest. So the effect on air travel is one of a number of different effects that this would have.

Q218 Lord Walpole: Do you think we are ever going to run aircraft in a different sort of way that does not involve burning fuel? Dr Sentance: Currently, what we see in terms of technology, the way I like to put it, it is a miracle that an aircraft gets off the ground, I think, to many people, and it is also a miracle that the industry is able to operate generally very safely. That limits the technological possibilities that you have, and if you want to operate at reasonable speeds and the best current efficiency, the jet engine is the only technology that we have. We do not see anything coming to replace the jet engine. There is some thinking—and we have commissioned research ourselves—on areas like the use of bio fuels. It does not seem to be particularly economic in terms of fuel prices that we are normally accustomed to—not at the moment—but the bio fuel technology may improve, and we have much higher fuel prices now, so that could come into the equation, but that is probably the most likely area that we could look to improve the emissions profile within the industry by technology.
Q219 Lord Walpole: Do you think bio fuels could possibly be produced to give less carbon dioxide emissions?

Dr Sentance: My understanding of bio fuels is that they do not generate less carbon dioxide when you burn them, but over the life cycle of the production, so that would produce what some people might call a cleaner fuel from the carbon dioxide point of view. I think in the industry we should be open and we should be trying to explore these possibilities, but we do not have a lot of technological scope in terms of the basic power generation of the aircraft. That technology is the only one we can see for powered flight of the speed to which we are accustomed.

Q220 Baroness Eccles of Moulton: It has been put to us, Dr Sentance, that the extra cost to the airline industry of joining the ETS would hit the low cost, small airlines a lot harder; they would find it much harder to absorb the extra burden than the very large companies like British Airways. Do you have a view on that?

Dr Sentance: I think as a proportion of their costs that could well be true in the sense that, first of all, in our view, the scope would be initially limited to within Europe, and these are airlines that operate almost exclusively within Europe. Secondly, they pride themselves on low cost levels and low fare levels and, on the assumption that that is correct, any cost increase proportionately is going to be greater for them. But any other mechanism you might think of—I heard the Aviation Environment Federation talking about taxation; it is not something we favour, but I think taxation would also have a great disproportionate effect on no frills, low cost airlines. I guess what it is telling us is that at the lower price end there may be a bigger proportionate impact, and that is something we need to think about, but it is not unique to emissions trading; it applies to many other instruments people are talking about in this area.

Q221 Lord Swinfen: Dr Sentance, what consultation did the Commission have with British Airways when formulating its proposals and preparing its impact assessment?

Dr Sentance: We did not really have any direct consultation on the impact assessment as such, though we talked with the consultants who prepared the basis of some of it, so I suppose we had an indirect impact there. We participated, as did many other people, in the general consultation that the European Commission had, and I hope that our views were reflected through a number of different routes. One is we communicated with them directly. Secondly, we exerted influence through our trade association, the Association of European Airlines in Europe and BATA in the UK. Thirdly, we talked with the British Government, who obviously is having an influence on the development of these proposals. So we certainly tried to exert influence but we are conscious that there are a lot of pressures on the Commission. We also participated in the event they held in June of this year, which was a stakeholder consultation event, and I actually was part of a panel and spoke at that event. So we tried very hard to make our views known and we hope that to some extent they are reflected in the Communication. On some issues, however, they have not actually followed some of the suggestions we made, such as trying to confine initially to intra-European aviation.

Q222 Lord Swinfen: Do you think they actually listened though?

Dr Sentance: I think they are concerned to get something that is workable and that has some degree of industry support. I think those two parameters were important. However, this was developed by the Environment Directorate, who are not experts on aviation industry matters, so some of their views on things like the international bilateral framework of aviation and the extent to which that would allow them to impose emissions trading on airlines flying outside of Europe I think were not very realistic on that point. I think that could be a recipe for a lot of difficulties.

Q223 Lord St John of Bletso: With the aviation sector accounting for 3 per cent of global carbon emissions, what principles should govern the total level of carbon emissions that should be allocated in the aviation sector if it joins the ETS? Should the overall level be the then current levels of emissions, or higher or lower?

Dr Sentance: There is a process to be gone through of trying to arrive at what is a reasonable target or allocation for the aviation sector. We do have to start from the perspective of what we think the profile of emissions is, and try and impose a comparable degree of restraint to the aviation sector as is being applied to other sectors. Our view would be that we are happy to take our fair share. We do not think, however, it makes sense, particularly in the early phases of applying emissions trading to aviation, to have a penal approach that attempts to extract more than the fair share for aviation. How you arrive at that fair share is going to be quite a difficult process. Clearly, there are going to be some negotiations and discussions on that, which we will aim to contribute to, but I think the principle that should underpin it is aviation taking its fair share in terms of the amount of restraint that it is expected to achieve relative to other industries.

Q224 Lord St John of Bletso: So when aviation is in the ETS, do you expect overall future aviation emissions to be capped at the initial overall level of
allocations? Do you expect aviation to contribute an increasing proportion of carbon emissions as air travel increases?

Dr Sentance: Whether we are an increasing proportion would depend even if we have a cap that does not reflect that. It can still be an outcome of the scheme, in that airlines are then prepared to purchase net emissions from other sectors, but setting that on one side. I do not think we are yet clear whether the principle that I have suggested points to level or net reductions. I think we would need to look at the time period over which we are trying to achieve the reductions and what this principle of fair treatment really means. I would come back to what I said earlier though, that we have to recognise that if aviation is brought into an EU emissions trading scheme, this will be the first time something like this has been attempted in the world, and so it may help to err on the side of getting something that is workable even if it does not achieve as much initially as you would like to get environmentally, with the prospect that, if we do get a workable scheme, you can then in future periods begin to look for more significant emissions reductions. Also in the future, if it is a successful scheme, there is a very good case then for taking that into the wider international domain and encouraging other countries, including the United States, to come on board. We would put a high premium on getting something that is workable in the initial phase of emissions trading in the global aviation industry.

Q226 Lord Roper: Before we get there, we have to get into the initial regime, and I really want to come from the high economics to the low politics. In paragraph 34 of your written evidence you say that there is no technical constraint upon incorporating air transport into the ETS but that it is important to secure political acceptance. I wonder what your sense is of the views of airlines in different parts of the European Union, and indeed of the governments on this issue? Where do you see the sensitivities and the sensitive issues?

Dr Sentance: Our experience has been, if we talk first within the airline community, that as the airlines have become more familiar with the issue, they have come to accept it and recognise the arguments to a greater extent. I think in the UK we had a benefit from having had a quite active public debate in the White Paper, which brought this issue to prominence, and that has probably made the UK airline community more familiar with and more accepting of the concept. There are some airlines still who would say they are in the minority, and if you look at the statements that have been put out more recently, say by Air France, for example, they have been much more positive about emissions trading. For governments, I think it is a similar issue, about familiarity, getting their heads around the concept. One thing I have observed is that in some countries there just seems to be generally less acceptance of emissions trading approach. In Germany, for example, I have seen statements from the German business organisation quite critical of emissions trading which is not the sort of statements the CBI would make in the UK. So there is a spectrum of views, but it is encouraging that, as people have come to understand the concept and thought about the issues, they have warmed to the idea.

Q225 Lord St John of Bletso: Over what period do you think this is feasible?

Dr Sentance: I think we are going to be governed to some extent by the rules of the scheme that we are entering into, and the European emissions trading scheme, the second period during which aviation would come in, would run up until 2012. It is not clear whether the preparatory work can be done to get us in right at the beginning of that phase. That is a relatively short period of time. This is a general issue for emissions trading, not just for aviation. Many people have commented that the European emissions trading scheme is not yet really acting as a driver for investment because the time period is so short. That brings up the issue that we really need to start thinking now about the post-Kyoto period, about a longer term framework into which perhaps international aviation can be brought in a more comprehensive way than it is at the moment with Article 2.2 of the Kyoto Protocol. I think we will get the benefits of emissions trading when there is much more long-term stability about the international framework and indeed, there is acceptance of that in the broader international stage. That is quite a lot to achieve.

Q227 Lord Haskel: Do you have anything to add about the discussion which is likely to be going on in the International Civil Aviation Organisation or within the United Nations Framework Convention on the climate change process, the big picture? Do they feel that this emissions trading scheme system will really have an impact on climate change?

Dr Sentance: I have been involved in the discussions within ICAO for all the time that they have been going on on this topic, going back to 1998, I think, and clearly there have been some issues in ICAO based around the United States’ stance on climate change that have made it difficult. But it is worth pointing out that ICAO resolutions have in principle supported emissions trading, and I am now part of an emissions trading task force which will report to the 2007 ICAO General Assembly, and there is scope, I think, to move forward again in ICAO. I know some
people, particularly in the NGO community, are frustrated by the pace of progress in ICAO, but we have to remember that we only got the definitive report on this topic from the IPCC in 1999, and we had a major dislocation in the aviation industry following 9/11, so I think it is actually quite an achievement that it is still on track and being discussed, and I do think there is scope for progress in ICAO. I think the European Union should, in addition to developing its own policy, be putting effort into trying to move ICAO forward and try and put proposals that will gain acceptance by other Member States.

Q228 Chairman: Do you believe that it would be possible to include extra-EU flights into the ETS, say, aimed at 2008?
Dr Sentance: I do not think that is going to be sensible policy. I think it is going to be a recipe for disputes with third countries who do not accept this principle and I think it is going to raise questions about the legitimacy of emissions trading at a fairly critical stage. I think we should try and make progress within ICAO that would allow at a future point the incorporation of extra-EU flights, and that should be our main objective for extending the scope of this outside the EU.

Q229 Chairman: Certainly at least one witness has said in evidence to us that there is no legal problem. Legally, it would be possible to insist that flights in and out of the EU could be brought into emissions trading.
Dr Sentance: There is no legal basis either. The legal position is that this concept was not thought of when many of the bilateral agreements were drawn up, and therefore people will then look to what ICAO says about this. ICAO has given some positive noises on principle but ICAO is in the process of developing guidelines in this emissions trading task force that I have talked about, so it is not clear what shape those guidelines would take, and they might make it difficult for the European Union to extend the scope. I would put it another way: there is no legal basis for it.

Q230 Chairman: So it is not illegal?
Dr Sentance: The legal position is unclear and would certainly probably be challenged by countries that did not agree with the European Union. What we are worried about is not just that challenge, but also retaliation, which is often the feature of these trade-type disputes, which is not a direction in which we want to go.

Q231 Lord Roper: Would I be taking it too far to say that, in so far as you believe ultimately it would be a good idea to have this as widely as possible, it is better to do it in stages rather than by creating a great deal of conflict and adverse reaction at an early stage which might make the later transformation more difficult?
Dr Sentance: Absolutely. I think that is a very good approach. There is no harm in the European Union saying that their intention would be, when international agreement had been achieved, to try and extend the scope, but our concern would be attempting to do it without that international basis.

Q232 Lord Roper: I was not suggesting it was my view. I wanted your view.
Dr Sentance: I did not mean to attribute the view. I think it is a very good observation.

Q233 Chairman: I understand the arguments. It would be very useful if you could just do us a very brief note on the point made on page 183 of the CE Delft report, _Giving Wings to Emission Trading_, where they talk about the question of whether it is legal or not. Do not let us deal with it any further now. We feel recognise it is an issue of judgment here how best to proceed, but on the particular issues of legal or not, it would be extremely useful to have that view on that too.
Dr Sentance: We can happily do that, my Lord Chairman.

Q234 Lord Swinfen: Dr Sentance, in paragraph 15 of your written evidence, you say that a tax which doubled the price of aviation fuel would cost airlines and their customers $50 billion a year, but would cut less than 0.5 per cent from the growth rate, which I understand is between three and 4 per cent, of air traffic over a 30-yer period. What is your source for this estimate?
Dr Sentance: The source is our own calculation based on, I think, quite well accepted industry figures. If I could just give a brief explanation, the $50 billion a year actually is the sort of fuel bill you would expect for the industry in normal times. We have already seen a doubling of the fuel cost; it has gone up to $100 billion a year.

Q235 Chairman: Is this global? Is this all airlines?
Dr Sentance: Yes, all airlines globally, if you calculate the fuel bill at $60 a barrel, but if we were down at $30 a barrel, $50 billion would be the right figure. At that sort of level of the oil price, fuel absorbs about 15 per cent of airline costs, so if you then double that, and that is passed on to passengers—that is a big if, but over the longer term that is what you would expect—you then have a 15 per cent increase in the cost of air travel. There is a lot of material out there about the elasticity of demand for air travel, but we work with a figure of roughly one for the industry as a whole, which means for every pound the price goes up,
people take that pound out of their volume of spending, so that would then equate to a 15 per cent reduction in air travel spread over 30 years. That gives you half a per cent. So in economic parlance it is not rocket science but it is to give an order of magnitude of what the costs would be and what the relatively limited benefit would be of going down a taxation of fuel route.

Dr Sentance: If you are referring to the Tyndall Centre Report, I would certainly question the figures that they have come up with, and I was a bit disappointed with the depth of analysis in that part of their report. There is obviously a lot of good stuff in the report, but these figures are very sensitive to the growth rates that are assumed, and I think part of their figures assumed going beyond the 60 per cent reduction that the UK Government has talked about. So there was some confusion there. I think we need to see what is going to happen if we apply a consistent policy both to the rest of the economy and to the aviation industry. What worries me about the figures that tend to be produced is that they do not make that assumption. They apply a very significant reduction in the rest of the economy and they somehow assume that in that world the aviation industry can go merrily on, but if we are in an emissions trading world, the price of carbon would be going up and there would be very big incentives ultimately to stop flying and big incentives to invest more heavily in fuel-efficient technology. My observation would be that those most Draconian figures really do not apply a consistent policy assumption across the two sectors, but having said that, I think, because the substitution possibilities are less in aviation, if we are in a carbon-constrained world, we may find that aviation does take an increasing share, but it is increasing from a relatively low base.

Q236 Lord Swinfen: I assume from that that the impact of the carbon emissions trading scheme would be almost entirely through the response of the airlines rather than just growth in travel demand.

Dr Sentance: The impact on travel demand would be less than those figures that I am suggesting here, and yes, we would expect to see some supply response from airlines looking for efficiency. Also, most projections suggest there would be a net demand from airlines for permits, which would then be financing reductions on the ground, so in a sense the aviation air travellers would be funding renewable energy or energy conservation; whatever routes were available on the ground to save energy would be funded by the air traveller.

Dr Sentance: If you are referring to the Tyndall Centre Report, I would certainly question the figures that they have come up with, and I was a bit disappointed with the depth of analysis in that part of their report. There is obviously a lot of good stuff in the report, but these figures are very sensitive to the growth rates that are assumed, and I think part of their figures assumed going beyond the 60 per cent reduction that the UK Government has talked about. So there was some confusion there. I think we need to see what is going to happen if we apply a consistent policy both to the rest of the economy and to the aviation industry. What worries me about the figures that tend to be produced is that they do not make that assumption. They apply a very significant reduction in the rest of the economy and they somehow assume that in that world the aviation industry can go merrily on, but if we are in an emissions trading world, the price of carbon would be going up and there would be very big incentives ultimately to stop flying and big incentives to invest more heavily in fuel-efficient technology. My observation would be that those most Draconian figures really do not apply a consistent policy assumption across the two sectors, but having said that, I think, because the substitution possibilities are less in aviation, if we are in a carbon-constrained world, we may find that aviation does take an increasing share, but it is increasing from a relatively low base.

Q237 Lord Haskel: And vice versa.

Dr Sentance: Possibly. It could be vice versa. This is one of the issues with this topic. We do not really know what will happen, and I think people probably tend to under-state the scope for supply substitution, but even so, you have to get quite a lot of supply substitution to offset the growth of air travel.

Q238 Lord Roper: The introduction of the airline sector into the ETS is likely to raise the cost of carbon within the ETS.

Dr Sentance: It will clearly create a net new demand, and I think the question is how far supply is responsive to that demand, but we will not be a massive sector in relation to the total scheme based on the emissions figures that were quoted earlier.

Q239 Chairman: You were talking about the proportion of emissions that aviation will be responsible for, and some people say it will rise and so on, and, as we understood it, there is a fairly authoritative report which says within 20-30 years aviation could realistically be seen to be taking up the whole of the CO2 emissions caps. Let us reduce that, knock something off that. Surely within 20-30 years, unless something changes, aviation is going to take a very substantial slice of CO2 emissions by acquiring, buying—as I said earlier, this is not a critical observation; it is simply a factual observation. So far we have found nobody who questions that. Is that your view?
particularly at a $60 oil price—for operating efficiencies, but that is obviously in the short-term one of the things you can do. If you take a slightly longer time horizon, there is the question of how it affects aircraft purchase, and I have suggested that it changes the economics of aircraft purchase, and it is certainly something that our fleet planners are beginning to think about in developing British Airway’s fleet strategy going forward. Taking an even longer time horizon, there is then the scope for accelerating research for new technology to help us to become more fuel-efficient. The manufacturer is always under pressure to pursue a number of objectives in developing new aircraft, but this would raise the importance put on fuel efficiency in the longer term context. Finally, there is the impact on demand of having raised the cost base and that flowing through, over some time period, into prices. I do not think we can say what combination of those measures, but there will be some combination, which will certainly reduce the emissions within the industry, though probably still leave the industry having to net purchase from other sectors.

**Q242 Lord Walpole:** Basically, what you are saying is the industry will in fact decrease the amount of flights it does and somehow will get emissions down. The business is going to expand, is it not?

**Dr Sentance:** I think that is the likely scenario, if we are responding to what consumers want to do, and then you are getting into more complex issues about whether we should be trying to develop a society where people are discouraged from flying so much. I do not think at the moment we are in that sort of world. As people express their preferences, they want to fly, and we are a producer in the business; we are there to meet that demand. I think we are caught between two pressures, the social pressure to fly more and also the environmental pressure to try and contain our emissions, and we are trying to find the best solution.

**Q243 Lord St John of Bletso:** Bird flu might affect the aviation industry. Going on to the technology issue, an issue we raised with the previous witness; you mention that British Airways is one of the most efficient, with one of the most modern fleets, and is continuing its campaign to reduce carbon emissions. To what degree do you think European government policy should be aimed at reducing emissions, supporting investment in research and development and recognising the need for continued improvements? We have heard these figures branded that more efficient air traffic control can bring down emissions by 12 per cent. Is that a realistic number? Which, if any, of these areas offers a significant contribution to reduce aviation emissions?

**Dr Sentance:** I think there is scope in the air traffic control arena. Some of it involves getting into politically sensitive territory. For example, the amount of European airspace which is earmarked for military purposes, and whether that is necessary in the current climate we operate within. That 12 per cent figure comes from an authoritative source, but there are many political obstacles to getting there. The other area where we would look for Government help is in the real research end of the Research & Development process. Clearly, a lot of Research & Development can be conducted by the commercial manufacturers, but a continued programme of Government support research into new technologies that will help reduce the weight of aircraft through new materials, technologies, and through combustion technology to make combustion more efficient, will clearly help.

**Q244 Lord St John of Bletso:** Will this be through tax breaks or what?

**Dr Sentance:** I am thinking more about primary research in universities and making sure that we have a strong primary research base in the key sciences, which will then feed through into the industry. This applies not just in Europe but in the United States as well.

**Q245 Lord St John of Bletso:** What actions are needed in your view?

**Dr Sentance:** To ensure that environmental priorities are given a bigger weight by the air traffic management authorities in Europe, which are still predominantly government-owned; and to maintain continuing support for the basic science which feeds into the development of new aircraft technologies. Those are probably the two major things for Government. In addition, creating a market-friendly framework for the industry, as we see emissions trading as being, which will properly incentivise the emissions reductions through normal market mechanisms.

**Q246 Lord St John of Bletso:** As a traveller, British Airways, if it follows all these initiatives, one wonders to what degree you could get a competitive edge on other airlines who would not necessarily be taking such a futuristic view to carbon emissions.

**Dr Sentance:** We have been prepared to take a certain number of voluntary steps which we believe are responsible and we feel have not put us at a competitive advantage. We have set a fuel efficiency target, we have joined the UK emissions trading scheme, we have recently launched a carbon offset proposal which allows passengers to offset their emissions—it may have limited impact but we want to be seen to be doing as much as we reasonably can. In the long-term though, we do need this ultimately
global framework which will enable the industry to limit its emissions in a cost-effective way. That is where we see we are heading in the longer term, which is something that can only be applied across the industry, not just by one airline alone.

Q247 Lord Swinfen: Does the height at which an aircraft flies affect the emissions?
Dr Sentance: In general, higher altitudes, once you get up there, are more fuel-efficient, but on the other effects, the non-carbon dioxide effects, the NOx, contrails and clouds, we do not properly understand but we think there may be quite a lot of sensitivity to the height. It is not a very straightforward thing just to say if it is higher it is worse. It depends on weather conditions and all sorts of other factors.

Q248 Lord Roper: You referred to the carbon offsetting scheme, and I think we were all rather sad to see the report in the newspapers yesterday that it had not initially been as much of a success as you might have hoped. What surprised me was I do not think I had been aware of was happening at all until I heard the story about it not working. I wonder what you did to make people like me, who might have paid it, aware of it?
Dr Sentance: Information is available on the British Airways website but, as you know, there is a lot of information on the website about car hire, hotels and all sorts of things. We are making it available without pushing it aggressively, because we know that passengers are also sensitive about things like fuel surcharges, and it is perhaps a difficult climate in which to be launching something like this. I was very disappointed by that newspaper article. I have written a letter to The Times and I am hoping they will publish it.

Q249 Lord Roper: In case they do not, perhaps you would send the Committee a copy.
Dr Sentance: I will send the Committee a copy of the letter that I have written, certainly.

Q250 Chairman: Could I ask a question following on from Lord St John’s? Is there anything that airports or those responsible for the running of airports could do, either within one country or across Europe that could help contribute to reducing emissions?
Dr Sentance: In terms of direct impact, the main way in which airports contribute to unnecessary emissions is by lack of capacity on the ground, meaning the aircraft are stacking for longer in the sky. So though it may seem paradoxical, and people will baulk at the suggestion, further expansion, say, of the infrastructure at busy airports like Heathrow through mixed mode operations on a third runway at Heathrow. If that can be used to reduce some of the congestion on the ground, that may help reduce some of the air traffic delays and some of the congestion. Having efficient operating procedures that mean that aircraft are not burning fuel inefficiently on the ground and can move very quickly from the jetty on towards the runway, those are the main things, beyond giving their public support to the cause of emissions trading, which we know that the key airport operator in the UK has done, and which we encouraged them to do.

Q251 Chairman: So the issue of aircraft circling monotonously around airports around the world, which may not happen as often as we think, is principally a problem of air traffic control rather than runway capacity down below?
Dr Sentance: It is both, and it depends on the circumstances, but often if you are held in a stack when you are coming into London, it may be just because they cannot get the aircraft down quickly enough because there is not enough runway capacity on the ground.

Q252 Chairman: It is the kind of thing the public think they understand. If you start introducing emissions charging, for which I think there is a general consensus, people will become fairly agitated if they are sitting up there burning up fuel simply going around in circles. Is that a significant issue, or is it frustrating but not actually significant?
Dr Sentance: We can provide you with some of our internal estimates historically and what we have projected going forward might be.

Q253 Baroness Eccles of Moulton: This is a question British Airways is probably more able to answer than almost anybody else. With the expansion of the EU and a whole lot of new countries coming into Europe, can you see that it is going to be even more difficult to get the ETS up and running, or will they mostly have rather small airlines that will not make all that much difference?
Dr Sentance: I hope it will not make it more difficult to get it up and running, and from an environmental point of view, it means we can broaden the scope. I hope the expansion of the European Union is not an obstacle. The countries that have come in are keen to move ahead with European initiatives, so I would hope they would be supportive.

