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**Image acknowledgments**

Front cover images - © BAA plc

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When we launched Sustainable Aviation in June 2005 we emphasised that it was a long term strategy designed to ensure that the UK aviation industry met its environmental responsibilities over the years ahead. We said at the time that some of the eight Goals and 34 Commitments would take many years to realise but we promised to report on a regular basis and we are proud to present this, our first progress report, after just 18 months. We are particularly pleased that, as the report highlights, many of the Sustainable Aviation signatories have risen to the challenges that are embodied by our Goals and Commitments and have started to make progress towards achieving them.

As the main purpose of this report is to describe progress we focus on the key issues of Climate Change, Local Environmental Impacts and our own Governance and Communications. We include a number of Indicators that have been developed so far and also outline the activity we are planning during the next two years.

The full list of our Goals and Commitments is shown in Appendix I. Appendix II lists Recommendations to government, contained in our Strategy, and we look forward to these issues being addressed in the government’s forthcoming progress report on the Air Transport White Paper (ATWP).

This report is supplemented by further information on the Sustainable Aviation website which reports against each Commitment and on the wide range of activities undertaken by signatory organisations.

We have developed a governance structure to manage this long-term activity and will continue to fine-tune our structure to ensure the right resources are being applied.

This strong foundation will be important as we move closer to addressing the challenges ahead. The attention on aviation’s environmental performance is likely to continue and increase and the industry will need to respond, demonstrating commitment, action and performance improvements. Sustainable Aviation will be a critical part of that response, providing a forum for collaboration and shared delivery that involves airlines, airports, manufacturers and air navigation service providers.

The recent Stern Review on the economics of climate change has reinforced the need to address global warming and its report emphasised the need for effective measures and international collaboration, as well as pointing out that effective early action need not jeopardise economic growth.

Since our launch five new organisations have become signatories of Sustainable Aviation, ensuring that we now speak for over 90 per cent of UK airlines, airports and air navigation service providers, as well as all major UK aerospace manufacturers. We will continue to promote the principles of our strategy both within the UK and internationally.

Sustainable Aviation Council
December 2006

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1 The economics of climate change. Stern, N. 2006. HM Treasury, UK
The UK aviation industry recognises its environmental, social and economic responsibilities and is committed to building a sustainable future. The publication of Sustainable Aviation, in June 2005, established UK airlines, airports, aerospace manufacturers and the main air navigation services provider as world leaders in addressing the challenges presented by the global growth in demand for air transport.

Sustainable Aviation is the first joint strategy of its kind, bringing together the different parts of the aviation industry to make a series of shared Commitments. This progress report sets out the actions we have taken since publication and it is the first of the regular biennial reports that we will produce.

The Strategy sets out a series of Goals and specific Commitments for the long-term sustainable development of the aviation industry. These include climate change, local air quality, and economic and social issues. Since publication, we have made important progress in each of the key areas above. We have established a governance structure, consisting of a Sustainable Aviation Council and a Working Group, to monitor and direct the implementation of the Strategy. The issues of climate change and local environmental impacts were further identified as priority areas.

UK air transport industry is committed to playing its part in limiting greenhouse gas concentrations in the atmosphere.

Understanding the non-CO₂ atmospheric impacts of aviation will be vital in addressing the overall contribution of aviation to climate change. We have consistently supported prioritisation of research in this area and strengthening of links between industry and the research community. We therefore welcome a major new government funded initiative – Opportunities for Meeting the Environmental Growth of Aviation (OMEGA) – to develop a broadly based knowledge transfer network for further research into atmospheric science, technology and economics. We will play a key role in this project.

Technology will play a leading role in reducing the environmental impact of air transport. The Advisory Council for Aeronautics Research in Europe (ACARE) has set improvement targets for fuel burn, noise, and nitrogen oxides (NOx) of 50, 50 and 80 per cent respectively for new aircraft in 2020 compared with their equivalents in 2000. We are on track to meet these objectives. In addition, alternatives to aviation kerosene, such as biofuels, continue to be assessed.

In the UK, more than £130 million has been committed to major research and technology validation programmes in the past 12 months. The main focus for these programmes is more environmentally-friendly engines, more efficient wing, fuel and landing systems, and increased understanding of aerodynamics and advanced materials and structures. This work is being jointly funded by industry, government, regional development agencies and devolved administrations as part of the National Aerospace Technology Strategy. These projects signal the scale of the long-term investment required, from all stakeholders, to deliver the step-change in performance required by the Sustainable Aviation targets.

In addition to these longer-term measures we are also working to minimise our current contribution to climate change. For example, in 2005 British Airways became the first scheduled airline to offer carbon offsetting to customers and the industry is currently working to introduce and promote carbon offsetting as an immediate step, pending introduction of emissions trading.

LOCAL ENVIRONMENTAL IMPACTS

Noise remains a major concern for people living adjacent to airports and under flight-paths. Sector-wide communication and understanding of sustainability issues is one of the key strengths of Sustainable Aviation and a dedicated Noise Abatement group has been established which brings together airports, airlines and NATS to identify and move forward noise abatement efforts around airports including ground noise. Work is underway through the group to develop a best practice guide for environmentally optimal departure procedures.

Airports have reviewed their noise mitigation schemes as part of the masterplan process and NATS has also launched a Continuous Descent Approach (CDA) outreach programme to publicise and inform airports and airlines about the benefits of this operating technique.

ACARE has also established a target of a 50 per cent reduction in noise and, as part of their contribution, the UK aerospace manufacturers have invested heavily, to drive progress towards meeting this target by 2020, through innovative design and manufacturing technology programmes.

Further progress has been made in identifying best practice concerning responsible environmental behaviour.

The industry is delivering on its commitment to play a full part in the improvement of air quality at sensitive airport locations. A Sustainable Aviation Indicator reports concentrations of nitrogen dioxide (NO₂) at airports.

BAA and British Airways provided technical support to the government-led Project for the Sustainable Development of Heathrow (IPSDH) which seeks to quantify the effect of the airport on the wider air quality of the area.

Progress towards the ACARE target of an 80 per cent reduction in NOx emissions has continued. For example the Rolls-Royce Trent 900 demonstrates a 20 per cent reduction in NOx emissions over its predecessor the Trent 895 during the period 1998-2006. It is envisaged that the next Trent 1000 engine, due to enter into service in 2008, will offer a further 10 per cent reduction in NOx over the Trent 900.

Further progress has been made in identifying and disseminating best practice concerning responsible environmental behaviour. In November 2006 the Airport Operators Association (AOA) published an updated and expanded Environmental Guidance Manual for airports. It is expected that airports and their stakeholders will consult the manual for the latest information and techniques for monitoring and reducing the environmental footprint of airports. Further work has also been undertaken by SBAC in encouraging the use of ISO 14001 standards by aerospace supply chain manufacturers.
ECONOMIC AND SOCIAL BENEFITS

The UK aviation industry operates within a challenging global market place, and continues to play a vital role in the UK economy. In 2006, in partnership with government, we commissioned a major study to quantify the contribution of the UK air transport sector to the national economy. It reported that the industry makes an £11.4 billion value-added contribution to the UK economy, supporting more than 700,000 direct and indirect jobs.

In addition, aerospace manufacturing is a UK success story and provides high value and highly skilled employment, remaining second only to the USA in world rankings. The SBAC UK Aerospace Industry Survey (2006) shows that 2005 was a highly successful year for the sector with civil aerospace revenue standing at £10.5 billion, a rise of over 18 per cent on the previous year. Aerospace manufacturing directly employs 124,237, an increase of nearly 10,000 from 2004. In 2005, self-financed research and development in aerospace was worth £0.89 billion, 76 per cent of which was for the civil sector.

