

Climate change

Background

There is consensus that climate change is caused by human activity, primarily burning fossil fuels which generates greenhouse gases. Carbon dioxide (CO₂) is a primary greenhouse gas, but other emissions, such as nitrogen oxides (NOx), also have an impact.

The Intergovernmental Panel on Climate Change (IPCC) estimates aviation's total impact to be around 3.5% of the total human contribution to climate change. By 2050, the IPCC estimates that aviation could account for 5%, although scenarios range from 3.5% to 15%.

The DfT estimates that UK aviation comprised 6.4% of the UK's total CO₂ emissions in 2006 (37.5 million tonnes of CO₂). In January 2009, the DfT forecasted that UK aviation emissions could rise to around 60 million tonnes of CO₂ by 2050. As the UK reduces its emissions to meet its 80% reduction target by 2050, aviation will represent a greater proportion of the UK's total emissions. Inclusion of aviation in the EU ETS, however, will cap aviation's net emissions at 97% of the 2004-2006 average level.

Our approach

We believe that our industry's contribution to climate change should be addressed and we work with stakeholders to pursue the best measures to achieve this. Where we have direct control over emissions we aim to lead the airport industry in managing them. Where we do not have direct control, such as over emissions from flights, we use our influence to encourage the airline industry and policy makers to tackle climate change.

Turn to page 7 to read how expansion plans relate to the UK's climate change targets.

Measuring the climate impact of airports

In last year's Corporate Responsibility Report we committed to producing a carbon footprint for our airports. The footprint for 2008 for Heathrow is shown in the box on page 18.

During 2009 we will use the carbon footprint to establish an updated climate change strategy for Heathrow.

Our performance

Climate impact of airports

The emissions over which Heathrow has direct control are shown in the carbon footprint on page 18 and total 340,480 tonnes of CO₂. The most significant contributor to these emissions is from energy used in buildings and infrastructure (fixed sources), accounting for over 98% of Heathrow's direct emissions.

BAA

BAA has set targets to reduce our absolute CO₂ emissions from fixed sources by:

- 15% on 1990 levels by March 2010.
- 30% on 1990 levels by March 2020.

For 2008 we have amended our greenhouse gas (GHG) reporting methodology to align with the Department for Environment, Food and Rural Affairs' (DEFRA) GHG Guidelines 2008. This recommends that companies use a rolling average carbon conversion factor of 0.537. This compares to the long-term carbon factor of 0.43 that was applied in 2007. The effects of this is to increase CO₂ associated with BAA's electricity consumption by 25%.

In 2008, CO₂ emissions from fixed sources were 529,646 tonnes. This compares to 436,229 tonnes reported in our 2007 Corporate Responsibility Report. This increase relates to the change in the carbon conversion factor and is not representative of BAA's overall level of energy consumption, as shown in Figure 8. This shows that BAA's actual use of energy has remained relatively flat over the past four years.

In making the change to calculating CO₂ emissions from our fixed sources we have also considered the effect on meeting our two long-term targets. Although it is now likely that we will not be able to meet our 2010 target we remain confident in meeting our 2020 target through:

- focused energy reduction strategies across all BAA airports;
- continued improvement of energy efficiency across all BAA airports;
- UK Government commitments to decarbonise the UK energy mix as part of the Climate Change Bill.

We will shortly be publishing an energy strategy for Heathrow outlining how we will meet our 2020 CO₂ target at the airport.

Heathrow

2008 target

Reduce CO₂ emissions by 3% against business-as-usual forecast through improvements in energy efficiency.



The target was achieved, with performance at Heathrow for 2008 amounting to 8.6% below the business-as-usual forecast, which represents a scenario when CO₂ is not actively managed.

- Key activities contributing towards this performance are grouped under three elements in Heathrow's energy strategy:
- Energy demand management.
 - New building design.
 - Energy supply and generation.

Energy demand management

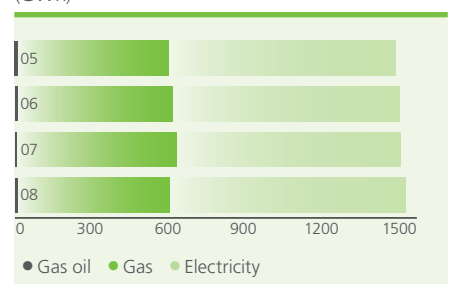
Energy demand management describes practical initiatives to reduce our use of energy through switching equipment off when not needed and using equipment more effectively. At Heathrow this has helped us achieve a reduction of over 27 GWh.

Examples of achievements at Heathrow include:

- 1.8 GWh savings by turning baggage belts off earlier.
- 2.8 GWh savings by installing low-energy lighting in Terminal 1 and World Business Centre 1.
- 1.45 GWh savings at Terminal 4 through auditing.
- 0.4 GWh savings through improving car park lighting.
- 2.75 GWh savings by using waste heat from our combined heat and power station to heat T5.

We regained accreditation to the Carbon Trust Standard, a leading emissions reduction award scheme, and together developed an energy-saving video for employees.