Q254 Baroness Eccles of Moulton: So you see it as an advantage rather than a disadvantage?
Dr Sentance: I hope so, yes. I think you could see it that way, yes.
Q255 Baroness Eccles of Moulton: If air transport does not enter the ETS, are there any acceptable alternatives if it is agreed that the growth in aviation emissions should be reduced in the years ahead? You have already dealt with tax pretty comprehensively but are there any other alternatives?

Dr Sentance: If we cannot achieve this within Europe, we should just redouble our efforts to move ahead more broadly internationally. I do not think going down another route is going to be productive, because in our view it is the wrong route; it is not the efficient route. We have been active in trying to promote the cause of the EU emissions trading scheme, and if the EU for some reason finds it cannot move ahead, I think the correct response would be for the EU to redouble their efforts in ICAO to push this forward.

Q256 Chairman: Emissions permits, if given to airlines, on whatever basis, presumably they will have a value equal to the market price of carbon times the quota? So effectively, they are an asset on your balance sheet, are they not? Why is there a problem of whether you pay for them? If you pay for them, they have a value. I am a little puzzled by this. If you follow that argument, if you pay for them, they have the same value, the value you are paying.

Dr Sentance: I do not know what the accounting treatment would be. There is a potential value there but there is also at the same time—I do not like the word that you have used, “given”, but “allocated” these permits.

Q257 Chairman: That is what you want. You do want to be allocated them, on one basis free of charge.

Dr Sentance: Yes, but we have also at the same time assumed a responsibility to restrain our emissions that is potentially going to incur costs, costs of investment, potential costs of buying permits. As with a lot of things, there are swings and roundabouts. I think the other point that I would make is that you have to remember that you are dealing in the airline industry with an industry that has been structurally unprofitable for a very long time. To ask that industry to begin to make net payments for these permits when other people are not doing it seems to us to be unreasonable.

Q258 Chairman: I would put it this way. It may be an asset, having bought it, but it is not the way you would have spent the money if you had been given the freedom to do so, and I assume, having acquired that asset, it has not resulted in anything being done on emissions. It is an interesting issue. Perhaps we might have spent the money if you had been given the freedom. There is a potential value there—

Q259 Chairman: Thank you very much. Thank you for going well beyond your time. It has been extremely helpful of you. I did say I would give you, in the unlikely event we have missed anything, the chance to raise a point, and so is there anything you think we have missed?

Dr Sentance: My Lord Chairman, your Committee’s questioning has been so thorough that I do not think there is anything you have really missed.

Chairman: Thank you very much. We are most grateful.

Supplementary written evidence by Dr Andrew Sentance, British Airways

Here is some supplementary information following my oral evidence to the Committee.

1. Q207. We were asked to provide an estimate of the cost to BA if we had to buy permits for all our intra-EU flights.

British Airways flights within the geographical region of Europe, including our regional subsidiary Citiexpress, burned an estimated 3.5 million tonnes of CO2 in 2004-05. Given that our geographical region is somewhat broader than the European Union, a reasonable estimate for intra-EU flights would be 3 million tonnes of CO2. At present permit prices of 22 euros/tonne, this would cost €66 million or around £45 million.

2. Q209. We were asked to estimate what this would add to the price of flights if that whole cost was passed on.

Within our Europe geographical region, 23.5 million passengers were carried in 2004–05, equivalent to 12.75 million return journeys. For each return journey, therefore, a passenger generates 0.275 tonnes of CO2. If BA had to pay the whole cost of this at existing permit prices (22 euros/tonne) this would cost €6.05 or £4.10 per return journey.
3. Q247. We were asked to provide a copy of the letter we had sent to the Times on BA’s carbon offset initiative. This is attached (Not printed). Disappointingly, the Times chose not to publish it.

4. Q251. We were asked to provide an estimate of emissions generated by aircraft holding at Heathrow, waiting to take off and land.

Our current estimate for British Airways’ Heathrow operations is:
35,500 tonnes fuel
110,000 tonnes CO₂
Current kerosene price: USD 645 per tonne
Fuel cost: £12.9 million

8 November 2005
MONDAY 31 OCTOBER 2005

Memorandum by Department for Environment Food and Rural Affairs (Defra)

Has the emissions trading scheme worked well so far, and does the current system provide a solid foundation for expansion to include other sectors of industry?

1. The EU Emissions Trading Scheme (EU ETS) is a cost-effective and efficient way of reducing carbon dioxide emissions.

2. It commenced operation on 1 January 2005 and participants covered by the Scheme have been obliged to fulfil their monitoring and reporting obligations since this time. Operators carrying out activities covered by the EU ETS were required to obtain greenhouse gas emission permits, prepare monitoring and reporting plans, and provide verified historic emissions data, in order for them to be included in the UK’s National Allocation Plan (NAP) for Phase I (2005–07) of the EU ETS.

3. The 1,062 installations covered by the Scheme were responsible for around 46 per cent of UK carbon dioxide (CO2) emissions in 2002. Over the next three years, the UK NAP requires these installations to help reduce carbon dioxide emissions by around 65 million tonnes carbon dioxide (around 8 per cent) below projected emissions. This will help the UK deliver its national goal of a 20 per cent reduction in CO2 emissions on 1990 levels by 2010—thus exceeding its Kyoto Protocol target.

4. The approved NAP was published in May 2005, and the UK Registry went live on the same day. Therefore, UK operators have been involved in the carbon market for several months. The EU ETS market is still young, but it is developing rapidly. In the first half of this year over 75 million tonnes of carbon were traded, representing over £1.3 billion of trade.1 It has been estimated that the global carbon market could be worth some €5 billion in 2005, with the EU ETS accounting for 88 per cent of this figure.2

5. Approximately 12,000 installations across the 25 Member States of the European Union are required to surrender allowances equal to their annual emissions. This covers 6,572.4 MtCO2 in Phase I (2005–08), which is approximately 46 per cent of the EU’s total carbon emissions.3

6. The EU ETS is designed to achieve emission reductions in a cost-effective manner, by providing operators with the flexibility to choose whether to make emissions reductions themselves or to buy surplus allowances from other operators. A higher price of carbon would therefore incentivise industry to make additional reductions in emissions, as this becomes more cost-effective than emitting at a higher level and purchasing allowances.

7. A number of inconsistencies in implementation across Member States have been identified and the UK is working with the Commission and other Member States to increase harmonisation of implementation across the EU. The UK is considering expansion of the scheme for Phase II to bridge the gaps and remove competitive distortions currently existing between some sectors. Streamlining the Scheme and working towards greater harmonisation of scope will create a more effective scheme.

8. The European Commission have commissioned McKinsey & Company and Ecofys to monitor and review the EU emissions trading scheme (EU ETS) during 2005 and 2006. The purpose of the review is to provide a fact base in order to analyse the functioning and design of the system, to evaluate the impact of expanding the EU ETS to other sectors and gases, and to understand the actual impact of the EU ETS on competitiveness.

9. Whilst the Scheme is still developing, overall it provides a solid foundation from which to explore the inclusion of other sectors where appropriate.

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3 Source: Analysis of the NAPs for the EU Emissions Trading Scheme, ECOFYS, 2004.
Including the Aviation Sector in the European Union Emissions Trading Scheme: Evidence

31 October 2005

Why include the aviation sector, and what are the possible costs and benefits to the industry of joining the ETS?

10. UK forecasts suggest that the UK’s combined domestic and international aviation emissions could account for up to a quarter of our total contribution to global warming by 2030. In the EU carbon dioxide emissions from aviation were 3 per cent of total emissions in 2001, an increase of 68 per cent from 1990 levels.4

11. The EU’s 6th Environment Action Programme states that “Identifying and undertaking specific action to reduce greenhouse gas emissions from aviation if no such action is agreed within the International Civil Aviation Organisation by 2002” is a priority. The 2003 Air Transport White Paper restated the principle that the aviation industry should pay for its environmental costs and that it has to take its share of responsibility for tackling the impact of air transport on climate change.

12. The advantage of emissions trading is that it guarantees the desired environmental outcome in a way that other instruments, such as charges, do not. And it ensures that the emissions reductions required to achieve this environmental outcome take place in as cost-effective a manner as possible. This is because the abatement happens at the organisations who face the lowest abatement costs. However, we also recognise that trading may not provide a total solution and continue to explore and discuss options for the use of other economic instruments for tackling aviation’s climate change impact.

13. At present, there is evidence of market failure because the full environmental costs are not currently factored into the prices paid by those who benefit from aviation. When compared to other options (such as emissions charges), including aviation into the existing EU ETS means that it is cheaper for the EU as a whole to achieve the environmental goal. Emissions trading is the most economically efficient instrument for achieving a specific goal.

14. The exact cost impact of correcting this market failure will depend upon the details of any trading regime, which will be subject to negotiations with other EU Member States. However, the feasibility study recently published by the Commission (Giving Wings to Emissions Trading) looked at several possibilities and assumed that, due to the industry’s low profit margins, costs will be passed on to the consumer (see below).

15. EU industry accepts the need to internalise externalities, and broadly agrees that emissions trading is the most cost-effective option for tackling the impact aviation makes on climate change.

16. The inclusion of aviation has the potential to impact on the EU Allowance price, which will have a subsequent cost to existing (non-aviation) EU ETS sectors. However, the magnitude and nature of this impact will depend on a wide range of design factors. We have commissioned a study to provide an assessment of this.

17. The methodology for allocating emissions has yet to be decided, but must provide the correct incentives to reduce emissions without distorting competition within the industry.

What are the possible impacts of the inclusion on the international competitiveness of the EU aviation industry (and its competitive position in relation to other transport modes)?

18. The impacts of the inclusion of aviation depend on the design of the scheme, which will be subject to negotiations with other Member States. However, the Commission’s recently published feasibility study contained an assessment of competitive impacts and concluded that none of the policy options considered will significantly damage the competitive position of EU airlines relative to non-EU airlines.

19. This conclusion was based on the following:

— None of the front-runner options differentiate with respect to nationality of aircraft operators or type of operation;
— The impact of the estimated price increases on the size of the home market is too small to have substantial effects on the operating efficiency of EU carriers; and
— Non-EU carriers may be able to cross-subsidise or shift their cleaner fleets to routes falling under the scheme, but in practice other constraints and commercial considerations may limit this.

20. Although aviation is an international industry, it is less vulnerable to economic distortions than other sectors of the EU economy. This is because the scope of acceptable substitutes for the industry’s “product” (ie travel between two points) is more limited than for other products and because the market is highly regulated by bilateral air service agreements that limit competition from non-EU airlines.

4 as reported under the EU greenhouse gas monitoring mechanism.
21. There are few alternatives to the convenience and speed of air travel. It must also be considered that some other transport modes, such as rail, are indirectly covered through existing EU ETS sectors (in the case of rail, the Electricity Supply Industry).

What are the costs and benefits to consumers and the environment of including aviation in the ETS?

22. The impact of emissions trading on ticket prices is relatively small, with costs spread over all tickets falling under the scheme. The Commission’s feasibility study projects a ticket price increase range of between £0.20 and £9 for a round trip. However this falls to £0.2 to £2.9 if allowances are allocated for free.

23. The study also indicates that the inclusion of aviation will result in a total reduction of 20–26 MtCO2 of which 0.3–5.6 MtCO2 would come from the aviation sector and the remainder purchased from other sectors. The inclusion of international aviation into the EU ETS will therefore provide a further economic driver to aid the UK to deliver its national goal of a 20 per cent reduction in CO2 emissions on 1990 levels by 2010—thus exceeding its Kyoto Protocol target (note: international aviation is not included in either the national goal or the Kyoto target).

At what point in the development of the EU ETS would it be feasible to incorporate the aviation sector?

24. It would be feasible to incorporate the aviation sector from the start of Phase II. The Commission have said that an amendment to the EU ETS Directive in time to include new sectors in the Phase II National Allocation Plans is unlikely. However, this does not rule out the inclusion of aviation as it is not likely to form part of the Phase II NAPs.

25. Provided that we can give sufficient notice to industry about the number of allowances and how they will be distributed, an amendment bringing in other sectors could be prepared and introduced in or after 2008.

26. We will continue to press for its inclusion from 2008 or as soon as possible thereafter. The inclusion of aviation into the EU ETS is our priority, however, we reserve the right to act alone or bilaterally with like-minded partners if progress towards agreements at an international level proves too slow.

What other economic or regulatory mechanisms exist to encourage reductions in CO2 emissions from the aviation sector, and how effective might they be compared to emissions trading?

27. Other instruments to encourage reductions in emissions from the aviation sector include taxes, charge, voluntary agreements and regulation. The UK has long recognised that a global exemption of aviation kerosene from fuel tax is anomalous but, given ICAO’s policy that fuel used for international aviation should not be subject to tax, we believe that a unilateral approach to aviation fuel tax would not be effective. Without international agreement on the issue, market distortions and environmental disbenefits could result, such as the carrying of extra fuel to avoid tax, which leads to increased emissions.

28. The UK Government is keen to remove some of the international and EU legislative constraints on action and we see a strong case for EU and international action on market based approaches for tackling the environmental impacts of aviation. At the same time it is important that any new taxes or charges take account of countries’ sovereignty and the UK’s approach to this, such as any EU tax legislation, needing to be agreed under unanimity.

29. Any taxes or charges will need to be well designed, lawful and deliver effective and efficient environmental outcomes taking account of economic and social objectives, including the impact on passengers, the competitiveness of airlines and EU countries, and social exclusion.

30. The UK’s commercial aviation industry has already undertaken voluntary commitments in its recent “Sustainable Aviation” strategy. The Government is pleased that the industry has recognised its environmental responsibility and is responding proactively and we look to them to take their strategy forward energetically so that aviation contributes to a sustainable society.

31. The advantage of emissions trading is that it guarantees a specific environmental outcome in a way that other instruments do not. It also ensures that the emissions reductions required to achieve this outcome take place in as cost-effective a manner as possible.

32. Emissions trading is therefore our priority, however, we recognise that it may not provide a total solution and we continue to explore and discuss options for the use of other economic instruments for tackling aviation’s greenhouse gas emissions.
Examination of Witnesses

Witnesses: Mr Elliot Morley, a Member of the House of Commons, Minister of State for Climate Change and Environment, and Mr Daniel Yeo, National Climate Change Policy Division, Department for Environment, Food and Rural Affairs (Defra), examined.

Mr Morley: I have, my Lord Chairman.

Mr Yeo: My name is Daniel Yeo. I work for Defra in the National Climate Change Policy Division.

Mr Morley: Thank you very much. Just very briefly, the whole issue of including aviation within the European Emissions Trading Scheme is one which has been a very high priority for the UK Presidency. It is the UK that has been the driving force behind moving this forward. We asked the Commission to bring forward the proposals for including aviation within the EU ETS and we were very pleased to see that recently the Commission did this and we had a very brief opportunity to respond to it in the October Environment Council. It will be on the agenda for the December Environment Council when there will be an opportunity for discussion on it to gauge opinion from other Member States. My own feeling is that the idea of including aviation within the scheme enjoys considerable support and there have been some very positive responses from the aviation sector itself. Aviation is expanding, its contribution to greenhouse gases is increasing and it is a sector that we cannot ignore. Currently it is completely outside the Kyoto Framework because it is included within the wonderfully named Bunker Fuel discussions, along with maritime fuel, which I associate more with shipping than aviation. I want to have a system where it was based simply on efficiency and emissions from the aviation sector itself.

Mr Morley: Thank you very much. I am a Member of the House of Commons, Minister of State for Climate Change and Environment, and it is the UK that has been the driving force behind moving this forward. We asked the Commission to bring forward the proposals for including aviation within the EU ETS and we were very pleased to see that recently the Commission did this and we had a very brief opportunity to respond to it in the October Environment Council. It will be on the agenda for the December Environment Council when there will be an opportunity for discussion on it to gauge opinion from other Member States. My own feeling is that the idea of including aviation within the scheme enjoys considerable support and there have been some very positive responses from the aviation sector itself. Aviation is expanding, its contribution to greenhouse gases is increasing and it is a sector that we cannot ignore. Currently it is completely outside the Kyoto Framework because it is included within the wonderfully named Bunker Fuel discussions, along with maritime fuel, which I associate more with shipping than aviation. I want to have a system where it was based simply on efficiency and emissions from the aviation sector itself.

Lord Haskel: I wonder if you could start by discussing how we are going to allocate the scheme. In paragraph 17 of your evidence you note that the methodology for allocating emissions has yet to be decided, and you go on to say that it must provide the right incentives to reduce emissions without distorting competition. Could you say something about how they differ in their impact to reduce emissions and upon distorting the industry?

Mr Morley: There are four basic options. I think, that the Commission and the EU can consider, as to how allowances are allocated. One is that you simply allow people to buy them. It is as simple as that, the sector has to purchase the allocations from the existing pool and apply it to themselves. The second way of doing it is by auctioning, which has an element of fairness, because there is concern that whatever system you have, you should not disadvantage the more efficient airlines which have put money and investment into more modern fleets. You would not want to have a system where it was based simply on the track record or the grandfathering, which is the third option, and you simply take the record of

1 ICAO have endorsed the development of an open emissions trading scheme and are producing guidance on both voluntary schemes and the inclusion of aviation into mandatory schemes.
individual companies and you give them an allocation on the basis of that record. I do not support that myself. Another way of doing it, the fourth way, is benchmarking, which again has certain advantages of fairness in that you will do a calculation on what would be the average emissions of a modern aircraft on a particular route. Therefore, the allocation would be based on not necessarily the historical track record, but on what would be regarded as a reasonable level of emissions for a modern aircraft. Again, that will not disadvantage those companies which have invested in modern and less polluting aircraft compared with those which have not. Those are the four particular options. I think it is fair to say that, although there is a cost to it, really auctioning has the most attractions.

Q264 Lord Haskel: You said just buying them and that was your first option. Would you mean buying them from the existing pool?
Mr Morley: You could do it that way, although I think really you would have to have an allocation to cover the aircraft sector, but theoretically you could. If you wanted to make sure that the price was higher in relation to the actual carbon allocations then of course if you put a new buyer—a whole new sector—within the scheme it would be likely you would impact on prices. Given the size of the aviation sector, I do not think that is likely.

Q265 Lord Swinfen: You could start, if you are coming in late, with an allocation.
Mr Morley: To the pool, do you mean?

Q266 Lord Swinfen: Yes; give a free allocation to them as new entrants to the scheme.
Mr Morley: That is how the scheme is set up at the moment in that there is a reserve, and we have a national reserve in the UK, so that if you have a new company coming in there is a free allocation for new investment. You could have that, although if you had auctioning across the board then you would not be disadvantaging a new company. If every company had to get their allowances by auction then no-one would be disadvantaged by that.

Q267 Lord Fyfe of Fairfield: I may be repeating some of this, but what would be the basis for calculating the level of CO2 arising from aviation operations within the EU?
Mr Morley: The four options have implications in relation to how you would apply them, particularly if you were doing benchmarking or grandfathering because you would have to have some form of track record in relation to the company for both of those. For auctioning you would have to have a calculation of the overall need for the sector. Again, if you wanted to reduce emissions, theoretically you could set the overall level of allocations slightly below the existing demand because that drives efficiency and drives that down. There will have to be some calculations done on that and I think there is some work being done, am I right, by our consultancy?

Mr Yeo: No, not on the total level of allowances.

Q268 Lord Fyfe of Fairfield: How would the allocation be made to individual airlines, for example?
Mr Morley: It depends on which of those four options you go for.

Q269 Lord Fyfe of Fairfield: Taking your favoured option, how would you operate that?
Mr Morley: That is entirely up to the airline. If you went down the route of auctioning, the airline would do a calculation of how many tonnes of carbon it would need to cover its operations and then it would bid for that required amount from the auction. It would be entirely up to individual companies to decide how much carbon they wanted under the auction scheme. It is one of the advantages that it has.

Q270 Baroness Eccles of Moulton: Minister, as I understand it, there is already a pilot scheme running, since the beginning of the year, where the allocations, the allowances, are distributed across the industries which are in the pilot. How would it work if the aviation sector was then going to operate under a different system, like a straightforward purchase or auction, because at the minute I believe they are grandfathered, are they not?
Mr Morley: They are. I think you are referring to the UK scheme, is that right?

Q271 Baroness Eccles of Moulton: Yes.
Mr Yeo: There are two schemes. You have got the UK scheme at the moment, which is a voluntary scheme, and there is the EU ETS, which is not a trial, it is a whole, stand-alone scheme in itself, which started operating on 1 January this year2. Baroness Eccles of Moulton: It is still running as a pilot?

Q272 Chairman: It is Phase I?
Mr Yeo: Yes. Under that, there is a provision for up to 5 per cent of allowances being auctioned and it is up to Member States to choose how much auctioning they wish to use, and that rises to 10 per cent in Phase II.

Q273 Baroness Eccles of Moulton: Is aviation going to be included in the EU ETS from 2008? If it is, the whole allocation system might change I suppose?

2 There is no pilot scheme. The UK ETS is a voluntary scheme that has been operating since March 2002 and is separate from the EU ETS. Phase I of the EU ETS started on 1 January 2005, and continues until 2007. Phase II runs from 2008–12, in line with the first commitment period under the Kyoto Protocol.
Mr Morley: That is right. Ideally, we would like this scheme to start in 2008, although, realistically, my Lord Chairman, we recognise that it would have to go through the legislative process with the EU. A decision would have to be taken by co-decision with the European Parliament; that can be quite a lengthy process, and then when it is agreed it has to be translated into EU law. It is a bit touch and go whether they can make 2008 but that is our preference.

Q274 Chairman: I have two supplementaries on the question of auctioning. Have any other industries been asked to pay for their initial allocations by auctioning?

Mr Morley: So far, no. There is within the scheme, as you just said, the option of auctioning a certain percentage of the allowances. Even within our own scheme, if the national reserve, that we were talking about within our own UK allocation under the EU scheme, is not fully taken up then there is provision within Phase I of the National Allocation Plan to auction those off if we so choose. A decision has not been taken on that.

Q275 Chairman: Why is it that, given the allocations to other industries so far, you have not gone down the auction route and why is it now that you think this is potentially a good idea for aviation?

Mr Morley: I will give you my personal opinion on auctioning, more than the Government position. Of course, we will have to discuss collectively with the EU what would be supported of the four main options in relation to allocation. I am giving you the view that I think there is a very strong argument for auctioning. I think the view, both our own and that of the Department of Trade and Industry, is that within our own scheme, ultimately auctioning would be desirable. It is a place we would like to get to, but you have to get the scheme started, you have to get it established. I think it is no mean achievement to get the EU ETS off the ground with 25 countries. It has not been without its problems, and I would not pretend otherwise, but I think we can deal with some of these in the second phase, and of course it is a learning experience. I think the EU scheme is very important in terms of having a real effect on combating climate change and, as I have said, I do see it as being the nucleus of a global scheme in due course.

Q276 Chairman: Our main remit is the impact of these things on industry. I am still interested in why it is auctioning that you have in mind—auctioning the initial allocation means installations pay for emissions they are making already as opposed to doing something about changing their behaviour over time. Do you see any arguments against auctioning, any problems, from the point of view of the industry?

Mr Morley: The main argument I would see against auctioning is the competitive effect it would have on the EU aviation sector compared with global competitors, although if you made the scheme applicable to every take-off in the EU, which I believe you could do, then of course you are dealing with the competitive point. Why I think there is a strong argument for it is, if I can go back to the argument that you may have two companies, one of which has invested in a modern fleet with few efficient engines and one which has not, the one which has the modern fleet clearly will have to bid for fewer carbon credits than the one which has not, so there is an element of equity within the scheme. Also, as I was saying to Lord Fyfe, in terms of the calculation, it is the companies themselves which do the calculation, and of course that reduces the bureaucracy of the scheme, because the companies would want to buy only the allocations to cover their operations and they would do that assessment themselves. It has a range of advantages, in terms of administration, in terms of equity and in terms of making sure that the scheme is effective as well.