Aviation services support international trade and are an important factor in determining investment by new and existing businesses. They also contribute to social inclusion, cultural exchange and international communication. The growth in traffic at regional airports has also been an important factor in generating local economic growth and greater competitiveness.

LOOKING FORWARD

In addition to making progress on the Commitments contained in the Strategy, we will further develop the areas of governance, stakeholder engagement and wider communication.

The past 12 months represent important progress towards the long term sustainable development of the UK’s aviation industry. There is more that needs to be done if the Goals are to be achieved, but we remain committed to delivering the Strategy. The work undertaken in the first year since the launch of Sustainable Aviation shows that our combined efforts are already having an impact and will continue to do so as the Goals and Commitments are strengthened and delivered in the years to come.

1 The Economic Contribution of the Aviation Industry in the UK, Oxford Economic Forecasting, October 2006
This report provides a summary of progress in key areas from a diverse range of sustainability initiatives undertaken by the aviation industry. A number of Sustainable Aviation (SA) signatories produce more detailed environmental and social reports. Links to the websites of SA signatory companies are provided at www.sustainableaviation.co.uk.

Sustainable Aviation sets out eight key Goals and 34 specific Commitments for the long-term sustainable development of the aviation industry. The Goals of the Strategy are as follows:

- Full industry commitment to sustainable development and a broader understanding of the role of aviation in a sustainable society
- Aviation incorporated into a global policy framework that achieves stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous man-made interference with the climate system
- Limit and, where possible, reduce the number of people affected by aircraft noise in the UK
- Industry playing its full part in improving air quality and meeting air quality regulatory requirements at sensitive airport locations
- Industry playing its full part in the development of an integrated transport system
- Continue to manage and limit the industry’s overall environmental footprint
- A competitive and commercially viable aviation industry making a positive contribution to the UK economy
- An industry with constructive relationships with employees, local communities, customers and industry partners, meeting society’s air transport needs.

PRIORIT AREAS

The Sustainable Aviation Goals and Commitments cover a wide number of sustainability issues. For the first year, we identified three priority areas judged as either time-critical or of high relative importance.

The priority areas identified were:
1. Climate Change
2. Local Environmental Impacts
3. Governance and Communications

CLIMATE CHANGE

Aviation incorporated into a global policy framework that achieves stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous man-made interference with the climate system

The Stern report for the UK Government has highlighted the overwhelming scientific evidence for the risks associated with climate change and the need for an urgent global response. The Intergovernmental Panel on Climate Change (IPCC) has reported that the global emissions of CO₂ by aircraft accounted for around two per cent of all man-made CO₂ emissions in 1992. This figure could rise to three per cent by 2050, according to the IPCC mid-range emissions scenario. Stern reports that aviation CO₂ emissions currently account for less than two per cent of global greenhouse gas emissions and suggests this would rise to less than three per cent by 2050 under business as usual predictions. The UK Government is planning to cut greenhouse gas emissions substantially by 2050 and if overall global emissions are sharply reduced, then aviation’s percentage contribution to climate change is likely to be higher. The UK aviation industry is committed to playing its part in limiting greenhouse gas concentrations in the atmosphere.

KEY INITIATIVES

Emissions trading
- Significant step towards managing aviation emissions: European Commission & Council back inclusion of aviation in emissions trading
- Industry actively working to develop and promote carbon offsetting as an immediate step pending introduction of emissions trading – British Airways and Monarch launch carbon offset schemes
- Major industry survey shows public backing for emissions trading

Improving understanding of climate change
- Industry paper on non-CO₂ effects
- Monitoring and supporting the science of climate change

Technological improvements
- Good progress towards ACARE fuel efficiency targets
- Continued research on alternative fuels
- Support for ‘Single European Sky’ research to improve efficiency of air traffic management

Airline emissions and fuel efficiency data
- UK airlines have developed and agreed a common methodology for the reporting of aircraft emissions and fuel efficiency

Airport energy use
- Airports secure funding for Airport Carbon Management Group to drive forward emissions reductions
Emissions trading

The Stern report identified Emissions Trading Schemes (ETS) as effective mechanisms for achieving sustained reductions in global CO₂ emissions, across countries and industries. The inclusion of aviation in the EU ETS is an important step towards a broader international agreement to address aviation emissions and significant progress has been made towards this objective.

Active support has been given to the UK and EU policy objective to develop emissions trading for aviation and we welcome the imminent announcement of draft legislation to this effect. We look forward to providing further assistance in developing a pragmatic and deliverable policy approach in Europe (see Significant Progress on Emissions Trading).

AIRLINE IMPLEMENTS VOLUNTARY CARBON OFFSETS

Sustainable Aviation signatories made a commitment to "inform passenger understanding of the climate impacts of air travel, including evaluating carbon offset initiatives as a practical short-term measure".

The UK Government supports the use of voluntary offset schemes to raise awareness of climate change and, in 2005, made a commitment to offset emissions from government air travel. In September 2005, British Airways became the first scheduled airline to offer a voluntary offset scheme to its customers. The scheme’s primary aim is to raise passenger understanding of the climate impacts of air travel, and is not claimed to be a substitute for international policy action.

Passengers are able to offset the CO₂ emissions created during their flights by making a voluntary contribution to an organisation that invests in projects that avoid, reduce or absorb CO₂ emissions through renewable energy, energy efficiency and forest restoration.

Customers can offset their emissions via the booking confirmation form or at www.ba.com/offsetyouremissions. They are directed to an online calculator, which estimates the CO₂ emissions for their journey and allows them to make their contribution for those emissions. For example, the contribution on return flights from London Heathrow to Johannesburg is £15.37.

After initial steps to gain experience of offsetting, this scheme will be strengthened to incorporate stakeholder feedback.

Significant progress on emissions trading

Active support has been given to the UK and EU policy objective to develop emissions trading for aviation. Over the last year significant progress has been made towards this. A key contribution has been the effort put into securing common industry positions on aviation and emissions trading. European wide policy agreements have given the clear signal that the aviation industry is committed to addressing its climate change impacts and engaging with policy makers to develop an appropriate design for emissions trading.

In September 2005, the European Commission announced that aviation should, in principle, be included in the EU Emissions Trading Scheme (ETS). The Commission set up a Working Group with representatives from the aviation industry and EU states which met several times during the winter of 2005/06. It was involved in the development of the draft directive.

British Airways, easyJet and Rolls-Royce all made presentations to the Working Group, addressing the issues of airline emissions reporting, methods for distribution of emissions allowances and developments in engine technology. The Commission expects to publish its recommendations before the end of 2006. We look forward to providing further assistance in developing a pragmatic and deliverable approach to including aviation in European emissions trading.

At the international level, Sustainable Aviation signatories have made a significant contribution to the International Civil Aviation Organisation (ICAO) Emissions Trading Task Force that is developing guidance for the application of emissions trading internationally. We will continue to work at an international level towards a global solution to air transport emissions.

There has been growing interest in the use of carbon offsetting as an immediate step to address and raise awareness of climate change, pending introduction of emissions trading. For example, in September 2005 British Airways became the first scheduled airline to offer carbon offsetting to customers (see Airline Implements Voluntary Carbon Offsets). The industry is developing further measures to extend the use of offsets. We anticipate that government will consult on this area shortly.