Q277 Chairman: How much would that add to the costs of the European aviation industry if they had to buy the existing carbon emissions at the current price of carbon?

Mr Morley: It is not a calculation you can do on the current price of carbon. It is a bit difficult to give you an absolute answer because it depends on the price of carbon at the time. It depends on the way that the calculations will be done overall in relation to the sector. I think it is a bit difficult at the moment to give you a precise answer on that. I do not know whether we have any figures in the assessment that the Commission did?

Mr Yeo: I believe there are some figures, yes.

Q278 Chairman: We would be perfectly happy if you could send us a note afterwards.

Mr Morley: Yes. I think there are figures in the Impact Assessment so we can let you have those.

Chairman: Thank you very much.

Q279 Lord Fyfe: In paragraph 24 of your written evidence you say that aviation is not likely to form part of the Phase II National Allocation Plans if it is included within the ETS. Would you explain the significance of that, please?

Mr Morley: It goes back to what I was saying earlier on, that we would like to see it included in Phase II but, because of the time-scale of the Phase II National Allocation Plans, it has to be with the Commission for June of next year, clearly it is not going to be ready for June of next year. What you
could do, theoretically, is that if you had legislation done by 2008 for the beginning of the second phase in 2008 then theoretically it is possible to include it, but it is not going to be possible to include it in the calculations in Phase II at the moment.

**Q280 Lord Fearn:** Should the initial allocation allowances for aviation and between airlines be made at EU level rather than by Member States?  
**Mr Morley:** The calculations would have to be made at EU level.

**Q281 Lord Fearn:** In paragraph 25 you say that an amendment could be introduced to begin ETS for aviation in 2008, provided that you can give sufficient notice to industry. What do you mean by “sufficient notice”?  
**Mr Morley:** The industry would have to have the details of the allocation, all the points that we have been discussing, in reasonable time in order for them to make proper arrangements for the beginning of the Trading Scheme in 2008. Theoretically it is possible and certainly it is something that I would like to see. The industry is well aware that this is coming. It has been under discussion for some time. The proposals are now public and the Council of Ministers will take a decision on this in due course. Very clearly, it is in the public domain but, of course, the aviation industry will need the details of the allocation, which method is being chosen and how it is going to work. That is perfectly reasonable and that has to be done in a reasonable time.

**Q282 Lord Fearn:** Two years?  
**Mr Morley:** Two years is not an unreasonable figure, I think.

**Q283 Chairman:** Do I understand that you said the setting of the allowances and the allocation to aviation and allocation between airlines would have to remain at EU level? In other words, they would not come within National Allocation Plans?  
**Mr Morley:** I think it would be within National Allocation Plans but they are approved by the EU. Do you want to clarify that, Daniel?  
**Mr Yeo:** In the current scheme Member States draw up their own National Allocation Plans according to the contribution they expect their trading sectors to deliver and the Commission assesses those just to make sure that there is no over-allocation. At the moment there is not a methodology for assigning international aviation emissions to Member States; that is something which currently is under discussion in the UN Framework Convention on Climate Change. There is not currently a way of allocating international aviation emissions to the UK, for example.

**Q284 Chairman:** There is a method for allocating to each airline for all the 25 EU Member States, is there? How would this work? Are you saying that you would have to decide which airline definitely belonged to which country’s national allocation? How will that work, how will you calculate that? It seems terribly complicated, rather than having this done just at EU level.  
**Mr Morley:** The airlines are registered in a particular company where their head office is, and so where their head office is, where the company is based, they will come under that country’s National Allocation Plan.

**Q285 Baroness Eccles of Moulton:** This is a continuation of the same theme. Minister, I believe you said in your introductory remarks that the ultimate aim would be for an emissions trading scheme to be global, but initially would it be practical to include extra-EU flights in the ETS or really should it be only intra-EU flights?  
**Mr Morley:** I think it would be desirable if the EU Scheme applied to all aircraft taking off from the EU. Clearly it will apply to all intra-EU flights, of which there are many, of course, but I think if we want this Scheme to be really effective and also an issue of competitiveness and equity then it should apply to all ‘planes taking off from EU destinations, whatever their country of origin.

**Q286 Baroness Eccles of Moulton:** Would you think that there was a willingness internationally, globally, to seek a wider solution to aviation emissions in due course? If so, within what forum would that take place and within what time-scale, or is that too much crystal ball gazing?  
**Mr Morley:** I think there is a lot of crystal ball gazing there. I think it is fair to say that there are mixed views, shall we say, internationally on the benefits of carbon trading. I come back to the point that I was quite pleased to see that the International Civil Aviation Organisation are in favour of voluntary schemes and that is a step in the right direction. I have been very pleased and encouraged by the response of our own aviation sector here in the UK which has been pretty supportive. I know there are other airline companies in other European countries which also support this approach. There is a lot of support for the concept of carbon trading within the aviation sector. I would not be surprised if there were to be some complaints and possibly legal challenges if the EU went ahead and applied it to all take-offs from the EU, but nevertheless my advice is that it is legal to do
so and on that basis certainly we shall explore that as a very real option.

**Q287 Chairman:** I think you said that the advice you have is that it would be legal to do so?

**Mr Morley:** Yes.

**Q288 Chairman:** What would be the basis of that action?

**Mr Morley:** Basically that if you are applying a scheme within the EU and you are applying it in a non-discriminatory way, because that would have to be part of the approach, then it would not be against current international agreements to apply it to all carriers departing from the EU.

**Q289 Chairman:** Would that be based upon the air mileage of extra-EU take-offs throughout the whole journey, or just within EU airspace?

**Mr Morley:** The logic, my Lord Chairman, would be for the whole journey.

**Q290 Chairman:** An American airline could legally be charged for the whole of a London to New York flight?

**Mr Morley:** That is my understanding, as indeed an EU carrier would as well.

**Q291 Lord Swinfen:** Mr Morley, bearing in mind that French overseas possessions are considered to be part of metropolitan France and therefore within the EU, where are the EU boundaries? Does it mean that a flight taking off from a French possession in the Caribbean and flying to anywhere else in the world comes under EU legislation?

**Mr Morley:** If these territories are acknowledged to be part of the EU, and I think that these particular French possessions are, then of course the EU regulations would apply in those circumstances.

**Q292 Lord Swinfen:** Does that include flying from their possessions in the Pacific Ocean and the Pacific Islands?

**Mr Morley:** If they are regarded as part of the EU.

**Q293 Lord Swinfen:** I believe they are.

**Mr Morley:** We do have a list actually of countries that would fall under the scope and it does include overseas countries and territories, including some which are UK ones. We will certainly let you have that list, my Lord Chairman.

**Chairman:** That will be extremely helpful, Minister.

**Q294 Lord Swinfen:** Minister, in paragraph 16 of your written evidence you say that the inclusion of aviation in the Emissions Trading Scheme has the potential to impact upon the EU allowance price, which will have a subsequent cost to existing non-aviation sectors. You say that the magnitude and nature of this initial impact will depend upon a wide range of design factors. To start with, what are those design factors?

**Mr Morley:** This is the structure of the scheme, do you mean?

**Q295 Lord Swinfen:** Yes. You talk about design factors in your written evidence. What are those design factors?

**Mr Morley:** Daniel, do you want to mention what they are?

**Mr Yeo:** I think one of the key drivers surrounding the impacts on allowance price is to do with the overall level of allocation across the entire scheme, so not just for the aviation sector but for the rest of the non-aviation parts of the scheme as well. It will also depend on a wide variety of other factors, such as the amount of project credits, or credits coming from Joint Implementation and the Clean Development Mechanism projects, that enter the market and it is a very complex area. There is a wide range of factors that must be considered and I think it is very difficult to consider the impact of just the aviation sector on the broader scheme.

**Q296 Lord Swinfen:** My Lord Chairman, I think this is important. I wonder if we could have a note on those design factors. I think it is a very short time to produce what is really a very complicated answer and I wonder if the Minister would be kind enough to let us have a note.

**Mr Morley:** It is, my Lord Chairman. That is one of the areas where certainly we do have consultants working on it, I think it is ICF Consultantancy, and they are looking at the structure of these design factors. That work is under way. I do not know whether it is finalised enough actually to report to the Committee as yet, but certainly we can make sure that you have a copy of that when it is done.

**Q297 Chairman:** It would be rather helpful to us if we could have the terms of reference of that for the consultants, because I suspect that would answer the point that Lord Swinfen was asking.

**Mr Morley:** One of the key influences on that will be the overall size of the cap, and of course that is not determined yet and it is not likely to be for some time, because that is one of the issues that will have to be negotiated. The size of the cap will be crucial to influencing the shape of these designs.

**Q298 Chairman:** Would it be your expectation that the existing level of emissions for aviation would be added to the existing cap, or that, in principle, you would prefer to see aviation having to operate within the existing or lower cap?
Mr Morley: It will have to count towards the overall cap but it is likely there will be a sectoral cap for aviation in the calculations, but then of course that would add to the overall cap of the National Allocation Plans.

Q299 Chairman: When do you expect the consultants to report?
Mr Yeo: They have produced a draft report already and we expect the report over the next few weeks. I think there are some concerns we have regarding their methodologies, which we are continuing to discuss with them, and, as I said, there are the broader complexities of the scheme which need to be considered as well. I would be happy to provide you with a note setting out the terms of reference and the details of that.
Chairman: That is very helpful, Minister. Thank you very much.

Q300 Lord Walpole: If aviation enters the ETS on the basis of free allocation of quotas based on benchmarking, do you agree with the European Commission’s published estimates of the impact they would have on short-, medium- and long-haul air fares within Europe, and are such fare increases likely to have any noticeable effect on travel or emissions, or is that not the aim of the ETS?
Mr Morley: The aim of the ETS overall is to reduce emissions and that has to be its priority. I think it is a little bit difficult to say at the moment, because it is very new, exactly what the precise impact will be. Again, it comes back to the point I made earlier on, that the size of the cap is going to be crucial to this and you need to do the calculation. For example, if you had a “business as usual” cap then that would have much less impact on fares and allocations, and the price of carbon, than if you set the cap that was designed to reduce the amount of emissions, because clearly that means the aviation sector will have to find emissions reductions. It is important that we have some environmental objectives in this, so I would hope very much that the cap did present a challenge to the industry in terms of getting those emissions down. That again is going to be one of the issues which will have to be negotiated within the EU process.

Q301 Chairman: When we put this point to the Commission, when they gave evidence before us, I think it is fair to paraphrase their reply as saying that, yes, really the effect would be very small, certainly in the early years, and that in the parts of Europe which might be concerned, depending on holiday travel, for example, in Greece or beyond, people should not be too concerned. I just wonder how one can square soothing words to customers of air travel that there are not going to be significant rises in air fares with the desire for this to bite and to have an impact on aviation emissions?
Mr Morley: Again, from the Commission’s Impact Assessment, they assumed that there would be some impact on prices, although they are comparatively modest. When the Commission say that they do not see, particularly in the early stages, huge impacts on the companies or passenger numbers, probably they are right. I think it is also likely, as I mentioned in my opening remarks, that it would not necessarily rule out growth in the sector, but that growth would have to come on the basis of cutting emissions in other areas and that is highly desirable. I think that is the great advantage of the carbon trading system.

Q302 Lord Haskel: Really we started on this question, when we asked you to get out your crystal ball, Minister. In the event that aviation is in the ETS, do you think that future overall emissions allocations to aviation will be capped at the initial level that is allocated, or be lower because of increased efficiency, or perhaps be higher because of increased growth in air travel?
Mr Morley: It is crystal ball stuff really. I would hope very much that we would see the allocation being based certainly on trying to bring down some of the emissions. There are going to have to be some quite tough negotiations on this, because I think it is fair to say, my Lord Chairman, that the setting of the cap is going to be everything: it is the crucial factor. Set it too high and you are not going to have any impact on emissions and it will mean that the price of carbon will be low if the cap is too generous. Set it too low and of course you will have an impact on fares and competitiveness. I think that our objective would be to ensure the cap is set which does take into account the three elements of sustainability, which are the social, the economic and the environmental, and to look ahead with the growth of air travel. My worry is that if we do not have some restraints on the aviation emissions then that growth is going to continue and continue, with more and more emissions. You need that cap and the cap has to be set at a reasonable level, recognising all the kinds of pressures there are on the sector, but at a level that does drive some change in emissions, and does bring about the environmental benefits. Clearly, that will be the challenge we are going to face within the European Union.

Q303 Lord Haskel: Will the cap be set in stone? Presumably, if we try to look a bit further, beyond 2012, will there be arrangements whereby the cap can be reviewed or will aviation be forced to buy allowances from other sectors of industry?
Mr Morley: We are in the second stage of reviewing the National Allocation Plan within the European Union Emissions Trading Scheme, and it is likely, as
it progresses, that there will be periodic reviews. If I can give an opinion, I think the ideal is that when you review your caps you do it on the basis of each industry sector contributing to climate stabilisation. That means you try to force down those emissions and that you try to drive, through the use of the cap, new innovations, new technologies and new designs, and of course those other mechanisms which can be used within the carbon trading scheme, such as the Clean Development Mechanism, for example, and Joint Implementation.

Q304 Chairman: Looking to the longer term, the objective by 2050 overall is to get emissions down by 60 per cent. I think, is it not? Mr Morley: That is right, my Lord Chairman, yes.

Q305 Chairman: In broad terms, is your thinking at the moment that all sectors would have their caps reduced, gradually, over time, to reflect that? I ask it because, in the end, we tend to look at these things from the point of industry. Aircraft investments are long-term investments, a bit like power stations. Unless there is some confidence and certainty, or at least an idea of what the thinking is about the future, investment decisions are very difficult. If somebody says “We’ll tell you what’s going to happen up to 2012 but we’re not sure about it afterwards,” that is pretty tough if you are trying to make investment decisions.

Mr Morley: I think that is a fair point, my Lord Chairman. At the moment, the way that the EU scheme is constructed is that it takes you up to 2008 for the second allocation. We do need to give industry a long-term signal so that they can plan and they can invest. I know, from talking to industry, that is what they are looking for, and I have every sympathy with that. I think that is something which can be addressed within the EU so that people are clear where they are going. I think it is also fair to say that the Emissions Trading Scheme is only one approach to dealing with climate change and the need for climate stabilisation. It is a very important one because you are dealing with some big emitters—the energy sector, the industry sector and aviation. Also there is the transport sector and the domestic sector. Of course, they all have their contributions to make, whether it is through energy efficiency or other mechanisms that can apply. If we are to stabilise emissions, then every sector of society has a contribution to make towards this. Do not think that we think the carbon trading scheme is the complete answer and that just industry alone has to carry the burden of this, because that burden has to be shared.

Q306 Chairman: I apologise for pushing this particular issue but really it is quite important. One witness before us has said that by 2017, on some calculations, aviation could already have taken up all of the EU emissions target for 2050 and, on a slightly less demanding basis, that certainly could happen by 2025 or 2030. That implies that, whatever aviation does, air fares are going to rise very, very steeply in the next 10 or 12 years. That appears to be the logical conclusion from that kind of evidence to us. In other words, there are two issues: getting aviation into the EU trading scheme and then what the growth of aviation emissions implies for the future of air fares. Does that seem a reasonable conclusion?

Mr Morley: Yes. I think this sounds like the Tyndall Report which looked at aviation recently. Tyndall is a very respectable organisation which makes a very valuable contribution to discussion on these issues. Tyndall gives a projection on the upper end of growth in aviation and I think it is very difficult to say for sure whether those figures are actually going to materialise. What we do know is that certainly there is growth in this sector and that is the conclusion of our own Department for Transport in relation to their own figures and projections of demand. Also I think it is likely that there will be an impact on fares. How big an impact? I think there are far too many variables at the moment to predict that it would be an enormous impact. I think it is premature to say that. Certainly I could not say that there would not be any impact at all. I do not think any reasonable person would accept that.

Q307 Lord Swinfen: Mr Morley, has your Department in fact undertaken any impact assessment on the effect of the ETS on civil aviation?

Mr Morley: The calculation has been done by the Commission, by the European Union.

Q308 Lord Swinfen: That is not your Department! Mr Morley: No, absolutely not. It would be very interesting if it were.

Q309 Lord Swinfen: It might be rather better run? Mr Morley: Certainly I would like to think so. We have done some of our own initial Regulatory Impact Assessment work, and that is with the Explanatory Memorandum, so we have tried to give some idea of this. I think the Explanatory Memorandum has gone to EU Committee D for consideration.

Chairman: My Clerk tells me that the Explanatory Memorandum has arrived fairly recently, so thank you for alerting us to that, Minister.

Q310 Lord Swinfen: Minister, does it include an impact on private aviation? By that I do not mean private charter aviation, I mean the ordinary individual with his own small aircraft lying around, because, in my view, that is still part of civil aviation.
Mr Morley: That is interesting.

Mr Yeo: The Commission’s proposal and the work that the consultants C E Delft did, in their Giving Wings to Emissions Trading, proposed a de minimis level, so a minimum level beyond which operators would not be included within that scheme, and that de minimis level could be set just on a range of ways and that again is set out in the C E Delft Giving Wings to Emissions Trading report.

Mr Morley: The idea is that it would not catch the flying club with a couple of Cessnas, I think.

Q311 Lord Swinfen: In paragraph 14 of your evidence you mention the Giving Wings to Emissions Trading report. Are there any matters of substance with which you disagreed within that report?

Mr Morley: I think there are one or two queries on that report, are there not?

Mr Yeo: I think there are areas that we feel need more detailed consideration. I think you have raised some of them, regarding the impacts on allowance prices and the existing EU ETS and I think a further examination of some of the legal issues. Overall, CE Delft are well respected within Europe and internationally for their work and have carried out other work on aviation as well.

Mr Morley: I think it is fair to say, my Lord Chairman, it is a technical report which looks at the ins and outs and clearly there are going to have to be some political decisions made on this, particularly in terms of the impact on non-EU countries, for example. Obviously, that is going to be a consideration.

Q312 Chairman: On that point, presumably different countries have different views about how the system might be brought in. One witness before us made the point that Alitalia has rather different problems, financially, that is, and it has probably a rather different fleet profile and emissions profile. For example, and I give this simply as an example, it has created tourism and does that mean that Member States are likely to continue to support interests of national airlines or are they going to be guided principally by what is best for emissions?

Mr Morley: I think that Member States themselves are recognising increasingly that if you have a competitive sector like aviation then it should be truly competitive and it should not be propped up by state subsidies, and indeed that is against the EU state aid rules. I think that all Member States recognise that the days of propping up an uncompetitive and inefficient sector really are over; it is not a good use of public funds. I think, where there are airlines which are struggling (and there are indeed both European and world airlines which are struggling) then there are factors which go beyond the issue of carbon trading. I am sure it is a concern to them, but I think, frankly, some of those companies would struggle with or without carbon trading.

Q313 Chairman: It is important that industry competition policy is in harmony with the environment policy. It would be ironic if some airlines had to pay more for emissions, made bigger losses and then got state aid to help them out. That would not encourage environmental sustainability?

Mr Morley: It would not, most certainly, my Lord Chairman, and I am pretty sure that would fall foul of state aid rules.

Q314 Lord Walpole: Minister, in paragraphs 12 and 32 of your written evidence you say emissions trading may not provide a total solution to tackling aviation’s climate change impact. What do you mean by this? Are you, in fact, referring to NOX and other problems and would you like to tell us about that?

Mr Morley: Yes, I am. The focus of the current EU scheme is just on CO2. There will be a debate, my Lord Chairman, about even the present EU trading scheme, about whether it should include other greenhouse gases, and I think that is quite right and proper. Within the aviation sector you have got the NOX issue, as you say quite rightly, and should it include NOX as a tradeable gas as well as CO2? I think that is a perfectly reasonable consideration. There is also the issue of contrails which can have an effect of increasing cloudiness. Those clouds themselves can have an impact in relation to climatic factors, although doing some of the analytical work on contrails is really quite difficult at the moment, but it is being looked at. Certainly, I think it is fair to say that emissions trading is only part of a package of reducing emissions which is set out in the Air Transport White Paper, because also there are things like operational movements, for example. I think there is a range of factors that we have to look at.

Q315 Lord Walpole: I think you have answered (b) of that question, which is the other ways you can reduce emissions to your satisfaction.

Mr Morley: Air traffic control can have a big impact on this.

Q316 Lord Walpole: Can we go on to that then, because as far as I can see, and strangely enough I do know quite a few air traffic controllers, they are actually quite interested in this subject. We have heard from witnesses here about really very significant reductions in aviation carbon emissions by air traffic control and the use of airspace in the EU which is now military, and that sort of thing. What is your assessment of this and what can be done? The other thing we have not mentioned, and I cannot find...
it anywhere else, I hope that nobody else is asking it, is what about the use of biofuels?

**Mr Morley:** Yes, that is interesting. On the one about the air traffic management control, I think the Intergovernmental Panel on Climate Change did a special report which estimated that if you had efficient and effective air traffic management control you could improve overall fuel efficiency by between 6 and 12 per cent. That is a quite significant amount. I was quite struck, my Lord Chairman, that a lot of planes these days have these little digital maps which show you where you are. When I was coming back to London from a meeting in Geneva the little map showed the plane going round and round in circles just outside London, for quite a while as well, as a matter of fact. I think certainly these are things which need to be looked at. Indeed, what I find quite inexplicable is that I have also been on planes which have stood with the engines running for up to an hour waiting for a dock at Heathrow and other airports, and surely these are issues which can be addressed. The EU control is Eurocontrol, and I understand that they have a 20-year plan, ATM 2000+, where they are looking at some of these issues and we may see some improvements in European traffic control. Certainly I would welcome that very much. Also, I have been talking to groups like the British Airports Authority, who concede that there is more that can be done in relation to traffic management and traffic control, and that is a very good example of how we can get some savings in emissions in just better organisation really. On the biofuels one, I think there have been some experiments on biofuels. Certainly there have been some experiments with hydrogen, although of course carrying the volumes is quite a problem. Theoretically, of course, you can power a plane by biofuels but you would need an awful lot of land to produce all the biofuels you would need, that is part of the problem.

**Q317 Lord Fyfe of Fairfield:** In paragraphs 27 to 29 of your written evidence you imply, Mr Morley, that in addition to ensuring that aviation emissions are part of a market-efficient trading mechanism the Government may wish to ensure, either unilaterally or indeed through the EU, that aviation pays the full cost of its carbon emissions, or even that a charge might be levied over and above that full cost as a way of further restricting such emissions. Would you like to comment on that?

**Mr Morley:** I think it does go back to the “polluter pays” principle. We believe that if you are going to have a sustainable industry and if this applies generally, not just to the aviation sector, it should pay for its external costs and those costs should be internalised. That is one of the advantages of the Emissions Trading Scheme because it does internalise those costs.

**Q318 Chairman:** As Lord Fyfe said, in those particular paragraphs you appear to imply that you might want to go beyond that. Would you consider levying charges or taxes which imposed a cost on airlines greater than the emissions costs?

**Mr Morley:** If you fully internalise a cost then that is quite significant in terms of the effects it would have on the sector and you may not need to apply any additional charges on that. I think what the paragraphs are hinting at more is that if the carbon trading scheme does not appear then we may have to look at other alternatives, basically. I think that just internalising costs would be a major step forward and it would not be our objective to put additional costs on the sector.

**Q319 Baroness Eccles of Moulton:** Mr Morley, this is really a continuation on the theme of solo or bilateral action by the UK. In paragraph 26 you say that we will reserve the right to act alone or bilaterally if aviation does not enter the ETS in 2008 or soon thereafter and, you say, if progress towards agreements at an international level proves too slow. Presumably, the international level will be extra-EU, not intra-EU?

**Mr Morley:** It could be the EU as well, although I am pretty confident that we will make some progress with the EU.

**Q320 Baroness Eccles of Moulton:** How could this be made to work, moving in a solo or bilateral direction?

**Mr Morley:** It would be difficult, there is no doubt about that, my Lord Chairman. I should make it clear that it is not our preferred option. Our preferred option is the route of carbon trading. However, if we felt, for whatever reason, that was not going to materialise then we reserve the right to take measures ourselves, as a Member State, in terms of trying to deal with the growth of aviation emissions. There is a range of options, there is a range of fiscal measures, but really if we were doing it as just one country it would be very ineffective and we believe that the most effective mechanism is carbon trading, so we hope very much it will not come to that.

**Q321 Baroness Eccles of Moulton:** Would you have had any thoughts at all about which method might be used, whether it would be auctioning or straight purchasing or either of the methods that are used?

**Mr Morley:** We have not come to a firm conclusion in relation to allocation. I was just expanding my own views, which I think are shared by other Member States, and certainly other sections of Government, that there is a very strong argument for auctioning in this approach. You do have to take into account the social and economic factors as well, so that debate on the exact allocation method I think is still open.
Mr Yeo: I think my DTI colleagues might be better placed to answer that question, but it is something that we have looked at. We looked at the Sustainable Aviation Strategy carefully and it is intended to be an ongoing process that is reviewed and continued forward.

Mr Morley: There is a European group which is talking about the car industry, my Lord Chairman. There is a group called CARS 21, which has been set up by the European Union. It is a kind of foresight group. The Group is trying to look at future trends in the automobile industry within Europe, within the European industry, and Mrs Beckett sits on that, representing the environment side of the EU, which is very welcome. Part of that consideration is of future demands on cars and energy efficiency and emissions.

Q323 Chairman: In the other transport industry which causes you problems on the environment, motorcars, and so on, I gather that there is a foresight technology group, with the support of the DTI, which itself has a 20-year plan of action, as it were, among other things dealing with environmental issues. Is there a similar group with airlines and so on? How are you and the DTI working with the airline industries to ensure that there is a coherent programme of action? That seems to be what is happening in the car and vehicle industry.

Mr Morley: That is right. I think there is a strategy group who deal with this. Do you want to say something, Daniel?

Mr Yeo: There is a group called “Greener by Design” who are part-funded by the Department for Transport and the Department of Trade and Industry, and they produced something called Sustainable Aviation, but often it is known as the Sustainable Aviation Strategy. That is a group which brings together industry, academics and a wide range of different stakeholders. Also, across Europe, to which you also refer, there is ACARE, the Advisory Council on Aeronautics Research in Europe, which within that Sustainable Aviation Strategy set out its goals for 2020, which are a 50 per cent reduction in CO₂ emissions and an 80 per cent reduction in NOₓ emissions for new aircraft entering fleets in 2020.

Q324 Chairman: Have you looked at how that is set out and the intention and ability to action that programme compared with the foresight programme for the vehicle emissions?

Mr Yeo: I think my DTI colleagues might be better placed to answer that question, but it is something that we have looked at. We looked at the Sustainable Aviation Strategy carefully and it is intended to be an ongoing process that is reviewed and continued forward.

Mr Morley: There is a European group which is talking about the car industry, my Lord Chairman. There is a group called CARS 21, which has been set up by the European Union. It is a kind of foresight group. The Group is trying to look at future trends in the automobile industry within Europe, within the European industry, and Mrs Beckett sits on that, representing the environment side of the EU, which is very welcome. Part of that consideration is of future demands on cars and energy efficiency and emissions.

Q325 Chairman: Minister, as previously before us, you have been patient and full in your replies. We are most grateful to you. Is there anything you feel we have missed which you might want to add?

Mr Morley: No. It has been a very comprehensive series of questions, my Lord Chairman, if I may say so. Just to reiterate that I welcome very much the fact that this proposal is now being brought forward by the Commission and I hope we see some real progress on this.

Q326 Chairman: When do you expect to see progress? This was a UK priority, was it not?

Mr Morley: Yes.

Q327 Chairman: Where do you expect to have got to by the end of the Presidency and when might we see the results?

Mr Morley: Clearly we will not conclude this under the Presidency, my Lord Chairman, because this is a much longer process than the six months of the Presidency. Our priority, under the EU Presidency, was to bring forward the proposals; that has been achieved, so the proposals are being developed and brought forward by the Commission. We will have, I think on the basis of what they call an orientation debate at the December Council and that will be the first opportunity for Member States to give a detailed response to the Commission’s proposals and I am very hopeful that will be positive. Then the work will continue under the Austrian and the Finnish Presidencies, with a view to including this by 2008, if that is possible.

Chairman: Minister, on behalf of the Committee, thank you and your colleague, Mr Yeo. Thank you very much.
Supplementary written evidence from Elliot Morley MP, Minister of State for Climate Change and Environment, Department for Environment Food and Rural Affairs (Defra)

Following my oral evidence session of 31 October, I attach the additional information that I promised to provide regarding:

— The cost impact of auctioning;
— The inclusion of ultra-peripheral regions (UPR) and overseas countries and territories (OCT);
— Design factors influencing the allowance price; and
— Details of the ICF study examining the impact on allowance prices.

Auctioning

1. Whilst the Government has not reached an agreed position on allocation methodology, there has been some external work on the cost of auctioning.
2. In “Giving Wings to Emissions Trading” (p90), CE Delft estimate that auctioning could raise €600 million, based on the following assumptions:
   1. An allowance price of €10 per tCO₂e;
   2. That only the climate impact of CO₂ is covered; and
   3. Only intra-EU flights are covered.
3. In their 2004 report¹ Trucost conducted a rough estimate of the financial burden based on the annual CO₂ emissions of three airlines in Europe in 2002.
4. They assume that the market price of European Union Allowances is the lowest marginal carbon dioxide abatement cost which is estimated by Trucost to be €13.80.
5. Using this figure and assuming that the scheme only covers CO₂ emissions from intra-EU flights, they estimate that the cost of auctioning sums to around €42 million for BA, €13 million for KLM and €17 million for SAS.

Inclusion of ultra-peripheral regions and overseas countries and territories

6. The extent to which Ultra-Peripheral Regions (UPR) and Overseas Countries and Territories (OCT) would be covered by the scheme depends on the definition of the geographic scope and will be subject to discussion with other Member States. We have yet to reach a Government position on this issue.
7. However, in “Giving Wings to Emissions Trading”, CE Delft set out the definitions for their five geographic scenarios.
   — Scenario 1, Intra-EU—Only the European part of the 25 EU MS territories. This excludes UPR and OCT.
   — Scenario 2a, Intra EU and 50 per cent of emissions to and from EU—As above, but would include 50 per cent of emissions to and from UPR and OCT.
   — Scenario 2b, All departing flights—This would include 100 per cent of emissions from flights to UPR and OCT.
   — Scenario 3, EU airspace—Defined by EUROCONTROL Flight Information Regions and includes areas of seas and oceans. This would cover the element of flights to and from UPR and OCT that is within EU airspace.
   — Scenario 4, All departing flights and remaining emissions in EU airspace—This combines scenarios 2b and 3.
   — Scenario 5, Intra EU and routes to and from third countries that have ratified the Kyoto Protocol—This excludes UPR and OCT.
8. Annex A sets out CE Delft’s definition of these regions. You will note that in their methodology, they have not set out how they have treated flights to and from the Falkland Islands and British Antarctic Territory. The reason for this omission is unclear.

Design factors influencing the allowance price

9. In an emissions trading scheme, a key driver for the allowance price is the level of effort required by participants. This comes from the overall cap within the scheme. As such, the allowance price will be dependent on the overall cap within the EU ETS, which includes the Phase II National Allocation Plans as well as the number of allowances that are allocated to the aviation sector. In general, if there is a generous allocation, then prices will be lower and vice versa.

10. The forecasting of allowance prices is complex and highly uncertain, however, other key factors that influence the price include:
   - The cost of abatement;
   - Availability of credits from Joint Implementation and the Clean Development Mechanism (JI/CDM, known as project credits). This provides a further source of supply and depending on availability could have a downward effect on prices; and
   - Oil and gas prices.

Study into the impact on allowance prices

11. Following a Request For Quotation, five proposals were received and a contract was let to ICF Consulting on 6 September to conduct a study into the impact of the inclusion of aviation into the EU ETS. The specification is attached at Annex B. The final report was due for 14 October, a draft has been delivered and is currently being considered by the steering group.

12. The study was intended to be to a short time-scale, designed to give an indicative feel to inform further work, rather than attempt to conduct a precise quantified assessment of the impact of aviation on allowance prices, which would be challenging, particularly given the uncertainty in forecasting prices.

Annex A

Overview of Countries Under Scope Scenarios (from “Giving Wings to Emissions Trading”)

Ultra-Peripheral Regions
1. Azores
2. Canaries
3. French Guiana
4. Guadeloupe
5. Madeira
6. Martinique
7. Reunion

Overseas Countries and Territories
8. Anguilla
9. Aruba
10. Bermuda
11. British Indian Ocean Territory
12. Cayman Islands
13. French Polynesia
14. Greenland
15. Mayotte
16. Montserrat
17. Netherlands
Including Aviation into the EU ETS: Impact on Allowance Prices

Aim
To analyse how, and the extent to which, the inclusion of aviation emissions into the EU Emissions Trading Scheme is likely to affect the allowance price.

Background
The EU Emissions Trading Scheme (EU ETS) is a major new policy measure that aims to reduce emissions of carbon dioxide at least cost to industry. Participants are allocated tradeable emissions “allowances” (similar to quotas) that they can trade to help them in meeting their emissions reductions targets. The EU Emissions Trading Scheme came into force on 1 January 2005.

The European Commission is considering ways of reducing the climate change impacts of aviation, one of which is the inclusion of aviation emissions into the EU ETS. At present Phase I of the scheme does not include emissions from aviation and, in addition, international aviation emissions are not covered by the Kyoto Protocol. The Commission has carried out a study (by CE Delft) that assesses the climate change impact from emissions trading by aviation in the commitment period 2008–12. This has been recently published on the Commission’s website.2

It is generally considered that the aviation sector is likely to be a net buyer of allowances because its abatement costs are relatively high when compared to other sectors. We need to understand what the implications of this are for the traded carbon price and therefore the impacts on other industries in the EU ETS during Phase II (2008–12).

There are other factors that will influence the allowance price, including the number of allowances issued in Phase II of the EU ETS and the number of project credits (JI/CDM) introduced into the market.

Objectives and requirements
In order to inform our policy development and response to any Commission proposal, it is necessary for us to understand the impacts of including aviation in the EU ETS. The prime objective of this study is to quantify the likely impact of the inclusion of aviation in the EU ETS on the EU allowance price.

The study should be based on three base-case scenarios (for the EU ETS without aviation) and the assessment of increased demand for allowances that CE Delft made in their 2005 report “Giving Wings to Emission Trading”.

Specific outputs are:

— A critical analysis of CE Delft’s assessment of likely increased demand for allowances based on their assumed allowance prices); and
— An estimate of the allowance price in Phase II with aviation joining the EU Emissions Trading Scheme from 2008. This should estimate the impact in relation to three base-case scenarios of the allowance price in Phase II without aviation.

Proposers should have:

— A detailed understanding of the emerging carbon market and factors affecting the price of EUAs;
— A detailed understanding of the EU ETS Directive;

2 http://www.europa.eu.int/comm/environment/climat/aviation_en.htm
including the aviation sector in the European Union emissions trading scheme:

31 October 2005

— A detailed understanding of the industries covered by the UK National Allocation Plan, and contacts with EU ETS service providers based in the UK; and
— An understanding of the broader climate change, competitiveness and energy policy objectives of the UK.

Quotation requirements

Quotations should contain:
— an explanation of the proposed approach that shows how the objectives and requirements of this specification will be met, specifically setting out the three base case scenarios for the allowance price in Phase II without aviation:
— a schedule of the main tasks and milestones that will be used to monitor progress, including written progress reports and meetings as necessary;
— details of the project team, including the relevant experience of individuals involved and the days and grade of staff allocated to specific work areas; and
— estimated cost of the work, including rates for named individuals (should be a fixed cost tender on basis of specification as above).

Quotations will be evaluated on overall value for money. This will be based on cost; the extent to which quotations clearly address the study objectives and present a sound approach; specify outputs that are in line with requirements; proposed team composition and expertise; and effective management.

Steering Group

The Steering Group for this study will involve officials from Defra and DfT.

Time-scale

The Departments expect the duration of the study to be of the order of one month but proposers are free to submit their own estimate of the study’s timetable. The final report is required by Friday 14 October 2005. Please send an electronic copy of your quotation to Daniel Yeo (daniel.yeo@defra.gsi.gov.uk) by 12:00, 2 September 2005. Appointment of the contractor will be made by 6 September, with an inception meeting envisaged for 7 September.

Contractors will be expected to work under the standard terms and conditions of Defra service contracts, as attached to the Request for Quotation.

Written memorandum by Dr Paul Upham

Evidence submitted by Dr Paul Upham, Research Fellow, Tyndall Centre for Climate Change, the Manchester University Business School.

This is an individual submission, drawing on and making inferences from work undertaken with colleagues. The Tyndall Centre does not adopt corporate policy positions and the submission is the responsibility of the author only.

Expansion of EU ETS

1. Providing double-counting of emissions is avoided, there appears to be no reason why the EU ETS should not be expanded to encompass other commercial and public sector activity, including transport, though some minimum emission threshold would presumably be desirable from an administrative perspective, given the need for verification. The fuel-poor will need to be protected from energy price rises through measures such as subsidised insulation of houses.

1.1 Private (domestic) fuel-related emissions could be better dealt with via an allied but at least initially separate scheme. This domestic tradable quotas option, under study at the Tyndall Centre, envisages an electronic, automated debit of an individual’s carbon allowance account upon payment for direct purchases of fossil fuel and electricity for private transport, heating, light etc. Excess allowances would be sold as under EU ETS. The political plausibility of this scheme would likely increase as the adverse consequences of climate change become more apparent.
1.2 The EU ETS and DTQs systems could, with some revision, run in tandem, with the sum of their permitted emissions contracting to meet long-term climate change targets. A DTQs scheme could, if so designed, capture the emissions of small (sub-threshold) enterprises.

**Including Aviation: Rationale and Costs/Benefits to the Industry and Consumers**

2. The climate-warming effects of aviation need to be controlled because at present rates of growth they threaten the ability of the EU to meet its long-term climate target of limiting average global warming to +2°C (please see below). This conclusion assumes that half of the emissions of international flights to and from the EU are the responsibility of EU nations, and assumes that total EU carbon emissions will need to contract by at least 80 per cent between now and 2050. This contraction is further assumed necessary to meet the dual conditions of international per capita equity in carbon emissions by 2050 and an atmospheric carbon dioxide concentration of 450ppmv, a level more likely to be necessary to meet the +2°C threshold. While the 1958–2004 average annual increase in carbon dioxide concentration is 1.4ppmv, 1997–98 saw a 2.87ppmv increase. The level of 450ppmv could be reached well before 2050 and may also be too high to limit warming to +2°C.

2.1 Aircraft carbon emissions are projected by detailed AERO2K modelling to grow globally at about 3.3 per cent per annum for the period 2002–25. Tyndall’s passenger-based calculations suggest that if European passenger growth trends continue as they have done over the last decade, EU25 aircraft carbon emissions will grow at an annual average of about 4.8 per cent pa over the 2002–25 period, despite an assumed increase in annualised average fuel efficiency of 1.2 per cent pa.

2.2 Aviation industry representatives and the UK Government believe that inclusion within EU ETS will allow aviation to offset its emissions growth through the purchase of emissions allowances surrendered by firms in other sectors, and that this will be an economically optimal solution.

2.3 However, if we make the assumptions listed in point (2) above, some of which reflect the contraction and convergence climate policy regime implicit in the UK Government’s 60 per cent CO2 reduction target for 2050, we find that the consequences of aviation growth for other sectors would be severe. If EU aircraft emissions are uplifted by IPCC’s average of 2.7°C to reflect their additional warming effect relative to surface emissions (uplift is highly problematic scientifically, but is still instructive if its limitations are understood), we estimate that by the year 2017, uplifted EU aircraft emissions would exceed the EU’s 2050 carbon emissions target. From 2017 therefore, if aviation emissions were to continue to grow, no growth in carbon emissions by other sectors would be possible. Growth in aviation emissions would only be possible at a rate equal to the rate of emissions contraction by other sectors.

2.3.1 In practice, if international aircraft emissions were included in EU ETS and the EU applied annual caps commensurate with 450ppmv by 2050, the rise in the price of carbon would likely prevent the projected 2017 level of aviation activity and emissions, assuming that consumers consider aviation less essential than other goods and services. An equal, annual distribution of the required 80 per cent reduction in EU emissions over the period 2010–50 is 2 per cent pa (ie a reduction from 1,100 million tonnes of carbon [MtC] to 217MtC, or just over 22MtC pa). This is equivalent to a compound annual reduction of about 4 per cent pa. If we assume that the EU cannot purchase substantial quantities of emissions allowances from outside of the EU ETS (see below), and that the EU commits to an annual reduction in carbon emissions over 2010–50, then from 2017 aviation carbon emissions could grow only in so far as other sectors of the economy reduced their emissions in excess of 22 MtC pa, and in so far as the excess allowances involved were not purchased by firms in other sectors. This is despite anticipated annual fuel efficiencies for the EU fleet of 1–2 per cent (maximum) up to 2050, which we have already accounted for.

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2.3.2 While aviation might in principle purchase sufficient allowances for traffic growth, it would seem unwise to assume the availability of sufficient allowances. To date the industry and UK Government have assumed availability because they have not envisaged a tightly contracting EU emissions cap, and in some quarters have disputed any responsibility for international flight emissions.

2.3.3 In terms of costs to consumers, aviation would likely become more expensive due to the need for airlines to purchase emissions allowances at a price that would rise in accordance with the annual increase in their scarcity, as availability contracted. The detailed consequences for the aviation industry and its competitiveness are difficult to anticipate, as there are many factors involved and likely airline, lender and consumer responses are unknown. In general one might expect routes, airlines and airports that are only marginally successful to fail, while others would experience very low growth or stasis. If all airlines, regardless of nationality, are obliged to purchase allowances for the emissions of half of their EU originating or departing flights, then international competitiveness should not be a problem. It is important to note that it is not the inclusion of aviation within the EU ETS per se that would raise prices and curtail growth in a closed EU ETS, but the contracting emissions cap that is necessary for the ETS to achieve its ultimate purpose.

2.4 There is some scope for mitigating the above conclusions. If enacted, these would make it more likely that the aviation sector would avoid contraction in the short term, if incorporated in an EU ETS with a target of 450ppmv (or no more than +2°C average warming).

2.4.1 In principle, there could be substantial trade-out of aviation emissions from the EU ETS to less developed countries via the Clean Development Mechanism (CDM) and Joint Implementation (JI), involving investment in energy efficient plant and bio-sequestration with bioenergy. However, while bio-sequestration coupled with bioenergy and biofuel production apparently has significant potential to reduce atmospheric carbon dioxide, it does require substantial land (and water), involves fire risk and should not be relied upon alone. Moreover, if projects do not entail genuine “additionality” in emissions terms, use of the CDM and JI to compensate for aviation emissions growth will have a perverse outcome. Nevertheless, if properly implemented, this could be an important instrument for an aviation industry seeking growth under conditions of a tightly capped EU ETS.

2.4.2 An option for mitigating the warming effects of aviation emissions themselves (in addition to the expected 1–2 per cent fuel efficiency arising from other operational, engine and airframe improvements) is contrail avoidance. This may be simpler to achieve than previously thought.7 However, while this would reduce the short-term and regional warming effects of contrails, cirrus and NOx, it would raise the long-term warming (100 year duration) effects of carbon dioxide, as a result of flight through lower, denser air. In the long term, the net effect of lowering altitude will be beneficial only if it is assumed that the future level of air traffic will be the same as under a scenario of “conventional” flight levels. If, after lowering flight altitude, society later opts for the stronger step of reducing the number of flights (eg as global warming becomes strongly evident), then the additional carbon dioxide consequent on lowering flight altitude would still contribute to warming. Lowering flight altitude should not therefore simply be accounted for by a lower uplift factor. This notwithstanding, if no uplift factor is assumed, then by 2020 we estimate that EU aviation emissions will be 54 per cent of the EU’s 2050 target; 67 per cent by 2030 and 101 per cent by 2050. (We assume that the aviation sectors of all EU nations mature at an annual passenger growth rate of 3.3 per cent and that new airport infrastructure is made available as required.)

Timing

2.5 While the aviation sector should be incorporated within EU ETS as soon as possible, this must not be seen as sufficient in terms of managing aviation’s contribution to climate change. There will be no wholly satisfactory solution to the problem of making aviation emissions with regional and short-term warming effects commensurate with the effect of long-lived, globally distributed carbon dioxide emissions. As implied above, while different flight profiles8 might be allocated different multipliers relative to carbon dioxide, this could have a perverse outcome. However, incorporating aviation on the basis of carbon emissions alone, without additional measures, will be equally unsatisfactory. There needs to be one or more additional measures that take account of contrails, cirrus and NOx but do not entail increased carbon dioxide emissions. A multiplier applied to carbon dioxide emissions would likely lead to increased NOx as engine manufacturers raise engine temperatures in response, for higher fuel efficiency and hence lower carbon dioxide.

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2.6 Moreover, without the political will to institute a declining cap in the EU ETS from an early date, as described above, including the aviation sector would not be desirable because it would not effect control or offset aviation emissions. In that case, the less desirable option of a severe emissions or fuel charge would be necessary to reduce demand.

Alternative measures

2.7 To reiterate, emissions trading can only be as effective as a low carbon instrument as the emissions cap within which it operates. Whether or not alternative or additional measures are necessary will depend on:

— The adequacy of the ETS cap;
— The degree to which the system captures relevant emissions (a system designed to capture most commercial emissions will need to be complemented by a domestic quota system; this might also be used as a model for a system aimed at smaller enterprises, for which verification costs would be disproportionate);
— The reliability of emissions offsets made by trading out of EU ETS via CDM and JI; and
— The degree to which complementary measures account for non-carbon dioxide effects.

2.8 Given the potential for uplifted aviation emissions to consume the entire EU 2050 budget by 2017, and to continue growing for further decades, there is a strong case for a supplementary, mandatory requirement for an annual reduction or offsetting of EU aviation emissions of at least 4 per cent pa from 2010–50. This reduction would include international emissions as defined above. The economic and social benefits of achieving the reduction through a tightly capped, but internationally open EU ETS should be greater than achieving the reduction through a charge on fuel or emissions: an open ETS should deliver the emissions reduction either at lower cost or in a way that facilitates new, relatively benign development in less developed countries.

September 2005

Examination of Witnesses

Witnesses: Dr Paul Upham, Research Fellow, Dr Alice Bows, Research Fellow, and Dr Kevin Anderson, Senior Research Fellow and Research Question Manager, Tyndall Centre for Climate Change Research, The University of Manchester, examined.

Q328 Chairman: Good afternoon, Dr Upham, and to Dr Anderson and to Dr Bows. You are all welcome. Thank you for your written evidence. Dr Upham. I am sorry to have kept you waiting slightly. As you will realise, we have a number of questions. Dr Upham: Yes.

Chairman: I wonder if you would mind if we went straight into questions and then at the end I will give you the opportunity, if you think we have missed something, to make sure that we have not missed anything.