The British Air Transport Association (BATA) commissioned a YouGov survey into public attitudes towards air travel and its environmental impacts, which revealed that 56 per cent of people are concerned about the environmental impacts of air travel, but that only a minority (13 per cent) have changed their travel habits as a result of environmental concerns. When asked who, if anyone, should be responsible for the environmental cost, the majority (82 per cent) expect air travellers to pay and by far the most popular option selected (48 per cent) was through airlines being part of an international scheme which controls overall emissions (see Sustainable Aviation website for details).

Improving understanding of climate change

The non-CO₂ atmospheric impacts of aviation may be important in addressing climate change. NOx emissions at cruising altitudes play a role in both ozone creation and methane destruction, which have warming and cooling effects respectively. Aircraft can also generate condensation trails (contrails) and aviation induced cirrus clouds. Ozone creation, contrails and cirrus clouds have a local effect, whilst methane and CO₂ are well-mixed gases with a global effect. These emissions also have different residence times.

A better understanding of the atmospheric science will enable the most appropriate measures to be implemented. However, scientific uncertainty is not a reason for inaction and we must continue to seek the most appropriate ways to address all of these impacts.

We support initiatives to understand and address aircraft non-CO₂ effects through atmospheric research, technology improvements and investigation of other appropriate mechanisms.

We are maintaining close links with the OMEGA project, a major new government funded initiative to develop a broadly based network for further scientific research into aviation and the environment (see Significant Challenges, Radical Solutions).

Technological improvements

Technology will play a leading role in reducing the environmental impact of air transport. ACARE has set improvement targets for fuel burn, noise, and NOx of 50, 50 and 80 per cent respectively for new aircraft in 2020 compared with their equivalents in 2000. We are on track to meeting these objectives; for example the 8 per cent fuel efficiency gain between the Rolls-Royce Trent 895 engine and its successor the Trent 900 over the period 1998-2006. In addition, alternatives to aviation kerosene, such as biofuels, continue to be assessed (see Alternative Fuels).
The ACARE targets are an important part of the SA strategy and SBAC has been working closely with industry peers in order to define a robust mechanism for reporting progress against these targets (see Meeting the Technology Challenge: Towards the ACARE Targets).

Improvements in Air Traffic Management (ATM) have the potential to increase efficiency and significantly reduce emissions. There is a range of work being undertaken in this area at a European level, including Single European Sky ATM Research programme (SESAR). Signatory companies have contributed to this process, and are committed to continuing to promote more efficient air traffic management procedures in Europe and worldwide.

**AIRPORT CARBON MANAGEMENT GROUP**

The Airport Carbon Management Group (ACMG) was established six years ago as a group of airports looking to reduce their carbon emissions, principally through reductions in energy use. The group, which represents around 95 per cent of passenger traffic at UK airports, carries out an annual performance benchmarking exercise, and meets to exchange best practice and discuss carbon reduction projects.

Benchmarking work has demonstrated that there is a link between passenger numbers and carbon emissions, and the ACMG has worked hard to contain the expected rise in energy use over the last five years. The group’s activities have been successful – the graph below shows that CO₂ emissions resulting from energy use by member airports actually fell slightly by 0.2 per cent whereas passenger numbers over the same period rose by 16 per cent.

**INDICATOR: Aggregate airline carbon dioxide emissions**

<table>
<thead>
<tr>
<th>Year</th>
<th>Emissions (Millions tonnes carbon dioxide)</th>
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<td>2005</td>
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**Airport Carbon Management Group – Total CO₂ Trend 2001-2005**

In 2006 the AOA successfully bid for a £20,000 grant from the Carbon Trust Networks Fund to extend the scope and membership of the ACMG and achieve carbon reductions through three specific services:

- A dedicated extranet to allow more information to be displayed and greater and more flexible access for current and prospective ACMG members. See www.acmg.org.uk
- A greater range of materials available for members to assist them in spreading best practice in carbon reduction
- A number of workshops to bring together current and prospective ACMG members, to inspire and plan future carbon reduction goals and techniques

Total carbon savings from this project are estimated at around 13,000 tonnes of CO₂ per year – equivalent to around two per cent of airport carbon emissions. It is hoped that the enhanced capabilities of the ACMG will enable it to deliver even greater reductions in the years ahead.

**AIRLINE EMISSIONS AND FUEL EFFICIENCY DATA**

UK airlines have developed and agreed a common methodology for the reporting of aircraft emissions and fuel efficiency (see fuel efficiency and CO₂ emissions indicators). This development enables presentation of the key aviation climate change indicators for the first time to passengers and other stakeholders.

**INDICATOR: Aggregated airline fuel efficiency in Litres per Revenue Tonne-Kilometre**

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<tr>
<th>Year</th>
<th>Fuel Efficiency</th>
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<td>2004</td>
<td>0.43</td>
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<td>2005</td>
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**ALTERNATIVE FUELS**

The potential of alternatives to kerosene as aviation fuel has received considerable attention during the past year. In 2005, an international consortium was held in this area to exchange information and explore potential options alongside the Aviation and Environment Summit in Geneva.

The in-house fuel technology team of Rolls-Royce has examined the potential for renewable sources for aviation, in partnership with academia. A Fluids and Fuel Centre of Excellence has been established at Sheffield University, funded by Rolls-Royce and the company is supporting a DTI funded programme on bio-fuels. Airframe manufacturers including Airbus have committed a long-term investigation into the uses of fuel cells powered by hydrogen and kerosene as an alternative to an emergency ram air turbine. At an international level, IATA is also engaged in work on alternative aviation fuels.

Despite such progress, a great deal of further work still needs to be done to assess the overall viability and applicability of alternative fuels to aviation in the long term. Work aimed at allowing the use of pure synthetic fuel is also underway. Such innovation will not be delivered overnight, although there are undoubtedly significant opportunities for improving technological performance in this area. Active monitoring of the potential of alternative fuels will continue and developments will be reported in future SA progress reports.

Notwithstanding the above developments, kerosene is a safe, high energy density fuel and is likely to remain the fuel of choice for the foreseeable future.

The growth in emissions in the second half of the period reflects a modest growth in the UK airlines’ fleet size and also mirrors a general recovery in demand following a number of external events which disrupted the industry during the period from 2000 to 2003. This recovery has allowed many airlines to accelerate the process of fleet replacement. The five-year change represents a little less than two per cent per annum growth in emissions and about 0.5 per cent per annum improvement in fuel efficiency.

Developments in technology mean that the new aircraft types now being designed and delivered will provide a significant improvement in fuel and emissions efficiency. As an example, the UK regional airline flybe is the worldwide launch customer for the Embraer 195 and has ordered 14 of the aircraft with the first delivered in September 2006. These aircraft will use considerably less fuel than the ones they replace as well as reducing noise levels by 35 per cent. This order complements an order of Bombardier Aerospace Q400 turbo-prop aircraft which deliver comparable improvements in efficiency.

Since June 2005 other UK airlines have ordered new-technology replacement aircraft such as the Airbus A380 and Boeing 787. Each will deliver major emissions efficiency gains and lower noise levels compared with the aircraft they replace.

**AIRPORT ENERGY USE**

The AOA obtained a grant from the Carbon Trust Networks Fund to extend the range and effectiveness of the Airport Carbon Management Group (see Airport Carbon Management Group). Other signatory companies have continued to look at ways to reduce the ground-based carbon footprint of the aviation industry.

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Meeting the Technology Challenge: Towards the ACARE Targets

The industry is working towards the 2020 targets set by the Advisory Council for Aerospace Research in Europe (ACARE) to reduce fuel consumption and CO₂ emissions by 50 per cent, to reduce NOx emissions by 80 per cent and reduce perceived external noise by 50 per cent. The ACARE targets represent a doubling of the historical rate of improvement. In this reporting period, SA signatories have made important progress in their efforts to meet these targets, highlighted below.