Q329 Lord Swinfen: Dr Upham, in your written evidence you appear to suggest that, subject to a number of important qualifications, the aviation sector should be brought within the EU Emissions Trading Scheme in 2008 or as soon as possible thereafter. Am I right in that assumption? Dr Upham: Yes, you are right. My Lord Chairman, may I say that both Kevin Anderson and Alice Bows will answer jointly with me. Yes, because the EU ETS is a good start, administratively it would be simple compared with layering a tax on top of that. Ideally, we should bring all emissions into the Emissions Trading Scheme. It has economic advantages of taking account of differing marginal costs and in theory it is a good place to start.

Q330 Baroness Eccles of Moulton: Dr Upham, if aviation enters the ETS, should it be on the basis of intra-EU flights only, to start with, or could it be on a wider basis from the beginning? What would it be practical to achieve by 2008 and how might the coverage of aviation emissions be expanded beyond intra-EU flights? Really that is three questions but they are connected.

Dr Upham: This is really to be determined by political measures. It is not a technical question, it is more a political question. Ideally, we would want full international flights to be included. We see no reason why they should not be included by 2008. The CE Delft study agreed with that.

Dr Anderson: There are a couple of points I could add to that perhaps. If we include only intra-EU flights we miss about 70 per cent of the emissions from EU flights to and from EU airports, 70 per cent.
current growth rates for the UK, for instance, that would mean by 2012, if we manage to get flights outside the EU included as well by 2012, those emissions will have almost doubled, so this is a real, practical problem. If we seriously want to address climate change, just looking at the growth rates that we have today, which over the last year have been about 10 per cent in one year increase in emissions, that is the Government’s own figures, 10 per cent for one industry in one year. If these sorts of growth rates continue, and this is what we have seen prior to September 11, and we are back up to 8, 9, 10 per cent now, in terms of growth, if this continues to 2012 the emissions from the industry will have doubled by then, so the problem you get by 2012 is a lot more difficult if you procrastinate now. Currently, aviation industry emissions are about 7 per cent of the UK’s carbon emissions. I am talking here purely about carbon, about 7 per cent. Given that we should be reducing our emissions to meet our 60 per cent target; if the aviation industry is permitted to continue to grow at current rates, and there is no evidence to show that there are any restraining mechanisms being put into place, then by 2012 it will be a very substantial proportion of the UK’s carbon emissions budget.

Q331 Baroness Eccles of Moulton: If we were looking at EU-wide emissions, I suppose there are three different stages, and probably many more. The first one would be flights that were taking off and landing always within EU airspace, because it would be between two EU members. The next lot would be aircraft taking off and landing, obviously flying within EU airspace but then going beyond to some international destination but you would be measuring the emissions that were taking place only over EU airspace. The third would be that second category but the emissions that were taking place throughout the whole of the flight, no matter to where they were going. Do you have the statistics for those three stages?

Dr Upham: We use the third scenario. Whereas Mr Morley said you could allocate the entire journey, we took 50 per cent of the journey, assuming that the destination, say, in the United States, would pick up the other 50 per cent. Since the plane is going to make a return journey it makes no difference.

Dr Anderson: There is a generally quite well-accepted apportionment rule and it is relatively fair, if everyone abided by it you would end up including all emissions. Obviously at the moment the US is not going to be doing that, but it would make it a level playing-field in the EU. Whether you happened to be a British carrier, a French carrier or an American carrier, if you flew in and out of an EU airport you would be subject to ETS.

Q332 Chairman: We are just trying to clarify something. In paragraph 2.1, and hopefully this is the only technically detailed question we are going to ask, you talked about emissions growing at an average of 4.8 per cent despite fuel efficiency of 1.2 per cent, which appears to lead to a 6 per cent growth in passengers, or air miles travelled, the same growth in that. Then in 2.4.2 you talk about 3 per cent growth. We are slightly puzzled about the difference in the two paragraphs. How do you reconcile them?

Dr Upham: It reflects the method we used. We allowed different nations to mature. First of all, we grew them at their average growth rate for the last decade and then we allowed them to mature at 3.3 per cent, which is what Department for Transport says the UK will mature at, and we used different dates for that levelling off depending on whether they were EU15 or EU25 countries.

Q333 Chairman: Paragraph 2.1 appears to say, for the EU25, over the period 2002–25, that effectively, putting it simply, aviation air miles travelled will go up at 6 per cent per annum?

Dr Anderson: That is correct for that period. Obviously, that is aggregated over all of the EU nations, for all of which we have got different growth figures. Beyond this maturing date, and we have chosen two dates, 2015 for the EU15 and 2025 for the accession countries; beyond those dates we have used 3.3 per cent, for want of any other, better figure. Who knows what will happen after that, so that was just a simple maturing rate.

Q334 Chairman: In paragraph 2.4.2 that 3.3 per cent is referring to post-2025?

Dr Anderson: Yes, that refers to the matures.

Q335 Lord Haskel: Getting back to the estimates of emissions that you were speaking about earlier, in paragraph 2.3 of your written evidence you argue that if the estimates of aviation emissions are raised further then by 2017 EU aircraft emissions will exceed the EU’s 2050 carbon emissions target. Can you explain this point?

Dr Upham: Yes. You put this point to Mr Morley. What he did not say, and what is our main message, is that we need to reduce the EU ETS cap by in the order of 4 per cent per year to get down to a minus 80 per cent reduction by 2050. If you have a very weak cap, which we have now, then bringing aviation into EU ETS will not make much difference to prices or to carbon emissions in the aggregate. What we need to do is reduce total aggregate emissions by in the order of 80 per cent by 2050. If you do that, then because aviation emissions are rising and the aggregate you must reach is falling, they will obviously intersect and they will intersect much sooner than is commonly appreciated.
Dr Bows: This is also using an uplift factor, so you are not quite comparing like with like. What you are doing is trying to account for these additional climate impacts, in terms of contrails and NOX and those other things, and so you are raising the value of carbon dioxide by a particular multiplication factor, which is not something that we would necessarily recommend doing. What we are trying to say is that by 2017 the aviation industry will be accounting for an equivalent of the 2050 carbon reduction target, but you are not actually comparing like with like so that just needs to be noted.

Q336 Lord Haskel: That takes into account the NOX and also the cloud effect that has been talked about, all that sort of thing?
Dr Anderson: Yes. I would like to point out one thing here, which I was going to mention in a statement. Elliot Morley referred to some of the work we had done as the Tyndall projections, or Tyndall forecasts. We do not project and we do not forecast, we simply produce scenarios, “What if?”. We have no particular view on what we think will happen, we may have personal views on this, but our scenarios, our work, has simply used other people’s forecasts or historical data. These are not projections, we do not try to guess what the demand will be in 2012, let alone 2020 or 2050.

Q337 Lord Haskel: You do not produce a vision of what you think the transport industry will be like in 2012?
Dr Anderson: No. We have a range of scenarios, so we use different growth figures depending on what work we are doing and to produce different scenarios.

Q338 Lord Haskel: You say that the uplift is highly problematic scientifically?
Dr Upham: Yes, it is.

Q339 Lord Haskel: Can you explain that?
Dr Upham: As I am the least scientific of the three, in fact, I will just introduce this, it is because there are different time residencies of the effects and the gases.

Dr Anderson: Carbon dioxide. When you emit a lump of carbon dioxide, a molecule of carbon dioxide, into the atmosphere it will last a hundred years, give or take, and it has a warming impact, it warms up the earth. When you emit a lump of other stuff that makes clouds, NOX, which has other impacts on making ozone at that particular layer, which is a warming gas, that has a warming impact as well but the warming impact will last only maybe three hours to three days, so a short period of time, but during that period its warming impact is about two to four times the amount of warming from the carbon dioxide. This creates a real problem because one of them lasts a long time and one of them does not, but if you measure the impact instantaneously, at the moment it is produced at the back end of a plane, then it is about two to four times warmer. If you think about it over the hundred years, you integrate it over the hundred years, it becomes very small. There is no scientific answer to this. This is a social decision. Who chose a hundred years? You could choose 50 years to consider it over, or 10 years. Quite commonly with greenhouse gases, different ones like methane or carbon dioxide, we do have a way of comparing them over a hundred years. When it comes to these vapour trails and the contrails and NOX, they last for such a short period of time that it is not necessarily an appropriate way to compare them. Generally, I think the view of Dr Bows and myself is that we should find another mechanism for dealing with those and we should see carbon as something quite distinct from these uplift factors, as they are often referred to. I hope that was reasonably clear.

Chairman: I have to say, it was the clearest explanation we have had so far.

Q340 Lord Haskel: Moving on, in paragraph 2.4.2 of your written evidence you give further estimates of future aviation emissions relative to the overall 2050 emissions targets for the EU. Again you say that within 15 years EU aviation emissions will be over half the 2050 overall target. What does this imply for the air transport industry? Does it mean a growth in passengers?

Dr Upham: Remember, we are assuming that this is an EU on a downward trajectory to 450ppmv, that is to keep global warming at a maximum of +2°C, so we are assuming that is what we are aiming for. If we are not then we are aiming for pretty nasty impacts, but assuming we are we could fuel-switch, we could fuel-switch to biofuel but then you have still got water vapour in the atmosphere, so you would still have to lower your flights. The suggestion I have made is that for some period of time, and I do not know how long, the aviation industry could trade out of EU ETS via the Clean Development Mechanism or Joint Implementation but we do not know for how long they could sustain that.

Dr Anderson: Broadly what we are trying to say here is that if you let the aviation industry grow at rates considerably lower than it is growing at today, and I would like to point out here—and again it is what I was going to say in an opening statement—I think the Government, and not just the Government, I would say—I have to be quite careful because I realise who I am sitting in front of here, I have some low-cost carriers sitting behind me—also the aviation industry, need to remove their rose-tinted spectacles when it comes to growth figures. The growth of the industry is extremely rapid. It is 8 to 10 per cent per annum. No other industry approaches that level. If you look at the seven to 10 years prior to September 11 it was growing at
about 8 per cent per annum. Low-cost carriers now are perhaps moving into medium- and long-haul flight, which, I will have a guess, will increase demand. What we are trying to say here is that even if you reduce growth dramatically you still have very large carbon dioxide impacts, so we are just trying to flag up to the Government, and indeed to the industry, that really you have to curtail growth very seriously or you are going to get these sorts of outcomes. We are not saying that these are likely to happen or unlikely to happen, but if you do nothing you are going to have the aviation industry taking a very large chunk of the emissions target for 2050.

**Q341 Lord Haskel:** Have you taken into account the other factors that we have been told about, increased efficiency of aircraft, increased efficiency of planning flights, as the Minister said, not running the engines for an hour while you are waiting for a dock and all this sort of thing?

**Dr Anderson:** We have taken it into account. In fact, I think we have been quite optimistic in some of the figures we have used for that. We have tried genuinely to err on that side so we do everything that is possible in those areas. Somehow I doubt we will and I think we have been very optimistic in what we think will be achieved there, but we thought we should try to do that, to assume that there is a driver, a really significant driver, towards improved efficiency of the engines, the airframe and indeed the operation of the industry.

**Q342 Chairman:** That is the second time, Dr Anderson, that you have quoted 10 per cent. Can I be clear what growth in air travel you are saying has happened in the last five years, per annum? Are you saying, in paragraph 2.4.2, that is based on the 10 per cent per annum? I apologise, but you did forcefully again repeat 10 per cent.

**Dr Anderson:** No. We are saying, in our scenarios we have assumed considerably less growth than is occurring currently. That is because in this work here we are trying to look at some of the work of the Government, the Government’s aviation White Paper, for instance, we are trying to use their sorts of figures, and even with the Government’s own figures you tend to move into these quite disturbing outcomes. Currently, growth is about 8 to 10 per cent. There are a number of metrics you might use for that. One might be the actual fuel used, one could be passenger kilometres or number of passengers, but they are all showing 8 to 10 per cent per annum and I wonder why the Government does not do a basic cumulative interest calculation on that figure. It will be the same, or very similar, next year, short of some unforeseen disaster.

**Q343 Baroness Eccles of Moulton:** Is this UK, EU or about 8 per cent per annum? Low-cost carriers now are global, the 8 to 10 per cent? Perhaps moving into medium- and long-haul flight?

**Dr Bows:** It is UK. The 10 per cent figure comes from the Digest of UK Energy Statistics and that is for the fuel consumption, which is based on bunker fuel, so it is all the fuel that was purchased in the UK. The 8 per cent figure is from the latest DfT Transport Statistics, Great Britain, and that shows an 8 per cent increase in the passenger kilometres between 2003 and 2004 and similar rates of growth in terms of kilometres and in passenger numbers, so across the board.

**Q344 Chairman:** What is the figure for the EU? We hear nothing of the EU.

**Dr Upham:** Over the last decade?

**Q345 Chairman:** We are not quoting 10 per cent, you are quoting 10 per cent. What are the figures for the EU?

**Dr Upham:** It varies with the country.

**Q346 Chairman:** It is EU, is it not, that we are talking about here?

**Dr Upham:** About 6 per cent.

**Dr Anderson:** I think the mean is about 6 per cent. The range is very large, some countries are growing at only four and five but I think the mean was about 6 per cent. We will check that and we can get back to you with that number. Some countries in the EU are growing as fast as 14 per cent per annum.

**Q347 Chairman:** It is absolutely clear that in this country we have had quite a lot of low-cost airline activity, and so on, and here we are looking at some EU proposals in relation to the EU. If you are saying there is a 10 per cent growth problem in the EU it would differ from other figures we have been given, but I do not think you are?

**Dr Upham:** No.

**Dr Bows:** From what I understand from talking to people within the industry, the UK is extremely reflective of what is happening on average in the EU.

**Q348 Chairman:** There are two things about your figures. How do they compare with the IPCC figures? Are you saying that the Intergovernmental Panel on Climate Change in 1999 had got things wrong as well? Secondly, how do they compare with the CE Delft study, the Commission’s research? Again, are you saying that both the IPCC forecasts in Aviation and Global Atmosphere were wrong and that Delft was wrong and you are right, or are you saying they can all be reconciled? This is quite important because we are trying to understand the evidence we have before us.
Dr Upham: IPCC and Delft are different things. In *Giving Wings to Emissions Trading* they did not make projections about growth, it is more about the mechanisms for EU ETS and aviation. IPCC 1999 did make projections validated by the industry; that is the basis on which they made them. They did not make specific EU projections. Dr Bows, can you remember?

Dr Bows: No. From what I understand, they had a global growth figure of about 1.7 per cent, but of course that includes Africa and various other nations that have small aviation industries or aviation starting from a very low base. As I understand it, the global figure from people such as Airbus, Boeing and Rolls-Royce that produce forecasts is much higher than 1.7 per cent. Whether or not it is just because it was done quite a while ago, I don’t know. We have some very high growth figures in recent times and figures from the Boeing website show it is increasing exponentially, so I think that maybe it is just a little out of date.

Dr Anderson: You have to remember that 1999 probably means they are using 1997 data, so they are not far off 8 years out of date. September 11 has occurred since then. Low-cost carriers have taken off within the UK particularly but also in other parts of the world. As you say, they are not so prevalent within the other parts of the EU but that is changing significantly. I think it would be fair to say that these were reasonable forecasts in their day perhaps. Certainly we have used some of the figures from IPCC. Our uplift figures, where we have used them, as I say we are very cautious about using them, we have used the IPCC figure and we have used the IPCC figure for improvements in efficiency in aircraft and operational improvements in airframe design, and so forth.

Dr Upham: What you might be thinking of is that IPCC said that at the moment aviation is 3 to 5 per cent of global emissions and it would rise to in the order of 15, it is a range. What IPCC assumed was a scenario called IS92A, which is a “business as usual” scenario. It is not a scenario in which you contract your emissions to meet 450 or 550ppmv, which is not far off eight years out of date. September 11 has between what they did and what we did.

Dr Upham: I think probably it will be very responsive to any price signal, whether that is oil price or carbon price, or a combination of the two. It will respond because it is a significant factor to the aviation industry, particularly to the low-cost carriers, from my understanding, it is a significant part of their operating costs, so they will respond, I would have thought, more so than many other industries.

Q349 Lord Fearn: In paragraph 2.3.1 of your written evidence you say that the rise in the price of carbon would likely prevent the projected 2017 level of aviation activity and emissions. Has anyone produced estimates of the price of carbon over the next 10 to 12 years?

Dr Upham: We are not aware of any such estimates. The reason why I said I thought the price of carbon would rise and prevent that level of aviation activity is, if you have got a closed EU ETS, it is contracting to 450 then there are not going to be enough permits to buy, so the price of carbon would rise very high. I do not know if there are any others.

Dr Anderson: I would think also, and we have to err on the side of caution here, that any estimates of the price of carbon will be about as reliable as the estimates of the price of oil. In other words, we have no idea what the price of carbon or the price of oil will be, unless you decide to regulate and determine it that way, but certainly if the market is left to decide we do not know. We are not sure what low-hanging fruit is available in other industries.

Q350 Lord Fearn: Low-hanging fruit; what are they?

Dr Anderson: We have got energy-efficient light-bulbs in this Committee Room, perhaps we have got an excess of them, but there is plenty that can be achieved right across the board and small incentives might encourage industry to do this. For most industries energy is only about 2 per cent of their operating costs, so often, for many industries, energy is not particularly significant for them, there is no real driver for them to become more efficient. As a result of something like an increase in carbon price, that might make them look and say, “Hey, look, there are some easy options here and here,” which often are referred to as “low-hanging fruit”. This low-hanging fruit will mean, if we can identify these and there is a lot of research to show it is actually out there, the price of carbon will not go so high because companies will not necessarily have to buy more carbon units, they can become just more efficient in their activities. It is very hard to know, with these numerous factors that are out there, exactly, or even approximately, what the price of carbon will be. I would say that the more complex the model that is estimating it the more likely it is that it will be wrong.

Q351 Lord Fearn: How responsive do you think the aircraft industry will be towards this?

Dr Anderson: I think probably it will be very responsive to any price signal, whether that is oil price or carbon price, or a combination of the two. It will respond because it is a significant factor to the aviation industry, particularly to the low-cost carriers, from my understanding, it is a significant part of their operating costs, so they will respond, I would have thought, more so than many other industries.

Q352 Lord Fearn: In your estimation, by how much would you expect air fares to rise in Europe over the same period?

Dr Anderson: I have to be honest and say that I think it would be impossible to say by how much they are going to go up. If they go up enough to affect the amount of flying that we do, in other words, the amount of carbon that you can emit, because there are not many efficiency gains out there to be had, not
significant ones compared with the growth in the industry, then we would have to see very large increases in price. The small increases in the prices that we see today, given that it is the A, B and C groups, it is we who fly, basically, we are flying more often, it is not the lower income groups that are flying much, they are flying more, but we are the ones who are driving it, primarily; so if a flight to Rome goes up from £15 to £20, is it going to affect us going to Rome? I do not think so. If it goes from £15 to £150 it might affect whether we go to Rome. Marginal adjustments in the price, a fiver here, a tenner there, even £20 or £30, I think will have very, very little impact. I think the elasticities of demand are such that you will have to see significant increases in the price of aviation if you want to curb demand.

Q353 Lord Fearn: The same to America?
Dr Anderson: Yes, indeed. Of course, if the low-cost carriers do bring their operational practices to the medium- and long-haul flights you will expect to see the prices of some of those come down, depending, of course, on what happens to the price of oil.

Q354 Chairman: The answer to Lord Fearn’s question as to whether anybody has produced estimates of the price of carbon over the next 10 to 12 years is that you are not aware of any?
Dr Anderson: We are not aware of it, no.
Chairman: Quite clearly, as I said to the Minister, many, many businesses and sectors, it is critical to them that they do form views. You may say it is difficult but, of course, if you take investment decisions for 20 to 40 years you have to take a view, even if your view is that it stays as it is, you have a view. This is not yourselves, but I am aware of one or two commercial outfits which are beginning to produce forecasts of carbon prices, and so on, and I am very happy to share them with you outside this room. That work is certainly starting now and at least commercial organisations are having a go at this.

Q355 Lord Fyfe of Fairfield: In paragraph 2.3.2 of your written evidence you indicate that the industry and the UK Government have not envisaged a tightly contracting UK emissions cap in future. What is your evidence for that?
Dr Upham: It is a personal view. I see a disconnect between policy and the urgency with which we ought to be addressing policy. There does not seem to be the sense of urgency that there ought to be. These are incredibly serious issues for the entire world and yet we are at the level of dealing with political sensitivities, commercial sensitivities and there is just a major disjunction between what we need to do and what is being done. That was what I meant.

Q356 Lord Fyfe of Fairfield: I take that point of view entirely on board and, clearly, whilst your organisation is an influential one it has limited capabilities as far as directly influencing political thought is concerned, and one needs to influence political thought at national level, EU level, and so on and so forth. What else can be done to make people more conscious of this huge problem?
Dr Anderson: I think the media, for one thing. People are becoming aware of some of these issues. If we went back two years ago, when we started looking in more detail at aviation, certainly now the public are far more aware of these issues. We have had quite a lot of articles in The Guardian, indeed even in The Telegraph, and quite a lot of the tabloids are also addressing these issues, generally they are quite negative about it but at least it is gradually coming up the political and the public agenda. The public do relate now, to some degree, flying with an environmental impact, perhaps they are not exactly sure what it is entirely but they know there is something out there which is bad from their flying. There are other organisations being established to allow the middle classes to salve their conscience, by planting trees if you fly, for instance, so you can go to websites and do that. These are perhaps small changes. I tend to agree with Paul that we are rearranging deckchairs on the Titanic still at the moment, but it is a slow move in the right direction. I think politically we are several steps ahead of that.

Q357 Lord Fyfe of Fairfield: Could one say that the low-cost operators are culprits? They are certainly regarded by the press and the public at large as heroes at present. They promise to take you to anywhere in Europe for £15, landing at an airport you have never heard of, arriving at three o’clock in the morning, then you have to take a £60 taxi ride to get to your destination. Not much is said about that. Should not more publicity be attached to all the strings which are attached to low-cost flying? There are a lot of strings attached to low-cost flying.
Dr Upham: I think probably the biggest publicity will come from increasing evidence of climate change, so the more hurricanes, floods, droughts—

Q358 Lord Fyfe of Fairfield: The better?
Dr Upham: Not the better but, yes, it will happen.

Q359 Lord Fyfe of Fairfield: I know what you mean.
Dr Anderson: Particularly in the northern hemisphere. If it happens in the southern hemisphere, generally we do not care too much, but if it happens to those of us here then we tend to react quite quickly. I always hold the Thames Barrage as a hope, both in terms of quashing Mr Prescott’s house-building plans and alerting the public to climate change.
Q360  Chairman: On the specific question that Lord Fyfe asked, were you referring in paragraph 3.2 to a tightly contracting emissions cap for aviation specifically or the overall level of emissions? It is not entirely clear to me, having re-read the evidence.

Dr Anderson: Here we are talking about the overall emissions cap. The Government has its 60 per cent target. You may or may not be aware that the 60 per cent target links to 550 parts per million by volume of carbon dioxide in the atmosphere; Paul is referring to this 450, which people think is probably the more appropriate level that we should be heading for, which relates to an 80 per cent reduction of our carbon emissions.

Q361 Chairman: Are you saying that you do not think the EU or the UK Government are serious about having set an emissions target; in your view, they do not believe that has to be a tightly contracting cap in future?

Dr Upham: They may believe that it needs to be, but politically it is very difficult for them at the moment. That is what we are saying.