RESEARCH CO-ORDINATION

Delivery against the ACARE targets will require a series of step changes in the sector’s capability to design, manufacture and operate aircraft. One of our commitments links required improvements in fuel efficiency needed to reduce CO₂ emissions, and reductions in NOx emissions. The industry has broken down the 50 per cent CO₂ reduction target (on a passenger per kilometre basis) into the core aspects of aircraft and engine design and operations (including Air Traffic Management, ATM). Reduced fuel burn will also reduce NOx production at high altitude as well as CO₂, as long as advances in combustion are also progressed.

Whilst complementing involvement in European “Framework” research programmes, the UK National Aerospace Technology Strategy forms the principal mechanism by which research activity on this theme is being co-ordinated, specifically:

- Integrated Wing Technology Validation Programme
- Environmentally Friendly Engine Technology Validation Programme
- Advanced Materials & Structures and Aerodynamics Aerospace Innovation Networks.

More than £130 million has been committed to major research and technology validation programmes in the past 12 months. The main focus for these programmes is more environmentally friendly engines, more efficient wing, fuel and landing systems, as well as increased understanding of aerodynamics and advanced materials and structures. This work is being jointly funded by industry, government, regional development agencies and devolved administrations as part of the government-endorsed National Aerospace Technology Strategy. These projects signal the scale of the long-term investment required from all stakeholders, to deliver the step change in performance required by the Sustainable Aviation targets.

The proposed £1.1 billion, 7 year EU Joint Technology Initiative “Clean Sky” will also deliver technology to enable achievement of the ACARE goal of 50 per cent fuel reduction by 2020 on a per passenger per kilometre basis.

The major European aerospace manufacturers have recently reached agreement to develop this initiative with the support of the EU Research Commissioner. In addition, an aerospace innovation network in environmentally friendly technology will be established in 2007.

IMPLEMENTATION MECHANISMS

Integrated Wing Advanced Technology Validation Programme

This critical project, now underway at a cost of £35 million and involving 17 partners, will address development and validation of technologies associated with wing and major system (landing gear and fuel) design, manufacture and integration. The project will provide the means to assess their performance as an integrated system, rather than as separate topics as happens today. Aircraft drag, and hence fuel burn and emissions, is affected by weight as much as by advanced aerodynamics and advances in both areas are critical components in the programme. Furthermore, new systems require new manufacturing and installation processes and only by bringing the relevant disciplines together in a programme of this nature will major steps forward in performance of the whole system be achieved. The tools generated will assess the potential of individual technologies with regard to environmental performance, indicating where investment can give the greatest benefit. Project partners will work closely with the OMEGA project on this aspect.

Phase 2 of the project, due to start in 2008, will select the most promising advanced integrated wing configuration and validate the potential of proposed technologies against the ACARE targets. The project will form the backbone of integration and validation for ongoing UK wing technology development and national involvement in EU funded activities.

Environmentally Friendly Engine (EFE) Technology Validation Programme

Rolls-Royce’s recent engine developments have already demonstrated excellent progress towards achieving the ACARE emission goals. To progress this further, a new research and technology programme (EFE) has been launched. At a cost of £96 million over five years, this programme aims to validate the technology including a 60 per cent reduction in NOx emissions in future aircraft engines. The programme will examine a range of issues, including novel high temperature materials, high efficiency turbine components, low emissions combustion (NOx, particulates, etc.) innovation in manufacturing, engine controls, actuation and novel aerodynamics. A significant part of the programme will focus on the application of these technologies to specific components that then need to be integrated into a gas turbine engine.

Aerospace Innovation Networks

The industry is establishing two Aerospace Innovation Networks, focusing on advanced materials and structures and aerodynamics respectively. The Advanced Materials and Structures Aerospace Innovation Network is examining the contribution of lightweight and high performance materials to improvements in aircraft design and manufacturing. The Aerodynamics Aerospace Innovation Network is currently developing research aligned to future airflow and power-plant performance targets. Together, these innovation networks are contributing both to the industry’s desire to achieve the ACARE requirements in particular and the wider need to ensure the future sustainability of the industry.
1.2 LOCAL ENVIRONMENTAL IMPACTS

Although political debate in the UK over the last year has focused on aviation’s contribution to climate change, the industry continues to have significant impacts at a local level, which can be major concerns for people living near airports. These include noise, air quality and congestion in particular.

The industry needs to address these and other local impacts if it is to retain its ‘licence to operate’, and it remains committed to do so. To address these impacts, we have collaborated on a number of joint projects since the launch of the SA strategy.

KEY SUSTAINABLE AVIATION INITIATIVES

Noise
- Addressing noise at source – continued progress towards ACARE targets
- Operational procedures to address noise
- Launch of the Sustainable Aviation Noise Abatement Task Group
- Roll-out of an outreach programme on Continuous Descent Approach
- Night flights – new regime at designated London airports
- Mitigation – continued implementation of property-related mitigation initiatives at airports
- Community engagement – tailoring communication to noise affected communities

Air quality
- Technological improvements – continued progress towards ACARE targets
- Industry technical contribution to the air quality research programme as part of the Project for the Sustainable Development of Heathrow (PSDH), to improve the assessment of aircraft and airport

Surface access
- The inaugural Surface Access Forum held by government and airport operators to promote public transport

Environmental management
- Major update of the Airport Environmental Guidance Manual to share best practice between airports
- Aerospace manufacturers seek to extend environmental management systems

NOISE

INDICATOR: The number of people living within the 57dB(A) 16 hour Leq contour at individual airports

There have been substantial reductions in the noise generated by new aircraft and in the overall noise emissions at many airports. However, at most airports, the frequency and total number of movements is expected to increase in the future. For some people near airports or under flight-paths, aircraft noise is a significant issue affecting their quality of life.

Internationally, a ‘Balanced Approach’ to addressing noise impacts has been agreed. This involves the use of a cost effective balance of four key elements: reduction at source; operational improvements; land use planning; and operational restrictions. This is embedded in European legislative requirements and is now central to strategy for addressing noise issues.

The Commitments in the SA Strategy were structured around this approach and we have used this to guide initiatives undertaken over the last year.

Noise at source
In relation to noise at source, the ACARE goals for long-term technological progress remain central to Sustainable Aviation. For noise, the goal is a 50 per cent reduction in perceived external noise by 2020, for new aircraft in 2020 compared to equivalent new aircraft in 2000. The SBAC and signatory manufacturers have continued to make progress towards that Goal (see Meeting the Technology Challenges of Sustainable Aviation: Towards the ACARE Targets).

Operational improvements

The creation of a noise abatement task group has been an important step in moving forward our Commitments on addressing noise through operational improvements. Cross sectoral communication and understanding of sustainability issues is one of the key strengths of Sustainable Aviation. The SA noise abatement group brings together airports, airlines, NATS and manufacturers to identify and move forward noise abatement efforts around airports (see Task Group to Lead Initiatives on Noise Abatement).

NATS has also launched a Continuous Descent Approach (CDA) outreach programme to publicise and inform airports and airlines about the benefits of this operating technique, where operational circumstances permit its introduction. The benefits include reduced noise from aircraft on approach, and reduced fuel burn and emissions. As part of this process NATS is also playing a key advisory role in Eurocontrol’s CDA Focus Group. The group has been tasked with working up harmonised guidance for the implementation of CDAs throughout Europe.

The second edition of the Arrivals Code of Practice was collated by a cross-sectoral group including BAA, British Airways, easyJet, MyTravel, Virgin Atlantic, Civil Aviation Authority (CAA), DfT and NATS. The code is available on the DfT’s website, along with the first progress review.
Night Flights

After a two-stage consultation in 2004 and 2005, the Government announced its conclusions for the night flights regime at the designated London airports. The regime runs from 2006-12 and, sets up strict limits on the number of night flights that are permitted, together with their noise rating. For Heathrow in particular, the number of night flights was capped at present levels in view of community concerns over noise impacts. These airports will also shortly introduce new noise insulation schemes to further protect local communities from night flight noise impacts, and within the context of the balanced approach, noise emission standards of new aircraft will continue to have an important role.

Mitigation - local property related initiatives

The Government’s ATWP of 2003 set out a range of policies to address local noise impacts around airports. A number of airports already had community-related mitigation initiatives in place when our Strategy was launched in June 2005. As part of the process of producing Masterplans, airports have continued to consult with local communities on new or revised mitigation initiatives. For example, at Heathrow Airport, a new Community Trust with charitable status was established to co-ordinate implementation of new noise mitigation initiatives for schools, hospitals, community buildings and libraries.

Final Masterplans have now been published by a number of airports. The Sustainable Aviation website, provides links to airport websites and their published Masterplans, which provide more detailed information.

Community engagement - tailoring communication to affected communities

The way that aircraft noise is described to local communities is vital in developing trust and understanding. Signatory airports have continued to engage with local communities to develop appropriate communication and reporting strategies.

UK airport companies have been exploring a major new initiative to make the complex issue of noise as accessible as possible to stakeholders. Flight-track replay facilities give web users the ability to look at flight tracks at airports and see how high planes are flying in relation to where they live and work and access information on airport noise. Nottingham East Midlands airport launched their system, ‘WebTrak’, in September, becoming the first airport in Europe to enable people to access all aircraft operations within a 30 mile radius (with the exception of aircraft above 15,000 feet and some light aircraft). By visiting the airport’s website (www.nottinghamhema.com) the public can now interrogate the system for themselves to obtain information such as the aircraft’s track, altitude, airline and aircraft type. BAA is developing a similar facility, in consultation with stakeholders, for airports such as Heathrow, and has produced tailored publications for its South East airports, explaining in accessible terms the noise issues for each location.

AIR QUALITY

Air quality remains an issue of concern at a number of airport locations. There is concern that EU standards for the annual mean concentrations of nitrogen dioxide (NO₂), a component of NOx and, possibly, particulates (PM10), will be breached at residential dwellings near some airports. The NO₂ burden in the vicinity of airports is comprised of contributions from aviation as well as from other sources, principally road traffic, which is responsible for a substantial proportion of the emissions. The aviation industry clearly has a role in ensuring that local air quality standards are met. For example, it is recognised that Auxiliary Power Units (APUs) that provide power during boarding and disembarkation of passengers when the main engines are not running, contribute to ground level NOx emissions near airports. This could lead to work for ICAO’s Committee for Aviation Environmental Protection (CAEP) on certification for APU emissions. The provision of Fixed Electrical Ground Power (FEGP) is increasing and pre-conditioned air at the aircraft stands will reduce the need for APUs and lead to a further improvement in emissions.

Our Strategy committed signatories to contribute to research aimed at improvement of the assessment of air quality at and around airports. Over the last year, the major UK research to understand air quality around airports has taken place through PSDH (see box below). The relevant SA signatories – particularly Heathrow airlines and BAA – have provided technical support to the air quality elements of this project.

At a local level, Airport Masterplans developed over the past year have required airports to develop a number of strategies to minimise local emissions. The Sustainable Aviation website provides links to airport websites and their published Masterplans, which provide much more detailed information.

Further technological progress will also play an important role in addressing air quality. The ACARE goals for long-term technological progress include air quality, where the aim is an 80 per cent reduction in NOx by...
2020, for new aircraft in 2020 compared to equivalent new aircraft in 2000. The SBAC and signatory manufacturers have continued to make progress towards that goal (see both Meeting the Technology Challenges of Sustainable Aviation: Towards the ACARE Targets and the NOx reduction graph on the following page).

AIRBUS

Airbus has sought to extend ISO 14001 to provide a single certification across its entire European operations through its Site and Product-Oriented Environmental Management System (SPOEMS) initiative, with its site at Filton already certified, and its site at Broughton having participated in the initial pilot project. Airbus has chosen to innovate by building an EMS that integrates both its manufacturing processes and its products through a life-cycle approach. Such a technique will enable Airbus to systematically assess the environmental impact of its products for their entire life cycle and target improvements at the earliest design stage. SBAC is playing a key role in the dissemination of the programme’s results.

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SURFACE ACCESS

The industry remains committed to playing its role in the development of an integrated transport system. Airport Masterplans developed over the past year have required airports to encourage more sustainable surface access to the airport. In many cases, those Masterplans build on a long-standing track record of promoting public transport alternatives.

In conjunction with the DfT, the AOA organised a National Surface Access Forum, which brought together experts from across all transport modes and regulatory and planning bodies to find ways to accelerate the delivery of more sustainable surface access to airports. This group intends to convene again in 2007 and will begin by looking at a more accurate definition of transport modal split, as well as ways of integrating airport transport plans into wider spatial strategies.

ENVIRONMENTAL GUIDANCE FOR AIRPORTS

To assist airports to develop strategies addressing local impacts, and in response to Commitments in the original SA Strategy, the AOA launched its revised Environmental Guidance Manual (www.aao.org.uk) with the aim of allowing airports and their stakeholders to benchmark and improve best practice across a range of environmental areas.

Background

In 2000 the AOA published its first Environmental Guidance Manual (EGM) for Airports. This covered 11 operating areas, as well as developments in policy and legislation. The Manual was endorsed by the Environment Agency and established as the premier resource for airport environmental management at that time.

However, the Manual has fallen out of regular use as new legislation and techniques have emerged in the last six years. With the advent of Sustainable Aviation, the AOA recognised that an important opportunity had arisen for the Manual to be substantially updated and brought into line with the SA Commitments. The AOA engaged ENTEC, the consultants who produced the original Manual, to create a new, web-based document that would reflect all the latest policy and thinking, would set benchmarks for airport environmental performance and reflect the Sustainable Aviation Commitments. The new EGM will also be updated regularly.

Purpose

The AOA considers that the Environmental Guidance Manual for Airports can play a core role in setting a standard benchmark for airports in terms of source material, guidance, and targets in relation to environmental issues. The Manual also provides concise guidance of the best advice that exists the route to legislative, regulatory and policy compliance; as well as stimulating further improvements in environmental performance at individual airports, demonstrating industry intent and leadership in terms of environmental performance and Corporate Social Responsibility and showcasing specific case studies of environmental excellence.

It is hoped that the Environmental Guidance Manual will be endorsed by leading third-party organisations such as the Environment Agency, and will become the major environmental management resource for airports, their stakeholder groups and planning authorities.

ENVIRONMENTAL MANAGEMENT

Rolls-Royce is continuing to reduce the environmental footprint of its operations through substantial improvements in areas of significant impact. Improvement programmes are delivered using management systems that are certified by third parties to the international Environmental Management System (EMS) standard ISO 14001. The company has also extended EMS into the supply chain in recognition of the significant cumulative impact of the supply chain and a desire to work with the best-performing suppliers. Rolls-Royce has a publicly declared environmental policy that requires suppliers to implement an appropriate EMS comparable with the requirements of ISO 14001. The company is also currently piloting a phased approach to EMS implementation based on BS8555, with a view to making this more widely available in 2007.