Dr Anderson: Like many of us, we hold two conflicting views. We have to accept that we are all like this. You can call it hypocrisy if you want to, but I think it is just that we have these dilemmas, these dichotomies, within all of us. This is a problem for Government here. On the one hand, it wants to open up access to other areas, it wants to ensure more low-cost carrier routes; the aviation White Paper is quite clearly a paper about increasing capacity. On the other hand, I think they are very genuine in the UK Government, certainly the ones I have spoken to, about climate change. Bringing these two together is very, very difficult and that is the role of people like us, I suppose, who are trying to flag up these what seem to us fairly obvious irreconcilable differences. I think it is quite difficult, philosophically but also practically, for the politicians to bring these things together, because it is difficult for us and the public. As you said previously, are the low-cost carriers culprits? They are not culprits because we get on the ‘planes. The ‘planes would not fly if we did not get on them, so are we the culprits or are the culprits the airline?

Q362 Chairman: I am sorry, if I can bring you back to your own text and the question, if I may, as this is quite important to us. There is an Emissions Trading Scheme in operation now, Phase I, and discussions are going on in Phase II allocations. Are you saying that Phase I allocations were not as tight as they should have been and are you saying that the discussions going on in Phase II you think will not result in a level as low as they should be? I am concerned here with observing behaviour, as opposed to views, about what we think behaviour might or should be. Specifically, are you saying that the evidence of Phase I of the ETS and the discussions going on in Phase II of ETS show that the EU and the UK Governments are not serious about reducing emissions, because that is the proof of the pudding, is it not?

Dr Upham: I am not familiar with the details of what percentage reduction is likely in Phase II, but if it is not reflecting a 4 per cent reduction per annum then it is not doing what is necessary.

Chairman: That is very helpful.

Q363 Lord Haskel: You have referred to people salving their consciences when they fly. In paragraph 2.4.1 of your written evidence you talk about Clean Development Mechanisms and Joint Implementation and these could be important instruments for the aviation industry seeking growth under conditions of a tightly capped ETS. Could you say how you envisage this working?

Dr Upham: They may believe that it needs to be, but particularly if it is vegetation you are planting, if you are planting biomass as a sink then if the world warms and the biomass dies or catches fire you have lost that, so there are risks attached to it. The aircraft operators would buy permits, emissions reduction units, from the developers in the less-developed countries, who would earn emissions reduction credits as part of their project and thereby effectively they would be buying growth.

Q364 Lord Haskel: Do you not think that some of these projects could be of benefit to these less-developed countries?

Dr Upham: Yes. There is a potential benefit there. They need to be monitored very carefully and at the moment not enough of them are coming through. There is also the further possibility that these schemes may not even exist post 2008.

Dr Anderson: Post-Kyoto, particularly 2012. These schemes are up and running in various guises up till 2012. We do not know what a post-Kyoto world is going to look like. There is no agreement out there. We hear increasingly that Prime Minister Blair is looking for different sets of mechanisms, in other words, something that is not quite like international targets, as we have had with Kyoto; possibly something more along the Bush line of pursuing technologies but without having an international target framework. We do not know whether these will exist after 2012, but if they do exist, and are well monitored, as Paul said, they could be viable options. I think the biomass one is a particular problem, because, in fact, you can make situations worse. If the biomass dies and methane is emitted, methane is a
stronger greenhouse gas than carbon dioxide so you

Dr Upham: In principle, the aircraft operators could

set up joint ventures with developers in less-
developing countries to promote, stimulate the
throughput of these projects, and this sounds
plausible to me.

Lord Haskel: Have you any thoughts about
the scale of this, to what extent would this take place?

Dr Upham: It would have to match the emissions
excess. I have looked at the scale with regard to
biomass and there did seem to be sufficient, but that
was just a very quick look, we simply have not had
time to look at this properly.

Dr Anderson: I think one of the options you could do
for the uplift factors would be to consider these, so to
consider carbon completely constrained within ETS
or some other, similar mechanism, so carbon you
could not buy out through Joint Implementation or
by a CDM mechanism but perhaps it is something
you could use for the upfits. If you knew what the
price of carbon was at a particular time you could
apply that price, via this multiplication factor that the
IPCC have, 2.7 times for the vapour trails and these
uplift factors. You could say, “This is the amount of
money that you must invest in other programmes
elsewhere,” or something similar. I think it may be a
mechanism which perhaps you could apply to the
uplift factors, which are very difficult to deal with.
I am not saying that it is wonderfully scientifically
rigorous adopting this approach but I do not think
there is a scientifically rigorous way of dealing with
the upfits. I think this might be a way forward.

Chairman: I think probably the key message
we got from that was, as I said to the Minister about
the wider ETS, that a degree of certainty about the
future is really quite important. If these particular
schemes are okay up to 2012, fine, but that is not the
basis for long-term investment planning, is it?

Dr Anderson: No.

Chairman: That is helpful. We will certainly pursue
that. Thank you very much.

Lord Swinfen: Are those conditions going to
be met, in your view?

Dr Anderson: I agree with Paul; I do not think we will
have an adequate ETS cap. I think we are very poor,
as human beings, certainly in our Western culture, at
dealing with long-term issues. We have very short-
term policies, we have very short-term views towards
the world in our day-to-day living, let alone at the
political level, and I think really we are going to
struggle to move in that direction. The Government,
Defra, ran a major conference earlier this year, which
you may be aware of, in Exeter, at the Met. Office.
This was a big scientific conference looking at what
level of carbon dioxide emissions are necessary, what
the carbon dioxide concentrations should be in the
atmosphere to protect us from what is often referred
to as “dangerous climate change”. The Government
is currently using 550 parts per million, that is the
figure, in fact, which generally is used by the EU.
According to this conference, you need to use
somewhere nearer the 380 to 430 parts per million.
We are at 380 today, or 379, thereabouts. The scale
of the problem is that we need to act today, so tonight
we walk home, we no longer fly and we use only wind
turbines to provide our lighting in this room. If we do
not do that we are already missing the cap that is
perhaps necessary. We are not prepared to address
even what our scientists are telling us, whom we
employ in a place like the Hadley Centre. I come back
to the idea that we are playing around with
deckchairs on the Titanic still.

Lord Swinfen: I am interested to hear you say
that but what about the other three points? You have
answered the ETS cap only.

Dr Anderson: We discussed other incidents in relation
to the uplifts, though I have to say no conclusion
came out of that because we do not have one.

Lord Swinfen: You do not know whether that
one is going to be met or not?
As they get hotter they produce more NOX because need to be complemented by a domestic quota fact, Elliot Morley quite often refers to the work that there is a strong case for a supplementary mandatory but then there was an election so it did not get any that, because by 2017 aviation emissions will take up looking at emissions from individuals was put politically; in fact even a private Member's bill Dr Anderson: basically. You want the engines to run as hot as possible and you will get more efficiency out of them. As they get hotter they produce more NOX because the nitrogen is in the atmosphere, so you have this real problem. It is the same with noise. If you make them quieter you increase the CO2, if you want to focus on CO2 you have noisy 'planes landing that pump out lots of NOX and you can reduce the CO2 or alternatively make them quiet, get rid of your NOX and they pump out lots of CO2. Again, there are no clear scientific answers to these sorts of problems.

Q371 Lord Swinen: As yet?
Dr Anderson: As yet. The CDM and Joint Implementation I discussed with Karen Buck, and other people, I am sure, have been discussing those issues, but again we do not know what will happen after 2012 so we need some certainty, but that certainty at the international level will not be there, almost certainly. The idea that you are going to get the Americans on board plus everyone else in agreement by 2012 as to what the future will be in relation to these, I think, unfortunately, all the investors are going to be left wanting for the next few years on that. Certainly Karen Buck, the Aviation Minister for the UK is aware of these issues.

Q372 Chairman: The second point is a relatively modest point although not insignificant. It is effectively whether smaller emitters are captured, as it were?
Dr Anderson: We have done a lot of work at the Tyndall Centre on this and had a lot of impact politically; in fact even a private Member's bill looking at emissions from individuals was put forward. It went through its first reading unopposed but then there was an election so it did not get any further. The Government are fully aware of this. In fact, Elliot Morley quite often refers to the work that we have done on domestic tradeable quotas, or personal carbon allowances. These are issues that the Government is fully aware of and it needs to find some way of addressing them. They are quite difficult but they are not as difficult, I think, as the aviation industry is to try to tackle. There is a lot that we can do as individuals and as companies to respond, but we need the mechanisms out there. The ETS deals only with large emitters, so it deals only with power stations and possibly the aviation industry and cement manufacturers. All the other small and medium industries are outside that mechanism so we need to incorporate those.

Q373 Chairman: I am terribly sorry but I thought the answer was an answer to our call for evidence on alternate measures and that paragraph referred to aviation, but your reply gradually moved away from aviation.
Dr Anderson: Under that one, it refers to “a system designed to capture most commercial emissions will need to be complemented by a domestic quota system,” that is the household one, which we have referred to with Elliot Morley and others, and as a model for similar, small enterprises.

Q374 Chairman: So you were not referring to aviation?
Dr Anderson: No.

Q375 Chairman: On the ETS cap, do you have a view, and given the very first point about it being important, about what level of ETS overall cap, and the aviation cap within that, you would judge to be in line with what is needed in 2008?
Dr Anderson: Broadly I would say that we should be aiming for an 80 per cent reduction by 2050. There is a mechanism for producing a curve from today to 2050 and that is a gradually reducing curve of emissions, and any date on that curve you can draw a line down and it tells you what the level of emissions should be. That is what the percentage reduction should be for the proportion of emissions captured under ETS and then all the other sectors should make their requisite emissions reduction at the same percentage level. Overall, society should be reducing its emissions in accordance with this curve up until 2050. That is what we should be doing if we want to stabilise anywhere near the Government's 2°C, in other words, if we want to try to avoid dangerous climate change. That gives us still only about a 50/50 chance of avoiding that dangerous climate change.

Q376 Lord Walpole: The final question on your final paragraph, 2.8, of your written evidence. You say that, because by 2017 aviation emissions will take up a large proportion of the overall emissions target, there is a strong case for a supplementary mandatory requirement for an annual reduction or offsetting of EU aviation emissions from 2010 to 2050. What precisely do you mean by this, what requirements do
you have in mind, how would it be imposed, by which authority and would it require legislation?

Dr Upham: This is the most contentious bit.

Q377 Lord Walpole: It is indeed, and I liked it.

Dr Upham: Good. It is contentious because the presumption is that the rest of the EU is not contracting to 450. That is, let us assume that we do not sign up to a serious climate target, and I think that is quite possible for the next 10 years, then because aviation is growing at such a rate, because it is dependent on kerosene, and hence going to produce this emissions growth, you could make an argument for at least a mandatory offset above baseline. Say, for example, all emissions beyond 2010 should be carbon-neutral through the CDM, you could make such an argument, but the counter argument is that is not fair to this one industry—why single out this one industry, so it is a contentious proposal.

Dr Anderson: Could I come back on that 2017. I do not want the Committee to go away with the impression that we are saying that by 2017—

Q378 Lord Walpole: You have had it?

Dr Anderson: Yes, we have had it. This 2017 includes the uplift. We always put a caveat in all our work on this to say that we do not think the uplift approach is necessarily the appropriate route to go down. That is not to say we should ignore the uplift but we would prefer to see carbon seen alone. Even if you look at carbon alone, the proportion the aviation industry takes up in just the next few years and the next 10 or 20 years is very significant anyway, so the message is the same. You have to deal with the aviation industry later on this evening, you cannot wait 10 years to try to deal with it.

Lord Walpole: Who is actually physically going to do that and bully people and impose restraints?

Q379 Chairman: I think it would be much safer if he said, for example, an example he carefully gave was that there could be a mandatory requirement to invest in or purchase the credits from investment in reducing carbon emissions elsewhere in the world.

Dr Upham: If this were to go ahead then the competent authority would be the Environment Agency in the UK. It would be the same competent authority that monitors carbon emissions in each country.

Q380 Lord Walpole: It would require legislation, there is no doubt about that?

Dr Upham: I can envisage certain airlines wanting the image of carbon neutrality beyond the baseline, it is not completely impossible to imagine that.

Dr Anderson: Certainly for business and first class, where the cost of the additional trees you have to plant is maybe £200 or £300, I think, at most, at the moment, the cost of the flight might be £2,500, so if you can afford £2,500 you are not going to think twice about it. You may think “Hey, it would be really nice if it were carbon neutral. I can have a chat with my friends over a glass of Pimm’s and tell them how wonderful they are.”

Q381 Chairman: Moving away from the Pimm’s, your reference actually was to mandatory requirements, it was not voluntary. I am sorry to bring you back to your own submission.

Dr Upham: We have described the seriousness of the situation.

Q382 Chairman: You were making the point really that it may be necessary to go beyond the ETS and there may be a need for other schemes and you suspect they may be mandatory rather than voluntary?

Dr Upham: Yes.

Dr Anderson: Yes.

Q383 Chairman: I do take your point. I was simply trying to ensure that we were thinking you might have something in mind and you gave us an example, thank you very much.

Dr Anderson: One thing to be aware of again then, it is just another difficult issue to try to take account, is that by encouraging the aviation industry to be more efficient and therefore perhaps to increase the rate at which they purchase new ‘planes, which generally are more efficient than the old ‘planes, it means you change the second-hand market. If you are genuinely interested in climate change, what happens to the second-hand ‘planes? They get sold to other parts of the world, they bring down the price of second-hand ‘planes and they carry on flying. It is not a small issue to think about there. We have not done any work on that and I am not aware of any other significant work which has looked at that, but if you are genuinely interested in climate change you have to ask what happens to the old ‘planes. Fifty per cent of all Dakotas are still flying.

Lord Walpole: A lot of them lie around in various homes in Russia, do they not, for spares?

Q384 Baroness Eccles of Moulton: Could I ask a general question. You have given us a great deal of extremely interesting and useful evidence and there has been an undercurrent of doomsday factor in it if nothing is done. Are the Tyndall Centre’s assumptions pretty well broadly shared by other academic research centres that have concentrated on global warming and CO₂ emissions? Do you know lots of other people who think in the same way?
Dr Anderson: I think it would be fair to say, in our part of the Tyndall Centre, that our particular focus is on energy and climate change and I think there is broad acceptance of our conclusions. We have generally used data from other reputable organisations, for instance, the 450 parts per million, or less maybe, comes from the Hadley Centre. It is not made up by some Mickey Mouse organisation, we use generally very reputable organisations. The 2.7 factor we use, the multiplier, comes from the IPCC, as do the efficiency improvements. Alice has recently conducted quite a long series of interviews with people from industry, so their information is taken on board as well. We go out of our way to remove our own prejudice and generally err on the side of caution and are quite conservative with our figures.

Chairman: Thank you so much. You have been kind and stayed with us beyond the time we should have kept you. Thank you very much for your written evidence and for being forthright and so interesting today. Thank you.
Written Evidence

Letter to Sub-Committee B from the Environmental Affairs Director, Air France

In response to your Inquiry on ETS and Aviation Sector, please find enclosed the document, “European Aviation Industry joint position paper on Emission Containment Policy” (not printed).

Air France, as a contributor to this document, fully supports the exposed Emission Containment Policy and is confident that it will answer the question of your Inquiry.

21 September 2005

Memorandum by BAA plc

1. SUMMARY

1.1 BAA is the world’s leading airports operator. We are committed to continuing to understand and improve our performance with respect to sustainable development.

1.2 We accept that there are certain known environmental limits, such as the earth’s capacity to handle greenhouse gases. However, in keeping with the emphasis placed by a sustainable development framework on policy integration, BAA believes the debate on aviation needs to recognise both the realities of environmental limits and aviation’s socio-economic benefits.

1.3 BAA has two main interests in climate change policy: we are one of the UK’s top 20 industrial consumers of energy and we are a major player in the aviation industry.

1.4 Aviation has a small but significant and growing impact on climate change, and this impact needs to be addressed. We believe that emissions trading is the most economically efficient and environmentally effective way of addressing the impact. Participation in the EU’s emissions trading regime will allow aviation to purchase the necessary additional allowances from other sectors to enable the industry both to continue to grow and meet its emissions obligations, by funding emissions reductions elsewhere.

1.5 We welcome the European Commission’s focus on emissions trading for aviation and have taken a leadership role within the EU aviation industry in pressing for this, as an interim step to a solution at a global level. We believe that the EU scheme has worked well to date (a view informed in part by our direct participation within it). The scheme has inevitably entailed practical challenges, but these can be overcome and it provides a solid foundation for expansion to other sectors. We believe that integration of intra-EU flights within the EU ETS is deliverable by 2008 or soon thereafter.

1.6 Emissions trading will impose additional costs. However we believe that these will be significantly lower than alternative policy measures for the same environmental outcome. Taxes and charges, which aim to cut emissions by reducing demand, are not well targeted, as the revenues flow to Government rather than directly to addressing the impacts.

1.7 We believe that all intra-EU flights should be linked with the EU ETS, irrespective of the nationality of the airline. On that basis, the scheme would not have any significant competitive effects, since all the flights on a particular route would be included. The extra costs linked to emissions trading may influence the choice of mode of transport, but only on short-haul journeys, where air travel can be practically substituted.

1.8 Aviation’s impacts on climate are a result of the following four factors: CO₂, oxides of nitrogen (NOₓ), the creation of condensation trails (contrails) and the potential impact of contrails on cirrus cloud. The IPCC (Intergovernmental Panel on Climate Change) has estimated that aviation’s impacts resulting from these effects is some 2.7 times that due to CO₂ alone, though there is uncertainty surrounding this. In line with the precautionary principle, we recognise that aviation’s total climate impacts should be addressed.

1.9 A targeted approach will be needed to address aviation’s total climate impact, with specific measures for the specific impacts. These measures will include further scientific research and technological development (for example investigating advanced air traffic management to allow aircraft to avoid climate-sensitive parts of the sky).
1.10 It may also be possible in future to expand the emissions trading scheme to include these impacts, though there are practical difficulties to overcome. It would be counter-productive simply to apply a CO₂ multiplier to account for aviation's non-CO₂ impacts in the trading scheme (whereby aviation would have to acquire, say, two permits for every unit of CO₂ emitted) as this risks encouraging an undue focus on reducing CO₂ emissions, at the expense of increasing NOx emissions, where there are known technological trade-offs.

2. Introduction

2.1 BAA is the world’s leading airports operator. In the UK, BAA owns, develops and operates seven airports: Heathrow, Gatwick, Stansted, Southampton, Edinburgh, Glasgow and Aberdeen. Overseas we either manage contracts at, or have interests in, airports in the USA, Australia and Italy.

2.2 BAA has two main interests in climate change policy. First, we are one of the UK’s top 20 industrial consumers of energy. We have set a target to reduce our CO₂ emissions from energy use by 15 per cent over 1990 levels by 2010 and have a thorough carbon management strategy to deliver that. Since January 2005, we have also registered three combustion plants at our airports to participate in the EU Emissions Trading Scheme (ETS).

2.3 Second, we are a major player in the aviation industry and have taken a proactive role in the debate over addressing aviation’s impacts on climate. Our response to this Inquiry focuses primarily on the second area, though it also draws where appropriate on our own direct experience of the EU ETS.

2.4 We divide our evidence into the following three sections:
   — Section 2 provides a short summary;
   — Section 3 provides an overview of BAA’s approach to sustainable development; and
   — Section 4 responds in detail to the seven questions on which the Sub-Committee is seeking evidence.

2.5 The European Commission is due to publish a Communication during September 2005 outlining its policy proposals to address aviation’s impacts on climate change. At the time that BAA finalised this evidence for submission, the Communication was not published. The Communication will provide further information which would help BAA to respond to the questions posed by the Sub-Committee’s Inquiry. The technical study used to inform the Communication, produced by consultants CE Delft, was available at the time this evidence was submitted, and is referred to in BAA’s evidence.

3. Context: BAA’s Approach to Sustainable Development

3.1 BAA’s approach to sustainable development

3.1.1 BAA is committed to continuing to understand and improve our performance with respect to sustainable development. Like many companies we work within the UK Government’s framework. The Government aims to pursue sustainable development in an integrated way through a sustainable, innovative and productive economy that delivers high levels of employment; through a just society that promotes social inclusion, sustainable communities and personal wellbeing; and in ways that protect and enhance the physical and natural environment, and use resources and energy as efficiently as possible.

3.1.2 BAA believes that responsible air transport and airport growth should take place only where it is in accordance with the integrated approach above. BAA accepts that there are certain known environmental limits, such as the earth’s capacity to handle greenhouse gases.

3.1.3 However, in keeping with the emphasis placed by a sustainable development framework on policy integration, BAA believes the debate on aviation needs to recognise both the realities of environmental limits and aviation’s socio-economic benefits.

3.1.4 Economically, aviation plays a crucial role in promoting the high-knowledge and high-value-added industries and it also underpins the world’s largest industry—tourism. Socially, air travel is a facilitator—for people to visit friends and family scattered around the world, to learn, and to visit parts of the world inaccessible to their parents or grandparents. Sustainable development rightly places emphasis on improving quality of life for all. In this context, the fact that aviation is now accessible to most people, at least in the more prosperous countries, is both significant and welcome.
3.2 BAA’s approach to climate change

3.2.1 BAA supports the leading role that the UK Government and the EU have played on climate change and recognises the importance of effective international action to address this issue. BAA notes the EU’s publicly stated long-term climate change policy objective:

“...a long-term objective of a maximum global temperature increase of 2°C Celsius over pre-industrial levels... In the longer term this is likely to require a global reduction in emissions of greenhouse gases by 70 per cent as compared to 1990, as identified by the Intergovernmental Panel on Climate Change (IPCC)”\(^1\)

3.2.2 BAA supports the delivery of targets adopted by Governments within the framework of the Kyoto Protocol and we are committed to making a significant contribution to reducing greenhouse gas emissions arising from energy use at our seven UK airports.

4. Response to the Sub-Committee’s Specific Questions

4.1 Has the emissions trading scheme worked well so far, and does the current system provide a solid foundation for expansion to include other sectors of industry?

4.1.1 We believe that an open emissions trading scheme represents the most economically efficient and environmentally effective way of industry addressing the impacts of its emissions. Industrial climate change impacts are most effectively dealt with by harnessing market mechanisms and corporate self-interest, where possible, since these are powerful drivers and are likely to produce faster, better results than blunt regulation. Unlike a tax, where the level needed to achieve the environmental objective is unclear, trading ensures that the environmental objective is delivered through its overall cap on emissions, with the market determining the cost of carbon necessary to meet the agreed target.

4.1.2 We welcome the leadership that the EU has shown in this area by establishing the world’s first international scheme for trading emissions. A full assessment of the effectiveness of the EU ETS has not yet been undertaken. Nevertheless, our assessment is that the scheme has worked well to date: functioning as a market mechanism and sending a clear signal on the value of emissions reductions.

4.1.3 Our views on this issue are informed in part by our own experience: during a recent review of our carbon management strategy in 2003, the prospect of the introduction of the ETS was an important driver to establishing our own long-term carbon reduction target. In operation, the scheme has created an important financial incentive for us to reduce our emissions, and we anticipate that it will continue to do so in future.

4.1.4 It is inevitable that the implementation of such a complex international scheme will entail practical challenges. Our own experience has highlighted a number of areas where we feel that the workings of the ETS could be improved. These include the resource implications of administering the scheme, the treatment of new entrants and the need to ensure equitable treatment of industries in different Member States.

4.1.5 However, these practical challenges can be overcome. They do not alter our fundamental view that trading is the most economically efficient and environmentally effective way of industry addressing its climate impacts.

4.1.6 We believe that the current system provides a solid foundation for expansion to other sectors and we welcome the European Commission’s focus on emissions trading as the appropriate policy for aviation’s climate impacts.

4.2 Why include the aviation sector, and what are the possible costs and benefits to the industry of joining the ETS?

4.2.1 Aviation has a small, but significant and growing impact on climate change, and BAA believes that this impact needs to be addressed. We believe that emissions trading is the best mechanism currently available to policy makers to deal with our industry’s emissions, which is why BAA has taken a leadership role within EU aviation in pressing for this.

4.2.2 The Intergovernmental Panel on Climate Change estimated that aviation was responsible for approximately 3.5 per cent of total human climate change impact in 1992. In the UK in 2000, aviation was responsible for around 11 per cent of the total climate impact (the higher percentage reflecting the UK’s important role as an aviation hub). However, while aviation’s current climate impact is significant, it is nevertheless still smaller than the climate impact arising from other sectors of the economy, such as power generation (29 per cent of UK’s total climate impact in 2000).

\(^1\) Article 2, the 6th EU Community Environment Action Programme, adopted in co-decision in 2002.
4.2.3 Governments at the Johannesburg Sustainable Development Summit recognised that the priority of meeting key human development needs (such as clean water, food, and sanitation) will rightly use up a significant proportion of the earth’s environmental capacity. The remaining capacity is available within developed and developing nations for use by other activities, including industry.

4.2.4 Governments will determine what amount of the available environmental capacity is allocated to industrial activities, including aviation, but we believe that the market best determines how to reallocate these allowances between industries. In the EU, Governments have chosen emissions trading as the best market allocation mechanism.

4.2.5 We believe that there is a powerful case for aviation to take up some of the environmental capacity available to industrial activities, because of the significant economic and social benefits that aviation generates. We recognise that aviation will need to take up more than its allocated share of this capacity, given society’s growing demands for air transport, and given the absence of short-term technological solutions which will allow a breakthrough in reducing to CO₂ emissions.

4.2.6 Participation in the EU’s emissions trading regime will allow aviation to purchase the necessary additional allowances from other sectors to enable the industry both to continue to grow and meet its emissions obligations. So while aviation may not be able to cut its own emissions directly, emissions trading will enable it to fund emissions reductions elsewhere.

4.2.7 Emissions trading will impose additional costs on aviation which will probably lead to higher air fares. However, we believe that these costs will be lower than the costs imposed by alternative policy measures, thereby benefiting leisure and business consumers of air transport services. The exact cost to the industry of joining the ETS will depend on a range of factors including:

— The extent to which the costs can be or are passed on to the passenger;
— Whether the design of the scheme includes only CO₂ or also addresses aviation’s “total climate change impact”;
— Whether the scheme applies to intra-EU or international aviation;
— The level of the cap; and
— How emissions permits are allocated to the aviation industry.

4.2.8 During 2003, BAA convened a major project on emissions trading. Under the guidance of a steering group representing business, government and non-governmental organisations, expert consultants Oxera researched the impact of a range of policy scenarios. Their analysis demonstrates that emissions trading can be a “win-win”, delivering more for the environment at greatly reduced costs to industry.

4.2.9 One scenario was based on 5 per cent emissions growth by 2010 compared to 1990 (i.e. a 25 per cent reduction against 40 per cent emissions growth). The cost to the EU aviation industry was estimated at around €400 million a year. Another scenario was based on 8 per cent emissions reductions by 2010 compared to 1990. The cost to the industry then increased to around €900 million a year. However, both of these scenarios cost substantially less than the tax-based alternatives.²

4.2.10 The recent study for the European Commission by expert consultants CE Delft reinforces the conclusion that emissions trading is the most economical and effective measure. CE Delft’s assessment of a scheme that includes only flights within the EU (the most practically-deliverable option in the short term) estimated the impact on ticket prices to be between €1.3 and €2.6 per return flight.³

4.2.11 BAA believes that the suggested alternatives to emissions trading for aviation would impose higher costs for lower environmental return. Policy approaches for aviation which aim to cut emissions by reducing demand, through the mechanism of taxes and charges, are not well targeted, as the revenues which are raised from such charges flow to Government rather than directly to addressing the impacts. Moreover, when it becomes clear that such taxes are not having the desired environmental effect, pressure is brought to bear on politicians to impose ever higher costs through escalating taxation.

4.2.12 The long-term goal is for aviation’s emissions to be mainstreamed within the global policy framework to address climate change. The International Civil Aviation Organisation (ICAO) has been asked to identify how best to achieve that. However, reaching agreement at an international level will take time so we support regional action at a European level as an interim step. We therefore strongly support the UK Government’s objective of including intra-EU air services in the EU ETS by 2008 or as soon as possible thereafter, and we

² BAA has not advocated any of Oxera’s scenarios but has used the analysis to indicate how the costs could vary and to stimulate debate and thinking.
³ BAA is not advocating any of the three policy scenarios assessed in the CE Delft study. We believe that the optimum selection of design elements will require further consultation.
are pleased that the European Commission is engaging seriously and constructively on delivering this. This will help to bring aviation within the club of climate-responsible industries.

4.3 What are the possible impacts of the inclusion on the international competitiveness of the EU aviation industry (and its competitive position in relation to other transport modes?)

Impacts on international competitiveness

4.3.1 We believe that all intra-EU flights should be linked with the EU ETS, irrespective of the nationality of the airline. On that basis, the scheme would not have any significant competitive effects, since all the flights on a particular route would be included. This view is supported by the CE Delft study, which concluded that "none of the policy options considered ... will significantly damage the competitive position of EU airlines relative to non-EU airlines".

4.3.2 CE Delft based its conclusion on two main arguments:

- European and non-European airlines receive equal treatment (which is not the case for other sectors already covered by the EU ETS); and
- The impact on the size of the home market (which is sometimes cited as a factor that can affect an airline’s competitive position) is too small to have substantial effects on the operating efficiency of EU carriers.

4.3.3 The long-term goal, and the one that will ultimately eliminate the risk of competitive distortion, is for aviation’s emissions to be mainstreamed within the global policy framework to address climate change, through the Kyoto Protocol. However, that will take time and we see EU-level action as an effective interim response prior to global action on aviation’s emissions.

Impacts on competitive position in relation to other transport modes

4.3.4 We recognise that an emissions trading regime will result in higher costs for the industry and, depending on how far those costs are passed on to customers, is likely to result in some increase in ticket prices. It is possible that this may influence the choice of mode of transport. However, this is only likely to happen on short-haul journeys, where air travel can be practically substituted. We do not believe that this will have a significant impact on the competitiveness of the UK or European aviation industry as a whole.

4.3.5 Moreover, we also believe strongly that aviation should receive equitable treatment alongside other participants in emissions trading and sectors not included in the emissions trading scheme. On that basis, we would welcome further discussion on the potential for other transport modes to be incorporated into EU/international emissions trading frameworks.

4.4 What are the costs and benefits to consumers and the environment of including aviation in the ETS?

Consumers

4.4.1 The main consumer benefit is that emissions trading will address aviation’s climate impacts in the most economical way, minimising the additional costs that consumers will need to bear. It will also provide reassurance to consumers that the climate impacts of their flights are being addressed and that the revenue raised by an increase in ticket prices will be invested directly in reducing emissions. In 4.2.10, we highlighted CE Delft’s estimate that the cost of including intra-EU aviation’s CO2 impacts in the EU ETS as between €1.3 and €2.6 per return flight.

4.4.2 The alternative of using taxes to deter people from flying is, as we have stated, inefficient. The idea of a tax has also not found strong public support. In a recent ICM/Guardian poll 61 per cent of UK citizens disagreed that a tax should be added to airline flights to deter people from flying.

Environment

4.4.3 The environmental benefit of aviation’s participation in the EU ETS is that real emissions reductions will be achieved. Aviation will be set a limit of allowable emissions and required to purchase permits for any excess emissions it wishes to make. These permits are only available to the market if other companies make deeper emissions cuts than required and can sell on their surplus allowances.
4.4.4 However, BAA recognises that aviation’s impacts on the climate are complex, and that emissions trading is not necessarily the appropriate solution for all impacts. There are four key climate effects resulting from aviation: emissions of CO2 and oxides of nitrogen (NOx), the creation of condensation trails (contrails) and the potential impact of contrails on cirrus cloud. The IPCC has estimated that aviation’s total climate impact resulting from these effects is some 2.7 times that due to CO2 alone. There is a range of uncertainty around this estimate, and the latest research has revised the estimate of radiative forcing down to 1.9 times the impact of CO2 emissions, plus the impact of contrails on cirrus clouds, which continues to be very uncertain.

4.4.5 BAA believes that emissions trading is the right policy measure to deal with CO2 emissions, since there is currently no prospect of a breakthrough technological alternative to burning fossil fuel. And while, in the future, we also believe that there may be scope to expand the emissions trading scheme to address aviation’s non-CO2 impacts, there are practical difficulties and scientific uncertainties which mean that emissions trading may not currently be the most appropriate mechanism for dealing with aviation’s non-CO2 impacts.

4.4.6 The amount by which CO2 emissions can be reduced will be determined primarily by the level of the of the emissions cap set, both for aviation and for the scheme as a whole. The Oxera analysis shows that a range of different emissions reductions can be achieved through emissions trading, and that the cost of achieving those reductions is substantially less than the tax-based alternatives.

4.4.7 CE Delft’s recent assessment of a scheme that includes only flights within the EU (the most practically-deliverable option) would deliver reductions in CO2 emissions of just under 30 per cent compared to business as usual emissions in 2012.4

4.4.8 In terms of non-CO2 impacts, there are other measures that may be more appropriate than emissions trading, and there is wide agreement that further research is needed in order fully to understand the scale and nature of these non-CO2 impacts, especially in relation to contrails and the impact of aviation on cirrus clouds.

4.4.9 Technological development will have a critical role to play in addressing aviation’s non-CO2 impacts. Manufacturers have already delivered significant improvements and will continue to do so with each new generation of aircraft. For example, the European manufacturing industry has set itself the goal of producing aircraft by 2020 that emit 80 per cent less NOx than those which came into service in 2000.

4.4.10 In relation both to NOx and contrails, it might be possible in the long-term to reduce impacts through advanced air traffic management, ie routing aircraft to avoid climate-sensitive parts of the sky, where contrails would otherwise be produced. Eurocontrol is currently conducting a joint project with the European Space Agency to assess the feasibility of this. In addition, the EU’s SESAME project is setting out a technological roadmap to support the proposed Single European Sky, and BAA believes that this project should include an assessment of how ATM improvements can deliver environmental benefits. However, we acknowledge that this remains a complex area with many uncertainties.

4.4.11 We have stated that it may be possible to integrate non-CO2 impacts into the EU ETS in the future, but we believe that this could only be done if each impact is separately and directly integrated. It would be counter-productive simply to apply a CO2 multiplier to account for aviation’s non-CO2 impacts (whereby aviation would have to acquire, say, two permits for every unit of CO2 emitted) as this risks encouraging an undue focus on reducing CO2 emissions, at the expense of increasing NOx emissions, where there are known technological trade-offs. There is also the issue that the metric used to measure NOx and contrail/cirrus cloud impacts (radiative forcing) is not compatible with the metric used in the EU ETS (Global Warming Potential).

4.5 At what point in the development of the EU ETS would it be feasible to incorporate the aviation sector?

4.5.1 The UK Government’s policy is to “press for the inclusion of intra-EU air services . . . with a view to aviation joining the scheme from 2008, or as soon as possible thereafter”.

4.5.2 There are several practical issues to resolve before aviation can be incorporated. However, we believe that these issues can be overcome and that integration of intra-EU flights within the EU ETS is deliverable by 2008 or soon thereafter.

4.5.3 One particular issue that has an impact on timing is the distribution of allowances to the industry. Kyoto is based on trading in allowances to emit CO2, so-called “Assigned Amount Units” (AAUs). Since aviation falls outside Kyoto, there are no AAUs to back emissions from aviation. To address that issue, we have proposed the partial integration of aviation’s CO2 emissions within the EU ETS from 2008, meaning that aviation can only buy emissions allowances from the open EU trading market, but not sell to that market. We believe that full integration of aviation, whereby aviation can buy and sell permits would then be deliverable by 2013.

4 The CE Delft analysis takes 2004 as its baseline for emissions, so the reductions achieved are not fully comparable with the Oxera results.
4.5.4 The recent CE Delft study also addressed in detail this issue of interplay between the Kyoto Protocol and the EU ETS and identified a range of possible solutions that would permit aviation’s inclusion before 2013. The overall conclusion of the CE Delft study was as follows:

“The introduction of emissions trading for the aviation sector, most immediately in respect of its CO2 emissions . . . does not appear to pose many challenges that have not already arise in the context of the existing EU Emissions Trading Scheme. This suggests that emissions trading is a policy option that can be considered alongside other policy instrument to tackle the climate impact of aviation”.

4.6 What other economic or regulatory mechanisms exist to encourage reductions in CO2 emissions from the aviation sector and how effective might they be compared to emissions trading.

4.6.1 The use of other economic instruments to address aviation’s climate impacts has been debated. Some stakeholders suggest a substantial revenue-raising EU charge for aviation’s CO2 emissions. A 2002 study by consultants CE Delft for the European Commission estimated that to achieve 13 per cent CO2 emissions reductions against 2010 business-as-usual projections would cost €8,600 million a year, significantly more than the €400–€900 million a year estimated by CE Delft for emissions trading. BAA opposes this policy approach, both because of the punitive costs that it would impose on EU aviation, and because half of the environmental benefit would only arise as a result of taxing away demand, with negative economic and social consequences.

4.6.2 Other stakeholders suggest that a revenue-neutral EU charge could address the climate change impact of aviation’s CO2 emissions, whereby greener airlines are net beneficiaries and dirtier airlines are net contributors. BAA believes such an approach could have a part to play but we do not believe that it would be effective on its own, because, under this approach, aviation’s CO2 emissions would continue to grow. However, we believe this option should be kept under review for aviation’s non-CO2 impacts. We have already introduced revenue-neutral NOx charges at some of our airports, to incentivise the use of cleaner aircraft and help address local air quality issues.

4.6.3 However, BAA would support a moderate en-route emissions charge if the revenues were hypothecated specifically to fund research into the non-CO2 impacts of aviation.

Stephen Hardwick
Director of Public Affairs, BAA plc
16 September 2005

Memorandum by Environment Agency

Summary

This memorandum presents the Environment Agency’s views on the inclusion of aviation in the EU Emissions Trading Scheme:

— The EU’s long-term climate change policy objective is a maximum global temperature increase of 2°C over pre-industrial levels. (This is likely to mean a 70 per cent reduction in greenhouse gases on 1990 levels.) Therefore reduced emissions are needed to meet Government and EU targets.

— While the EU’s total greenhouse gas emissions fell by 5.5 per cent from 1990 to 2003, carbon dioxide emissions alone from the international aviation of the 25 Member States of the European Union increased by 73 per cent in the same period. Without policy intervention, the growth in emissions is expected to continue in the coming decades. (Delft, July 2005).1

— Since January 2005 the EU ETS has provided a cost-effective method for Member States to achieve reductions in greenhouse gas emissions in certain industries, and such an economic instrument provides a mechanism to deal with CO2 emissions from aviation. However, the mix of policy options adopted should tackle the full range of aviation’s environmental impacts, including the other global atmospheric impacts.

— Time-scales for the inclusion of aviation in Phase II of the EU ETS are tight, and a number of difficult policy decisions will be required.

1. Introduction

It is one of the UK’s EU presidency priorities to include aviation in the EU ETS by 2008. Research by the Commission, published in July 2005, appears to be coming down in favour of including the sector in the scheme. We strongly support this.

The advantage of emissions trading is that it guarantees the desired environmental outcome in a way that other instruments, such as charges, do not. It ensures that the emissions reductions required to achieve a particular environmental outcome take place in as cost-effective a manner as possible.

The Environment Agency is the competent authority responsible for the Emissions Trading Scheme in England and Wales. We also manage the allocation of allowances to new installations entering the scheme and administer the EU ETS trading Registry for the UK.

2. EU Emissions Trading Scheme

2.1 Background to the scheme

The EU ETS is the world’s first large-scale greenhouse gas trading programme, covering all 25 EU Member States. It requires operators of installations carrying out the specified activities to hold a permit, which allows the installation to emit a certain amount of CO₂.

Allowances for each installation are set at a national level in a National Allocation Plan (NAP). Each NAP must be approved by the Commission to ensure that they meet a number of criteria, including that they are consistent with each Member State’s emission target under the Kyoto Protocol.

The number of allowances allocated to an installation effectively places an upper limit on the number of tonnes of CO₂ that that installation can emit free of charge. If an installation emits more CO₂ than it has allowances for in any calendar year, its operator will need to buy additional allowances from companies that have allowances to spare, i.e., their installations will have emitted less CO₂ than they had allowances for. In this way a market in CO₂ is created.

The scheme is currently in its infancy, and will take time to mature. Phase I of the scheme runs from 2005–07, with Phase II commencing in 2008 (to coincide with the first Kyoto commitment period) and running until 2012. Phase III will run from 2013–18.

2.2 Experience to date

To date there are around 1,050 installations permitted under the EU ETS in the UK, with the overall value of the National Allocation for 2005–07 amounting to some £11–12 billion.

In addition to permitted operators there are numerous traders and brokers actively trading in carbon allowances via the EU ETS Registry.

2.3 Expansion of the scheme

Emissions trading is a fast-moving and developing area of policy. Phase II is due to commence in 2008 and expansion of the scheme is currently under consideration. This could potentially mean the inclusion of additional CO₂ sources from new industry sectors. At this stage, it is considered unlikely that additional non-CO₂ greenhouse gases will be incorporated into Phase II.

3. Inclusion of Aviation

3.1 Aviation emissions

While the EU’s total greenhouse gas emissions fell by 5.5 per cent from 1990 to 2003, carbon dioxide emissions alone from the international aviation of the 25 Member States of the European Union increased by 73 per cent in the same period.

The global warming impact of aviation is three times greater than that of the equivalent amount of ground level emissions of CO₂; therefore the wider climate change impacts of aviation must also be considered (RCEP, 2002). Aviation emissions also include oxides of nitrogen, which contribute to ozone formation at cruise altitudes.

Even if CO₂ emissions from aviation are included in an international trading scheme, emissions such as nitrogen oxides and water vapour may be best dealt with by an EU charge, because the effects of these emissions are felt regionally. The EU has previously suggested an EU wide environmental charge (levy) on aircraft emissions if no action was taken internationally to reduce aircraft emissions (1999 Communication on Air Transport and Environment). Using mechanisms like emissions charges and fuel taxation as flanking
The environmental benefits in terms of the size of the CO	extsubscript{2} reduction which can be achieved will depend on the geographical scope and design of the scheme for aviation. The incentive to reduce emissions will depend on the change in an aircraft operator’s marginal costs associated with the production of 1 additional tonne of CO	extsubscript{2} and the amount of emissions for which allowances can be surrendered. There are a number of policy issues that will need to be addressed in the design of a trading scheme for aviation, as follows.

**Allocation methodologies**

How should allowances be allocated to the aviation sector i.e. at an EU or Member State level? And how should allowances be apportioned between participants? The current scheme requires Member States to set a national cap on allowances, which are then distributed between participants via “grandfathering”, which takes into account historical emissions. However, this method of allocation favours the bigger polluters, and therefore it is preferable to use benchmarking criteria or auctioning of allowances. These issues are currently being considered for Phase II of the scheme, and will need to be given careful consideration for the aviation sector. Harmonisation of methodologies across the EU is highly desirable.

**Competitiveness**

Impacts on international competitiveness must be considered, and it has been suggested that carriers that fly wholly within the EU would be disadvantaged relative to carriers that also have intercontinental flights. It has also been suggested that the budget airlines will be more significantly affected than the larger airlines. This is because their customers are more likely to be tourists (rather than business passengers or freight) who tend to be more price-sensitive.

Airlines tend to operate on tight margins, and so have a limited ability to absorb any increase in costs without passing them on to the consumer. This is more of a problem for low cost airlines, as they cannot shift price increases on to business class passengers, but must pass the increases on to leisure class ticket prices and then face the resulting fall in demand (Trucost, 2004: Emissions Trading and European Aviation).

However, it is unlikely that unconstrained demand for aviation can continue without it eventually undermining broader emission reduction policies and the recent Commission report suggests that the scheme could be designed such that participants should not be significantly disadvantaged. The geographical scope of the scheme, definition of trading entity (i.e. whether aircraft operators, airport operators, aircraft manufacturers, fuel suppliers) and allocation methodology are likely to be key influencing factors in this.

Aviation is considered to be less vulnerable to distortion than other industry sectors, as the “product” i.e. transport, is geographically bounded in that passengers/freight tend to have relatively fixed origins (and to a certain extent destinations) and there is therefore less incentive to go outside of these. Further, the air transport market is already regulated by bilateral service agreements that limit competition from airlines outside the EU.

**Cost to the industry and consumers**

The cost to the industry would depend on the size of the cap for allowances allocated to the aviation sector and on the way those allowances were distributed between participants. If a “grandfathering” approach were taken, with allowances issued for free, then costs to participants would be much lower than if they had to purchase their allowances in an auction.

Recent analysis (Delft, 2005) suggests that the potential increase in ticket prices due to operators passing increasing costs through to customers could be small (as little as €0.2–9.0 per return flight) depending on the design of the scheme.

**Monitoring of emissions**

Robust monitoring and reporting of emissions is fundamental to the credibility of any emissions trading scheme. Monitoring of fuel use during aircraft flights is already undertaken, and therefore CO	extsubscript{2} emissions could be calculated based on the carbon content of the fuel used.

3.3 Feasibility of inclusion

The UK Government’s stated deadline for inclusion of aviation in the EU ETS is 2008, at the start of Phase II.
The EU ETS Directive mandates a review in 2006 with proposals for expansion—this provides an opportune
time to consider the inclusion of aviation. The European legislative process can, however, be time consuming,
so if 2008 were not achieved, then it is possible to include it mid-Phase II, but consideration would have to be
given to the impact on the existing EU ETS. The scheme was phased to give industry a degree of certainty—
to introduce a new sector mid-phase could disrupt the market and may draw objections from industry.

Furthermore, the National Allocation Plans (NAPs) for Phase II must be submitted to the Commission by
July 2006. Even if the Commission manages to amend the Directive to include aviation including the sector
in the NAPs will be difficult, given the time-scales involved.

3.4 Alternative approaches

Regardless of agreement for inclusion in the EU ETS, the UK could show leadership and opt-in flights within
the UK to its own 2nd phase National Allocation Plan after 2008. This would give credibility to the UK case
for the EU-wide proposal; contribute to UK Kyoto commitments, which includes emissions from internal
flights; and demonstrate the technical feasibility of bringing in aviation.

If no way can be found of covering aviation in the emissions trading proposals by 2008, then other measures,
eg an increase in Air Passenger Duty or an EU-wide emissions charge, could be introduced. Using mechanisms
such as emissions charges and fuel taxation, as flanking instruments is also an option for addressing the non-
CO2 impacts of aviation.

4. Conclusions

Without policy intervention, the growth in emissions from aviation is expected to continue in the coming
decades. The EU ETS is one of the few mechanisms available to tackle emissions from aviation and its
inclusion in the EU ETS also helps to ensure that the burden of reducing emissions is more evenly spread.

The introduction of emissions trading for the aviation sector does pose some specific challenges with the
development of the detailed rules for implementing the scheme, however many of these issues have already
been tackled during development of the existing scheme. We realise that the proposed time-scales are
extremely difficult, but this should not be used as an excuse for delaying action.

23 August 2005

Supplementary Memorandum by Environment Agency

INTRODUCTION

Further to the briefing presented by the Environment Agency on 10 October 2005, this paper provides
additional information to assist the Sub-committee in its inquiry into the merits of including the aviation
sector in the EU Emissions Trading Scheme (EU ETS).

1. OPERATION OF THE SCHEME

The EU ETS operates by creating a market for carbon. Operators of installations participating in the scheme
are allocated a fixed number of allowances which allow them to emit carbon dioxide (1 allowance = 1 tonne
of CO2). If an operator does not have sufficient allowances to cover the CO2 they emit in any one year then
additional allowances can be purchased from those who have allowances to spare—ie from installations which
emit less CO2 than they have allowances for.