Airbus has sought to extend ISO 14001 to provide a single certification across its entire European operations through its Site and Product-Oriented Environmental Management System (SPOEMS) initiative, with its site at Filton already certified, and its site at Broughton having participated in the initial pilot project. Airbus has chosen to innovate by building an EMS that integrates both its manufacturing processes and its products through a life-cycle approach. Such a technique will enable Airbus to systematically assess the environmental impact of its products for their entire life cycle and target improvements at the earliest design stage. SBAC is playing a key role in the dissemination of the programme’s results.
GOVERNANCE AND COMMUNICATIONS

Communication
• Regular communication to SA signatories
• Stakeholder dialogue
• Dissemination of best practice
• National and international outreach

 Following our launch in June 2005, we created the Sustainable Aviation Working Group consisting of a representative from each of the trade associations and NATS, with the assistance of expert help from signatory companies. The Working Group is overseen by a Sustainable Aviation Council consisting of the heads of the three trade associations, plus senior representatives from NATS and two signatory companies in each sector. Members of the Working Group and the Council over this reporting period are listed in Appendix III.

All three trade associations established internal communications structures to disseminate the strategy amongst their members. In addition the Working Group organised an industry forum bringing together representatives from across the signatory companies, to raise awareness of the Strategy and gain momentum for future action. In particular, two working groups – on Climate Change and Noise Abatement – were set up following this event.

The dissemination of best practice is essential to the setting of high standards across our industry, and is an essential part of the work of trade associations and their leading members. NATS participated in consortia that submitted two successful bids with an environmental focus in the EC Sixth Framework Programme. ‘Co-operative Approach to Air Traffic Services II’ (CAATSII). This is a project in which NATS is running the environmental best practice work package. The second was Environmentally Responsible Air Transport (ERAT), which seeks to embed environmentally optimised operating procedures in the European air traffic management system. SBAC began a series of ‘roadshows’ run by its Environment Working Group, focusing on the identification and spread of best practice throughout industry supply chains.

We have produced a number of newsletters informing signatories of the latest developments concerning the strategy, and these have been placed on the Sustainable Aviation website for access from stakeholders and the general public. In addition, a stakeholder event was held to allow non-signatories with an interest in the Strategy to discuss and scrutinise the development of the Strategy (see Stakeholder Consultation 2006).

Representatives from the Working Group and many individual SA signatory companies have taken the opportunity to showcase the Strategy to international partners and peers.

STAKEHOLDER CONSULTATION 2006

The first event for Sustainable Aviation stakeholders since the publication of the Strategy was held at the DTI Conference Centre in London on Monday 10th July 2006. The day was chaired by Professor Callum Thomas of Manchester Metropolitan University and was attended by over fifty representatives from aviation and related industry, environmental organisations, airport consultative groups, government and the academic community. A number of group discussions identified stakeholder views on the strengths and weaknesses of the Strategy and how they felt it should be taken forward. The feedback was summarised and circulated after the event to all those who attended.

Three issues in the feedback are being treated as short-term priorities:-
• Reporting progress
• Developing a road-map for the Climate Change strategy
• Clarifying the Sustainable Aviation mission and scope

A full list of other organisations represented at the event is shown in Appendix IV.

The Working Group organised an industry forum to gain momentum for future action. In particular, two working groups – on Climate Change and Noise Abatement – were set up following this event.
1.4 ECONOMIC AND SOCIAL BENEFITS

SUSTAINABLE AVIATION GOALS:
A competitive and commercially viable aviation industry making a positive contribution to the UK economy
An industry with constructive relationships with employees, local communities, customers and industry partners, meeting society’s air transport needs

We operate in a highly competitive and challenging global market place and the industry’s economic aim is to maintain and develop a competitive and commercially viable sector, which can continue to make a sustainable contribution to the UK economy and to local economies close to all of its major sites.

In partnership with the UK Government, airlines and airports commissioned a major study by Oxford Economic Forecasting (OEF) on air transport’s contribution to the UK economy. The study concludes that air transport directly contributed £11.4 billion to UK GDP in 2004, 1.1 per cent of the overall economy and directly employed 186,000 people. It also helped to support over 520,000 jobs in total, including those employed in its supply chain and in travel agents as well as those jobs dependent on the spending of its employees.

In addition, aerospace manufacturing is a UK success story and provides high value and highly skilled employment. Recent research shows that aerospace manufacturing directly employs 124,000 people and remains the largest aerospace industry outside the USA, with a turnover of £22.7 billion. It has seen record levels of new orders, some £30 billion in 2005. In 2005, self-financed research and development in aerospace was worth £0.89 billion, 76 per cent of which was for the civil sector. UK aerospace manufacturing remains globally competitive and exports 67 per cent of its total sales.

In addition to aviation’s direct contribution to the UK economy, it assists other sectors to operate more efficiently and to compete in the global economy, supporting productivity and economic growth across ‘UK plc’ as a whole.

A wide range of international connections to and from the UK support international trade and this is a key consideration in determining investment by new and existing businesses. The OEF study found that, with some 55 per cent by value of the UK’s non-EU manufactured exports being transported by air, our services are particularly important for UK trade with fast-growing emerging economies, such as China and India, and for trade in high-value services. In addition, air services are important for the growth sectors on which the UK’s future economic success will depend, such as high-tech companies and financial and business services. Regionally, the aviation industry is also an important factor in generating local economic growth and encouraging greater competitiveness.

Aviation supports tourism with nearly three quarters of international visitors to the UK arriving by air, generating 170,000 jobs. It also contributes to social inclusion, cultural exchange and international communication. Aviation links enable UK citizens to access a wide range of overseas destinations for leisure, business and to visit friends and family.

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1 The Economic Contribution of the Aviation Industry in the UK, Oxford Economic Forecasting, October 2006
2 UK Aerospace Industry Survey 2006, SBAC
The initiatives undertaken by Sustainable Aviation over the last year have confirmed that the original Strategy provides a strong foundation from which to build. This will be important as the industry responds to the continued attention being given to its environmental performance.

**CLIMATE CHANGE**

**Emissions trading**
Support will continue to be given to the UK Government’s goal of integrating aviation into the EU ETS as soon as possible. This will include continuing our work with European industry partners to build support for carbon trading. There has been significant progress towards this goal, with draft legislation to include aviation in European carbon trading expected by the end of 2006. We see this first step as a precursor towards a truly global scheme and we will continue to work through international organisations such as ICAO to achieve this aim.

UK aviation companies expect to introduce carbon offsets. We believe that there is a role for government to provide guidance to business and consumers and to provide reassurance about the validity of such schemes. We are working with government and other stakeholders to help promote effective schemes as an interim measure towards aviation’s full integration into the carbon trading market. Offsetting also has the benefit of raising public awareness about the impacts of travel.

**Improving understanding of climate change**
We will continue to closely monitor the developing science of climate change and will continue to work with the academic research community, including the OMEGA initiative, to further develop knowledge of aviation’s environmental impacts.

**Technological improvements**
The National Aerospace Technology Strategy and related activities are part of the industry’s road-map to attain the ACARE targets and are indicative of what can be achieved in partnership between government and industry. We nonetheless recognise that an evolutionary approach to technology development is insufficient if the ACARE targets are to be met in the timeframe available and that radical improvement in the way aircraft and their key systems are designed, manufactured and integrated hold the key to future success. However, revolutionary or step changes in performance are only likely to be deliverable via substantial and co-ordinated long-term investment by all stakeholders, both public and private sector.