Allowances are traded in the Emissions Trading Registry, however any exchange of money pertaining to the
trade is either undertaken privately between the operators who wish to buy or sell allowances, or via a broker
or exchange. Allowances can be traded between any operators in any industry sector, so those who can reduce
their emissions can benefit from sale of their allowances.

The National Allocation Plan (NAP) containing operator allowances is set at the beginning of each phase and
is fixed for that phase in order that operators know how many allowances they will receive. However, the
actual allocations are made on an annual basis.

Emissions trading is an environmental regulation, not a tax. There are differences in that a tax sets the financial
incentive, and lets this determine the environmental benefits. Emissions trading sets the environmental
objective, and allows the market to determine the financial incentive. Furthermore, if allowances are given
away for free (as they were in EU ETS Phase I), then there is no initial cost to industry.
To calculate the number of allowances for each sector for Phase I (the sector totals), Government used emissions projections from DTI’s updated energy and emissions model. This involved taking historic data for the sector and applying the model’s growth rates to calculate the expected emissions in the first phase for that sector. Allowances were then apportioned between installations within each industry sector.

Phase II

Decisions have still to be made on the allocation methodology for Phase II. A public consultation exercise closed in September 2005 and the responses are currently being considered by Government.

Secondary Markets

Secondary markets in carbon do exist, with a number of brokering firms and exchanges already established which allow trading in futures. These exchanges facilitate trading in gas, oil, electricity etc. as well as carbon. Examples include Eurex, the European Climate Exchange and EXAA (Austrian energy exchange).

Shortfalls and Penalties

Where an operator fails to surrender sufficient allowances to cover the CO₂ emitted in any calendar year, a civil penalty is levied and the names of operators who breach the surrender requirements must be published. For Phase I of the scheme this penalty is €40 per excess tonne of CO₂, increasing to €100 in Phase II. Operators are also required to make up the shortfall of allowances in the following calendar year. It is not therefore possible for operators to simply pay the fine rather than purchase allowances from others.

Another option which will be available to help operators to meet their targets is the use of emission reduction credits. These allow participants to invest in greenhouse gas reduction projects and gain credits for reductions made elsewhere rather than reducing their own emissions. These credits can then be converted into allowances and used to meet their obligation. This aims to reduce the compliance costs for UK companies by providing them with alternative ways of meeting their emissions targets.

It is entirely possible that some operators will choose to sell their allowances, rather than continue operating and investing in abatement technology, particularly if the price of carbon increases and the cap is tightened in Phase II.

2. Inclusion of Aviation

There are many decisions to be made on how aviation might be incorporated into the emissions trading scheme. Much depends on how the scheme is designed.

If all flights leaving the EU were included in the scheme, then there is theoretical potential for airlines to alter flight routes so that they make shorter qualifying journeys (eg by stopping at an airport just outside the scope of the system en route to a long-haul final destination). However, other considerations (such as additional take off and landing charges, slot allocation and fuel burn/cost) are likely to limit this in practice. The costs of an intermediate landing would probably outweigh the cost savings of avoiding payment of allowances (CE Delft, 2005)

If the cap is set at a challenging level, including aviation in EU ETS will drive trading prices up because the industry will be net buyers. It will also attach an escalating future cost to carbon because of the expected expansion of the industry within a capped regime. EU ETS will therefore either provide the strong market signal to prompt new technology and fuel changes in aviation, or bridge to another, future, mechanism. The current alternative—aviation tax, or fuel duty, could add cost without driving down carbon emissions.

Aviation could be introduced mid-Phase II as a new entrant, however the New Entrant Reserve is designed to accommodate predicted levels of new entrants from existing sectors. If this approach were adopted, the impact on allowance prices would have to be carefully considered. It may be more appropriate for aviation to have a separate allocation.
Aircraft Emissions

Monitoring of emissions from aircraft is another issue which must be considered since accurate monitoring and reporting are fundamental to the credibility of any trading scheme.

The 1996 Intergovernmental Panel on Climate Change (IPCC) Greenhouse Gas Inventory Guidelines include two methods for determining emissions. Tier 1 is based on fuel consumption (i.e., an emissions factor multiplied by the fuel consumption—this is very accurate for carbon emissions). Tier 2 is based on Landing and Take Off (LTO) cycles. There is a further way that is being considered in updated IPCC guidance, Tier 3; which would be based on flight movement data such as that available from Eurocontrol.

Emissions factors are already used in the existing EU ETS for other industry sectors. For aircraft these could be aggregated on a national or fleet basis. It could also be calculated on an individual aircraft basis (or aircraft type)—the International Civil Aviation Organisation has an emissions databank that has emissions factors for a wide range of generic aircraft types.

3. Performance of the UK and Other Member States

There is a considerable amount of work underway to harmonise the implementation of the Directive across Member States. Much of this is co-ordinated by the European Commission, which also publishes guidance to Member States on a number of implementation issues. In addition, Member States are co-operating to share best practice and improve harmonisation.

Article 21 of the Emissions Trading Directive (2003/87/EC) requires all Member States to submit to the European Commission a report on the application of the Directive. The report must pay particular attention to allocation of allowances, operation of registries, application of monitoring and reporting guidelines, verification and issues relating to compliance with the Directive. The Commission is required to review all submissions and publish a report on its findings.

26 October 2005

Memorandum by Friends of the Earth

Has the emissions trading scheme worked well so far, and does the current system provide a solid foundation for expansion to include other sectors of industry?

1. Friends of the Earth welcomed the introduction of the EU emissions trading scheme (ETS) this year and believe that it potentially represents a real opportunity to help the UK and EU meet a portion of its Kyoto obligations. The first Phase of the scheme, from 2005–07, was designed to be a pilot phase to introduce companies to the concept and operation of emissions trading and enable organisational learning to take place. This borne in mind, Friends of the Earth nonetheless believes that targets and implantation mechanisms were not strict enough—a hindrance to both the environmental effectiveness of the scheme and also the ability of genuine organisational learning to take place.

2. Of primary concern were the caps outlined in National Allocation Plans (NAPs) for Member States. A recent report from the Centre for European Policy Studies stated that the European Commission (EC) has not had enough powers to rein in the almost universally over-generous allocations—and indeed the Directive deliberately allowed for a high level of difference in the way that Member States implement the scheme at home. This has led to the real danger of a “race to the bottom” on the grounds of competitiveness, hindering the ability of an individual state to implement the scheme in a progressive way, and endangering the ability of states to meet either their Kyoto or their own more progressive national targets. In the UK, for example, heavy lobbying on the grounds of competitiveness resulted in the submission of a very unambitious NAP, despite the Government’s self-stated and challenging target to reduce emissions of carbon dioxide by 20 per cent of 1990 levels by 2010.

3. Also, the first phase of the ETS saw allowances allocated to companies for free on the basis of their historical emissions (so-called “grandfathered” allocations). If the ETS is to succeed environmentally in internalising the costs of carbon emissions, the “polluter pays” principle must be implemented and companies must be forced to pay for the permits that they will use. The current arrangement actively rewards those who:


2 For example, the CBI: “There is a risk to UK competitiveness of other EU countries imposing less challenging emissions targets on their industries compared with British firms”—http://www.cbi.org.uk/nfds/positiondoc.nsf/1f08ec61711f29768025672a0055f7a8/5578C93D1D77F13580256E7B004D0F64/$file/natallocationoffsresp0304.pdf
companies that have been heavy polluters in the past, and penalises those that may have taken pro-active action to reduce emissions prior to the scheme coming into operation. There is provision within the Directive for up to 10 per cent of allowances to be auctionable in Phase II, and we have been calling for the UK to take up this allocation and use it exclusively in the power sector—with revenue recycled into developing low-carbon technologies such as Carbon Capture and Storage (CCS). At the very least we wish to see allowances allocated on the basis of industry benchmarks. In the longer term we believe a shift to 100 per cent auctioning is essential.

4. It is vital that these problems are addressed across all Member States. Allocation methodologies and NAPs must be harmonised to prevent the lowest common denominator dictating to the rest of the market what environmental action can be taken. At present the price of carbon—although having risen since the market’s commencement—is still very low, and nowhere near the Treasury’s stated “social cost” of carbon of approximately €70/tonne of carbon.3

5. Another problem with the EU ETS system lies in the fact that credits from overseas projects can be used. This means that between now and 2008 the EU is unlikely to deliver significant reductions at home, despite the fact that an enormous potential for reductions exists. Friends of the Earth are calling for a block on the usage of these Clean Development Mechanisms (CDM) in the next phase of the ETS in order to encourage action domestically.

Extension to other sectors of industry

6. If correctly designed there is no reason why any sector of industry could not be included within the EU ETS. Practically it would be relatively easy to include aircraft as large point sources of emissions as they are equivalent in scale to many of the installations already covered by the Directive. Road transport could also be brought into the ETS, although this is potentially much more difficult. To ease administrative complexity the allowances should be allocated as high up the distribution chain as possible—so in this case, producers rather than consumers would fall within the ETS.

7. However, as outlined above and in the rest of our submission, Friends of the Earth do not believe that the EU ETS as currently configured could cope with the addition of aviation. As the industry is relatively sheltered and will be a high net buyer of permits, there would be heavy knock-on effects on other sectors. The inherent problems in the current operation of the EU ETS must be addressed first.

Why include aviation in EU ETS?

8. Aviation emissions are increasing rapidly and could become the primary source of climate-changing emissions in the UK and EU if current growth trends continue. A report published recently by the Tyndall Centre for Climate Change research4 found that under a contraction and convergence policy designed to meet a 450ppm CO2 stabilisation target, the EU and UK’s entire carbon budgets could be used up by aviation before 2040 if current growth trends continue.

9. The report also concluded that there are no technological developments before 2050 that will significantly cut aircraft emissions from individual aircraft so some kind of economic measures to restrain demand are essential if the necessary cuts in emissions are to be achieved to minimise dangerous climate change.

10. ETS is one of the policy mechanisms available but its adoption shouldn’t preclude the use of additional flanking instruments to fully internalise the costs of aviation’s environmental impacts and address the historic and unjustified tax exemptions that the industry benefits from. It is also essential that any mechanism(s) adopted are environmentally effective and reduce or at the very least stabilise emissions from the sector.

11. However, bringing aviation into the existing EU ETS could undermine the integrity of that scheme because aviation is a rapidly growing, sheltered sector and very likely to be a net purchaser of carbon credits. Aviation is a sheltered sector for two reasons:

(i) It cannot be imported or exported, unlike say a steel plant which could be vulnerable to competition from a similar plant outside of the EU and therefore not included in the ETS. A flight from London to Frankfurt cannot be exported to Asia; and

(ii) The air transport market is highly regulated by bilateral air service agreements that limit competition from outside the EU.

12. Therefore, the inclusion of aviation in the EU ETS could push up the price of credits to other non-sheltered sectors to a politically unfeasible level. Friends of the Earth therefore recommends that other more vulnerable sectors are protected by providing a dedicated aviation ETS linked through a controlled “buy only” gateway to the existing ETS. This dedicated ETS would have its own caps and targets.

**What are the costs and benefits to the aviation industry of bringing the sector into the EU ETS?**

13. Some of the aviation sector accepts that “the game is up”, as the industry has long had a free ride on tax free fuel, and that it is inevitable that economic measures will be introduced with the aim of tackling the sector’s rising CO₂ emissions. Earlier this year Mike Clasper from BAA said “I don’t believe a future exists in which aviation can get away scot free, without fully accounting for our growing impacts on climate change.” Several key players in the industry have expressed enthusiasm for ETS because they see it as a sophisticated economic mechanism that will allow growth to continue at current rates —especially in light of experience of phase one of the ETS which other sectors have lobbied hard to achieve generous permit allocations and caps that have barely reduced emissions. Whatever economic measure(s) is/are introduced they must have the principle aim of making aviation play its part in meeting climate change targets.

14. Friends of the Earth within a coalition of EU Environmental NGOs has adopted seven key tests/conditions for European aviation climate policy:

It should:

(i) Incorporate environmental objectives in line with current (Kyoto 8 per cent by 2010 from 1990) and future (ie 30 per cent in EU by 2020 from 1990) EU climate targets;

(ii) Recognise that aviation is a sheltered sector, and hence be more ambitious than climate policy for “exposed” sectors;

(iii) Cover the full climate impact of aviation, as CO₂ alone accounts for just 25–50 per cent;

(iv) Encompass the widest possible geographical scope. Namely: emissions in EU airspace plus the remaining emissions from flights departing the EU to third countries;

(v) Comply with the “polluter pays” principle (ie all emissions should be paid for) and thereby help to create “double dividends” whereby revenues can be used to reduce labour taxes or boost innovation;

(vi) Help to correct historic tax exemptions; and

(vii) Significantly reduce the EU’s oil dependence.

**What are the possible impacts of the inclusion on the international competitiveness of the EU aviation industry (and its competitive position in relation to other transport modes)?**

15. Incorporation of aviation into the EU ETS is likely to have very little impact on its competitiveness. Particularly if a route based scheme with the widest possible geographical scope is chosen—this is because all carriers (whether EU or non-EU based) will be subject to the ETS on any given route.

The recent CE Delft study⁵ found:

— For airlines, little impact on the competitive position of EU carriers or their profit margins;

— For airports, little prospect of market distortion because of airlines dependence on slots and very little prospect of hub airlines moving to outside of the EU; and

— For tourism, negligible impact on the attraction of the EU to tourists from outside.

In relation to other transport modes, aviation has long benefited from tax exemptions that provide it with a competitive advantage over other transport modes particularly road transport.

In particular:

— no tax is applied to aviation fuel; and

— no VAT (in UK and several other EU countries) is applied to any aspect of aviation including aircraft purchase and servicing.

Depending on its design an ETS and flanking instruments could go some way to addressing this market distortion thereby creating a more level playing field between modes and aviation and other sectors.

What are the costs and benefits to consumers and the environment of including aviation in the ETS?

16. The Tyndall report found that emissions from forecast aviation growth taking into account the limited technological improvements expected before 2050 will render UK and EU targets to reduce carbon emissions virtually unachievable. It is therefore imperative that effective climate policy for aviation results in ticket price increases, or at the very least in stabilisation of prices (rather than allowing them to continue to fall) to reduce growth in demand. Price increases will be an inevitable consequence of bringing aviation into a credible EU ETS designed to achieve carbon reduction targets. The increased cost of air travel for consumers can be mitigated though other measures, such as increased investments in other modes of travel, such as the European rail system.

17. In reality, CEDelft calculated that ETS would have a relatively minor effect on ticket prices, an increase of between £0.2 and £9 for a return flight. However their calculations are based on the following assumptions:

— 2008 base line year;
— Grandfathering of permits in some scenarios; and
— CO₂ allowance price of either £10 or £30 per tonne.

18. All of the above will result in a reduction of costs compared to a more rigorously designed ETS designed to be compatible with Kyoto targets.

19. It is inevitable that any effective policy to tackle aviation’s climate impact will result in prices rising or at the very least stabilizing instead of falling as they are predicted to do.⁶

20. One possible side effect of incorporating aviation into the ETS could be price rises for other products and services, particularly energy. Without the protection of a dedicated aviation only ETS, other industries would be competing with a sheltered sector which is a net buyer with very high carbon abatement costs. In an ETS with a rigorous and declining overall cap this could result in substantial increases in the cost of carbon permits. This is why Friends of the Earth believes that a dedicated aviation-only ETS is essential.

21. The environmental effectiveness of ETS will depend entirely on the design details of the scheme. A scheme with rigorous caps, auctioned permits and flanking measures to include the full climate impact of the sector’s emissions could be very effective. (See page 14 for our recommendations for EU aviation and climate policy). In contrast, a grandfathered scheme with generous allocation based on “business as usual” would have negligible environmental impact.

At what point in the development of the EU ETS would it be feasible to incorporate the aviation sector?

22. The UK Government has expressed its desire to see aviation incorporated in the EU ETS in 2008 “or as soon as possible thereafter”. At the time of writing (September 2005) the EC has yet to produce its Communication on its preferred policy option and the issue won’t be discussed at European Council until December 2005. Environment Commissioner Dimas said in June 2005 that it would more likely be 2012 at least:⁷ There is also considerable disagreement between nation states about the best policy option and in some cases a reluctance to do anything.

23. On this basis we can expect at least a further three to seven years of rapid unchecked growth in emissions from the EU aviation industry. This is incompatible with the urgent need to tackle climate change. The UK Government stated in 1998 that aviation should pay for its environmental Impacts⁸: in 2002 the DfT estimated these at £1.5 billion per year⁹ yet the only tax on aviation, Air Passenger Duty (APD) raises just £800 million per year. At the very least the UK Government should honour its 1998 White Paper commitment and increase APD so that it internalises the cost of Aviation’s environmental impacts. APD could be increased relatively quickly and decreased again when a more sophisticated policy measure (such as EU ETS) is available.

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⁶ “The Future of Air Transport”—DfT 2003, uses passenger growth figures based on the assumption that fares will fall at 1 per cent per year “which is a lower reduction than the historic trend over the last 30 years and more.”
⁷ Statement by Stavros Dimas Environment Commissioner as reported in media June 2005, see: http://www.planetark.com/dailynewsstory.cfm/newsid/31050/story.htm
What other economic or regulatory mechanisms exist to encourage reductions in CO₂ emissions from the aviation sector, and how effective might they be compared to emissions trading?

24. The Commission has examined the options of kerosene tax and an emissions charge as mechanisms to control the climate emissions from the sector. There is clear evidence that direct taxes or charges would curb demand and therefore emissions. The incentive to move to cleaner technology would also remain through the higher price of fuel and/or charge for emissions. In 2003 the Department for Transport (DfT) re-ran its passenger forecast computer model with different assumptions, the results were dramatic: they showed that gradual introduction of kerosene tax and VAT together with removal of APD and Duty Free would have a huge impact on demand, reducing the 2030 passenger forecast from 476 million to 315 million a 54.6 per cent cut compared to unconstrained growth from 180 million in 2000. It would also only result in a small increase in ticket prices instead of the predicted fall.¹⁰

25. In summary, there are several reasons why the UK, other Member States and the EU should take other action on other measures, irrespective of any progress on EU ETS:

— An aviation ETS is some years away and the increasing climate impacts of aviation requires urgent attention;
— Bringing aviation into the ETS may not obtain sufficient support from the 25 Member States, so a “plan B” is required and should be worked on in tandem with ETS; and
— Exemption from kerosene tax (described by the DfT as “an anomaly”) needs to be addressed, in any case in the interests of fair competition between sectors, particularly within any future ETS.

Richard Dyer
Aviation Campaigner
15 September 2005

Letter from M J Smith, Manager Commercial and External Affairs, Monarch Airlines Limited

Monarch Airlines Limited thanks Sub-Committee B for the opportunity to submit evidence to the inquiry. We have pleasure in putting forward our views in answer to the questions raised in the call for evidence.

Has the emissions trading scheme worked well so far, and does the current system provide a solid foundation for expansion to include other sectors of industry?

We do not believe that we are sufficiently au fait with the current scheme to make comment on its performance so far. However, in order to admit aviation, amendments would be required to the existing structure to avoid aviation being disadvantaged.

Kyoto does not take account of international aviation emissions, and the existing ETS has not been designed with an allowance for aviation in mind. As a result trading could be restricted to the disadvantage of aviation. All existing industries in the ETS have equal access to the trade allowances of other sectors in the scheme, it would be necessary that aviation also be allowed equal access.

We are also uncertain as to whether the current scheme takes account of prior investment in technology. We believe this is an important issue that would need addressing in order to minimise distortion to competition as far as possible.

Why include the aviation sector, and what are the possible costs and benefits to the industry of joining the ETS?

It is accepted that whilst aviation is currently a small producer of CO₂, it is growing at a greater rate than technological development can offset, this net increase will need to be addressed. We believe trading may offer the best solution to the problems of carbon emissions to both industry and the environment of the planet as a whole. It should make a positive reduction to global emissions (subject to the design of the scheme) at the lowest cost possible to industry and its clients.

The current cost of CO₂ at circa £23 per tonne would work out at an average across our total network of £4.50 per boarded passenger. Unfortunately, we do not currently have the ability to precisely identify solely intra-EU fuel consumption but an estimate using our average sector length results in a cost of something in the order of £3.30 per boarded passenger. This of course will fluctuate, the price of traded CO₂ varied during a two week period of July 2005 for example between £19 and £29 per tonne. Additionally, there is likely to be a

¹⁰ As reported in “Hidden Cost of Flying” Brendon Sewill 2003, see: http://www.aef.org.uk/downloads/HiddenCost.pdf
labour cost in administering the scheme although this should be relatively small in relation to the cost of CO₂ trading.

We feel the benefits are best explained by approaching the question from the opposite direction and ask, “what are the disadvantages to the industry of not joining the ETS?”

Apart from carbon offsets, which may well have a part to play, the only alternative to ETS that presently appears to be under serious consideration is that of taxation. We believe this is a crude tool, which without hypothecation will not make any direct positive impact on the control of CO₂. Further the level at which it might be applied is more likely to be an arbitrary figure, not necessarily related to the environmental cost.

What are the possible impacts of the inclusion on the international competitiveness of the EU aviation industry?

This is likely to be a function of how widely the scheme is enforced. The fairest possible way would be to include all aviation through a worldwide agreement. However this looks politically unlikely and more realistically a “restricted” start encompassing intra-EU flights only appears to be the current expectation.

Inevitably this would cause some distortion in competitive position due to increased cost for intra-European operations. In comparison to the situation existing prior to X implementation of an intra-European ETS, carrier A operating a high proportion of intra-EU routes will see a disproportionate increase in overall costs that carrier B who operates a low proportion or indeed no intra-EU routes, will not.

What are the costs and benefits to consumers and the environment of including aviation in the ETS?

We see this as a similar question to that asked in relation to industry and consequently similar answers apply. Inevitably, the cost of inclusion will have to be passed on to the travelling public.

Whether an arbitrary tax or an emissions trading scheme, the end result to the consumer’s purse may be similar. The appeal of the ETS is that it would appear to offer tangible benefits to the environment through the overall capping of CO₂ emissions where a straight tax system would not.

At what point in the development of the EU ETS would it be feasible to incorporate the aviation sector?

We believe that the initially suggested time frame in 2008 is getting rather tight for two reasons. Firstly, as far as we have seen, very little work has been carried out on the detail of how the system could operate. There are a number of vitaly important issues for the system to work as the industry might hope and thus far there has been very little dialogue with industry to assess different views and requirements. Issues such as allocation, benchmarking, geographical scope and the modelling of the impact of these has yet to be evaluated. These issues will take considerable time to go through a consultation process, be understood and fully formulated.

Secondly and in part in light of the above, time must be permitted for industry to digest the impact of the additional cost. The charter industry in particular works on long lead times. In order for costs to be included in initial pricing calculations a 2008 activation of the scheme would require that it be fully specified, formulated and understood by the charter operators to the extent that we would be able to lock in on prices a year in advance. This would argue for the system to be complete by 2007 at the latest, not impossible perhaps but bearing in mind the current situation, this appears optimistic.

What other economic or regulatory mechanisms exist to encourage reductions in CO₂ emissions from the aviation sector and how effective might they be compared to emissions trading?

In addition to an active ETS we would like to see carbon offsets recognised as “legal tender”. We believe these have a role to play in the ultimate aim to find ways to reduce the impact of carbon usage and we are of the opinion that relying on a single method would be short-sighted and may ultimately be restrictive. As with the ETS however a considerable amount of work to fully understand and administer the use of offsets would be required.

12 September 2005
Including the Aviation Sector in the European Union Emissions Trading Scheme

Report with Evidene