The Industry will continue to work with the DTI to ensure that the Aerospace Innovation and Growth Team (AeIGT) initiative is adequately funded for the future implementation of the National Aerospace Technology Strategy. Other jointly-funded collaborative research investment vehicles emerging more recently include the Environmentally Friendly Transport Innovation Platform within the DTI Technology Programme and the proposed EC Framework 7 ‘Clean Skies’ Joint Technology Initiative.

**Promoting the efficient and effective support and exploitation of these mechanisms, as well as the National Aerospace Technology Strategy and company-specific research, will be a major focus for aerospace manufacturers in the next reporting round to ensure an integrated programme of activity towards delivering the ACARE targets. We will continue our work to agree a methodology to measure progress towards the ACARE Goals and expect to be in a position to publish that in our next report.**

**Airline emissions and fuel efficiency data**
We will continue to monitor and report on SA signatory airlines fuel efficiency and CO\textsubscript{2} emissions.

**LOCAL ENVIRONMENTAL IMPACTS**

**Noise**
We will strengthen the work of our Noise Task Group over the next year. The Task Group will continue to investigate and promote low-noise flight procedures and, by the end of 2007, will publish a strategy on the implementation of future noise abatement procedures. By the end of 2008, the group is also committed to publishing a best practice guide for environmentally-optimal departure procedures, balancing both noise and local air quality requirements.

Signatories will continue to develop their approaches to communicating on noise, including considering reporting supplementary metrics to improve information provided to communities, relating to both day and night noise. Each airport will require a locally-tailored strategy that is responsive to local community needs, for example, through working with established consultative groups.

**Local Air Quality**
We will continue to play our full part in improving air quality and meeting air quality regulatory requirements at sensitive airport locations.

**Surface Access**
Following the inaugural Surface Access Forum in 2006, a working group will be established to progress the key issues identified as barriers to progress on surface access to airports. Specifically in discussion with stakeholders, by 2008 airports will agree a common metric for measuring total vehicle journeys to airports, with a view to establishing an industry benchmark.

**GOVERNANCE AND COMMUNICATIONS**

Sustainable Aviation is committed to continuous improvement in its governance, stakeholder engagement, reporting, and wider communications. Specific steps over the next year will include the following:

- Clarify our mission and scope in relation to other aviation industry initiatives.
- Improve the external communication of our work. Our focus will remain the implementation of the Strategy but we will also commit to producing a stakeholder engagement strategy. We will communicate progress to a range of different audiences on a regular basis, including the Non-Governmental Organisation(s) (NGO) community.
GOALS AND COMMITMENTS INCLUDING AMENDMENTS

THE GOAL
Full industry commitment to sustainable development, and a broader understanding of the role of aviation in a sustainable society

COMMITMENT 1
Progressively strengthen the Sustainable Aviation goals, and encourage all aviation companies to endorse the Strategy and participate in its delivery

COMMITMENT 2
Report formally and publicly on progress towards Sustainable Aviation Goals and Commitments every two years, with the first review in the autumn of 2006

AMENDED COMMITMENT. Report formally and publicly on progress towards Sustainable Aviation Goals and Commitments every two years

COMMITMENT 3
A Sustainable Aviation Governance Framework, to facilitate progress towards achieving the Strategy’s goals

CLIMATE CHANGE
Aviation incorporated into a global policy framework that achieves stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous man-made interference with the climate system

COMMITMENT 4
UK aviation companies will develop, implement and encourage best practice among industry partners across sustainable development issues

COMMITMENT 5
Provide the means for communication on issues related to aviation and sustainable development, including stakeholder dialogue, through the ongoing Sustainable Aviation process

COMMITMENT 6
Airline and airport signatories to build support and assist policymakers in developing practical solutions for inclusion of aircraft CO2 emissions in the EU Emissions Trading Scheme by 2008, or as soon as possible thereafter, as a first step towards a global approach

COMMITMENT 7
Take a proactive role towards securing a positive engagement from the international aviation community to support measures to address climate impacts

COMMITMENT 8
Provide relevant data and expertise for the scientific community to enhance understanding of the non-CO2 atmospheric effects of aviation, and support improvements in metrics for quantifying and reporting effects

COMMITMENT 9
Propose appropriate mechanisms by 2012 for mitigating non-CO2 effects based on a consensus of scientific understanding

COMMITMENT 10
Continual improvements in technology and air traffic management towards ACARE emissions targets
- Improve fuel efficiency by 50% per seat kilometre including up to 10% from ATM system efficiencies
- Reduce NOx emissions by 80%
- By 2020 based on new aircraft of 2020 relative to the equivalent new aircraft in 2000

NOISE
Limit and, where possible, reduce the number of people affected by aircraft noise in the UK

COMMITMENT 11
Develop and implement common reporting of total CO2 emissions and fleet fuel efficiency by airline by end 2005

AMENDED COMMITMENT. Develop and implement common reporting of aircraft CO2 emissions and fleet fuel efficiency by airline, from 2006

COMMITMENT 12
Inform passenger understanding of the climate impacts of air travel, including evaluating carbon offset initiatives as a practical short-term measure. Provide an update by the end of 2006

AMENDED COMMITMENT. Inform passenger understanding of the climate impacts of air travel, including evaluating carbon offset initiatives as a practical short-term measure

For more information on all Commitments see www.sustainableaviation.co.uk
COMMITMENT 14
Where appropriate and not already in place, plans for property-related mitigation initiatives to be completed by 2007

COMMITMENT 15
Develop and promote low-noise flight procedures through evaluation of future operational methods and implementation of best practice, for example:
- evaluate implementation of steeper and curved approaches for noise abatement at relevant airports
- complete a CDA outreach programme at all main UK airports by end 2006
- assess the feasibility of a best practice guide for environmentally optimum departure procedures, balancing both noise and local air quality requirements, by end 2006

AMENDED COMMITMENT. Continue to investigate and promote low-noise flight procedures through the Sustainable Aviation Noise Abatement Task Group, for example:
- implement CDA procedures where possible at UK airports
- develop a best practice guide for environmentally optimum departure procedures, balancing both noise and local air quality requirements, by end 2008
- by end 2007, identify a strategy for the implementation of future noise abatement procedures

COMMITMENT 16
Support operating restrictions at particular airports, where these are shown to be proportionate and necessary, and less restrictive solutions are not available

COMMITMENT 17
Continue to engage with noise-affected communities and develop local airport noise communication programmes by 2007, tailored to the needs of those communities

LOCATIONAL AIR QUALITY

THE GOAL
Industry to play its full part in improving air quality and meeting air quality regulatory requirements at sensitive airport locations

COMMITMENT 18
Contribute to air quality measurement programmes and aid research to improve the assessment of aircraft and airport emissions to enable a better understanding, by 2007, of their actual contribution to local air quality close to airports

AMENDED COMMITMENT. Deliver continued improvements in airport ground vehicles, supply of ground power services, operational practice and the availability of cleaner fuels, in order to reduce NOx emissions. Report on progress by end of 2006

COMMITMENT 20
Deliver continued improvements in airport ground vehicles, supply of ground power services, operational practice and the availability of cleaner fuels, in order to reduce NOx emissions

LOCAL AIR QUALITY

THE GOAL
Industry playing its full part in the development of an integrated transport system

COMMITMENT 21
Quantify trade-offs between NOx, noise and CO2 emissions, so that these are taken into consideration by relevant regulators when setting future requirements

SURFACE ACCESS

THE GOAL
Continue to manage and limit the industry’s overall environmental footprint

COMMITMENT 22
Completing, by 2007, establishment of surface access strategies for each airport and those companies located at airports, within Air Transport Forums, for staff, freight and passengers

NATURAL RESOURCES

THE GOAL
Continue to manage and limit the industry’s overall environmental footprint

COMMITMENT 23
Achieve continuous improvement in the efficiency of use of energy and water use, and the management of waste, chemicals, water quality and environmentally sensitive materials

COMMITMENT 24
Make substantial progress in further limiting the environmental impact of supply chains

COMMITMENT 25
For new developments requiring land, avoid the loss of natural and man-made heritage wherever possible
Review periodically the potential and practicalities of alternative fuels to aviation kerosene.

A competitive and commercially viable aviation industry making a positive contribution to the UK economy.

Make a positive contribution to the skills, knowledge and motivation of all employees and provide a safe, healthy work environment.

An industry with constructive relationships with employees, local communities, customers and industry partners, meeting society's air transport needs.

Investigate consultative approaches leading to binding agreements as an agreed approach to the development of commercial airport infrastructure.

An industry with constructive relationships with employees, local communities, customers and industry partners, meeting society's air transport needs.

Deliver high quality service to passengers.

Continue to meet the requirements of people for access to aviation.

Engage with the tourism industry to coordinate approaches to sustainable development issues and clarify areas of responsibility.

**THE GOAL**

**SOCIAL**

**THE GOAL**

**ECONOMICS**

**THE GOAL**

**APPENDIX II**

**RECOMMENDATIONS TO GOVERNMENT**

In the inaugural Sustainable Aviation report (2005), the importance of working with government was clearly recognised. A number of specific points were raised and we look forward to these being addressed in the ATWP Progress Report.

1. Continue to work, through ICAO and other relevant international organisations, to define solutions at an international level.

2. Continue to take a leading role in ensuring the delivery of the National Aerospace Technology Strategy through the coordination of government resources identified in the Aerospace Innovation and Growth Team (AeIT) Implementation Report and ensuring funding mechanisms are available to enable manufacturers to maintain the drive towards technological and operational targets.

3. Encourage and facilitate studies on technical and economic impacts and on trade-offs, aimed at meeting environmental targets, in association with academic studies on the environmental impacts of aviation.

4. This joint approach should also include active support for an internationally connected vehicle to link research in this area through networking and knowledge transfer.

5. Commission research and promote collaboration with the scientific community into the non-CO\(_2\) effects of aviation through raising priority of this work, providing guidance on prioritisation and ensuring sufficient funding. This should include active support for a knowledge transfer network to link research in this area.

6. Agreement should be sought through the UN Framework Convention on Climate Change (UNFCCC) on an allocation methodology for international aircraft emissions that reflects the global competitiveness of the industry, the need for consistency across states and the goal of integrating aviation into the global approach to address climate change by 2012.

7. Work with the scientific community and industry to develop sufficient understanding of aviation’s non-CO\(_2\) climate effects to define which policy approaches, technological, regulatory, voluntary or economic, are appropriate, by 2012.

8. Encourage the UK Airspace Regulator, the CAA, to design a streamlined process for implementing airspace changes, for example, where there are potential environmental benefits, reducing current average request to approval timescales significantly. This streamlined procedure should be in place by end 2006.

9. The forthcoming revision of PPG24 (Planning Policy Guidance) is an opportunity to establish a consistent policy of more rigorous examination of planning permission for new airport developments, including consideration of noise impact areas such as 57 Leq and to seek to protect areas where aircraft noise impact has been recently reduced.

10. Action by government to complement initiatives from the aviation industry should be undertaken to address NO\(_x\) issues on roads near airports.

11. Pursue and develop an integrated framework, covering all sources affecting air quality at, and in the vicinity of, the airport. These should then be integrated within the Action Plans of the local councils, as required by the UK Air Quality Strategy.

12. Ensure the airports receive proper recognition within its integrated transport plans including the development of surface access links.

13. Review the relationship between provision of land for airport use within Regional Spatial Strategies and Regional Transport Plans.

14. Delivery of effective land use planning to protect present and potential communities around airports, and manufacturing supply centres, through full integration of the policies and strategic goals of the Office of the Deputy Prime Minister with other key government departments.

* Now Department for Communities and Local Government
APPENDIX III
SUSTAINABLE AVIATION COUNCIL AND WORKING GROUP MEMBERS

Sustainable Aviation Working Group
Paul Everitt, SBAC
Chris Goater, AOA
Matt Gorman, BAA
Ian Jopson, NATS
Andy Kershaw, British Airways
Mike Steeden, SBAC
Mark Watson, SBAC
Roger Wiltshire, BATA

Sustainable Aviation Council
Jonathan Bailey, Manchester Airports Group
Colin Beesley, Rolls Royce
Danny Bernstein, Monarch Airlines (Chair)
Martin Boyce, Airbus UK
Sarah Brookes, Manchester Airports Group
Paul Everitt, SBAC
David Hilton, NATS
Sally Howes, SBAC
Keith Jowett, AOA
Andy Kershaw, British Airways
Helen Murley, BAA
Andrew Sentance, British Airways
David Welsh, Rolls-Royce
Roger Wiltshire, BATA

APPENDIX IV
ORGANISATIONS REPRESENTED AT THE 2006 STAKEHOLDER EVENT

July 2006
ABTA Association of British Travel Agents
AEF Aviation Environment Federation
AUC Air Transport Users Council
BARUK Board of Airline Representatives in the UK
Cambridge University
CBI Confederation of British Industry
Cranfield University
DEFRA
DIT
DTI Forum for the Future
FTO Federation of Tour Operators
Gatwick Consultative Committee
Greener by Design
Green Skies Alliance
MMU Manchester Metropolitan University
POST Parliamentary Office of Science and Technology
SASIG Strategic Aviation Special Interest Group
SDC Sustainable Development Commission
Shell
Scottish Government
TUC Trades Union Congress

APPENDIX V
GLOSSARY

ACARE Advisory Council for Aeronautics Research in Europe
ACMG Airport Carbon Management Group
AeIGT Aerospace Innovation and Growth Team
APU Auxiliary Power Unit
AOA Airport Operators Association
ATM Air Traffic Management
ATWP Air Transport White Paper
BATA British Air Transport Association
CAA Civil Aviation Authority
CAEP Committee for Aviation Environmental Protection
CAATS Co-operative Approach to Air Traffic Services
CDA Continuous Descent Approach
CO₂ Carbon Dioxide
DBIA Decibels (A-Weighted)
DEFRA Department for Environment, Food and Rural Affairs
DFT Department for Transport
DTI Department for Trade and Industry
EFE Environmentally Friendly Engine
EGM Environmental Guidance Manual
EMS Environmental Management System
ERAT Environmentally Responsible Air Transport
ETS Emissions Trading Schemes
EU European Union
FEGP Fixed Electrical Ground Power
ICAO International Civil Aviation Organisation
IPCC Intergovernmental Panel on Climate Change
NGO Non-Governmental Organisation
NOx Nitrogen Oxides
OEF Oxford Economic Forecasting
OMEGA Opportunities for Meeting Environment Growth of Aviation
PM10 Particulates
PPG Planning Policy Guidance
PSDH Project for the Sustainable Development of Heathrow
SA Sustainable Aviation
SBAC Society of British Aerospace Manufacturers
SESAR Single European Sky ATM Research
SPPOEMS Site and Product-Oriented Environmental Management System
UNFCCC United Nations Framework Convention on Climate Change