Figure 8: Buildings energy use from fixed sources (GWh)



New building design

New building design describes our work to improve the energy efficiency and fabric of new buildings and refurbishments.

The Heathrow East Terminal

The proposed Heathrow East Terminal will be built on the existing site of Terminal 2, Flight Connections Centre and Queens Building and will accommodate 30 million passengers per year.

The new building is being designed to meet two targets:

- A 40.5% CO₂ reduction compared to 2006 building regulations, with on site renewable energy contributing a 20% CO₂ reduction.

The building will meet these targets by:

- Reducing heat loss during winter and solar gains in summer.
- Using energy-efficient heating, lighting, cooling and electrical systems above energy regulation requirements.

Terminal 5

The main terminal building is glazed on all facades, giving the building a light and airy atmosphere, and reducing the need for artificial lighting. To prevent solar gain, louvres shade all but the north facade. These are angled to prevent the summer sun penetrating the building, but allow in the winter sun, which is lower in the sky. The building has energy-efficient light fittings throughout. Individual sets of lights can be set according to the need at a particular time of day or for certain weather conditions.

The terminal is cooled by water supplied by efficient ammonia chillers. This removes the need for multiple air-conditioning units and refrigerators.

Waste heat from the combined heat and power station delivered to T5 by a new underground pipeline supplies 85% of T5's heat demand.

Energy supply and generation

A new energy centre is required at Heathrow to meet rising energy demand and to replace old equipment. In 2008, we identified options for meeting energy demand while reducing CO₂ emissions. This identified combined heat and power (CHP) as an economically and energy efficient way of reducing CO₂ emissions at Heathrow.

Climate impact of flights

We do not have direct control over climate emissions from flights but believe that aviation should meet its external costs and contribute to the goal of avoiding dangerous climate change. We welcome the completion of the Climate Change Bill in November 2008, which established a binding reduction in UK CO₂ emissions of 80% by 2050 as well as the recommendation of Adair Turner, chairman of the Committee on Climate Change, that aviation should play a role in meeting this target.

We believe that this reduction can be achieved through improved efficiencies, and the industry's participation in emission trading.



Below
T5 Energy Centre



Carbon footprint

Heathrow Airport carbon footprint

BAA commissioned Entec to develop a methodology for calculating the carbon footprint of its airports. Heathrow's Limited's footprint is described below.

Entec has drawn on best practice guidelines such as the Greenhouse Gas Protocol on Corporate Accounting and Reporting. These define emissions over which an organisation has direct control as well as other emissions that can be reported voluntarily.

Heathrow's direct carbon emissions

These emission sources cover fuels and energy used in airport operations, including electricity and natural gas, airport vehicle fuel, company cars and emissions from refrigeration systems.

Electricity used in running Heathrow Express buildings and offices is included. Electricity used for running trains has been included under other emissions, as Heathrow has less control over these emissions.

Heathrow's 2008 direct emissions are calculated as 340,480 tonnes of CO₂. Figure 9 shows that emissions from electricity generation dominate, followed by emissions from use of natural gas on-site. These activities account for over 98% of Heathrow's direct emissions.

Other emissions

In addition to the activities included in Heathrow's direct carbon footprint, the activities of staff, business partners, customers and passengers also result in carbon emissions. We recognise the need to understand these impacts and play a role in influencing behaviour. The following carbon emission sources have been included:

- aircraft movements on the ground and close to the airport (arrivals and departures up to 3,000 ft). This represents the limit of airport influence over these activities;
- all passenger and staff journeys to Heathrow (door to door), including Heathrow Express;
- water treatment and waste management;
- vehicles used at Heathrow by third parties; and
- Heathrow Airport Limited employee's road, rail and air business travel.

Figure 10 summarises carbon emissions from other airport sources and illustrates the significant contribution from aircraft emissions both on the ground and in the departing and arrival phase of flights.

Taken together, other airport emissions amounted to 1.8 million tonnes in 2008.

The carbon footprint does not include emissions from aircraft in flight. These are regulated and managed through national polices, notably the EU ETS. The DfT calculate CO₂ emissions from flights for the UK as a whole as well as broken down by airport. Carbon emissions for flights departing Heathrow were 17.1 million tonnes in 2005 (the most recent year for which calculations were published).

It is Entec's view that this work represents a significant step forward for Heathrow's carbon management strategy and Entec recommends that BAA continue to develop and report against this methodology.

Full details of Heathrow's carbon footprint are due to be published in a separate report mid-2009. This will also contain data for all BAA airports.

Figure 9: Direct carbon emissions

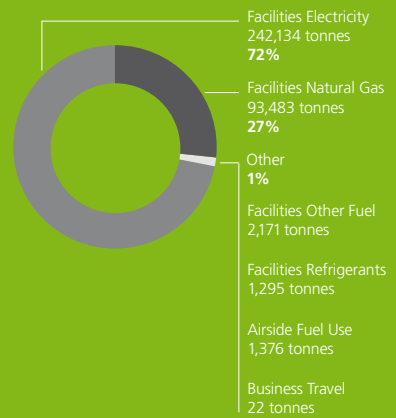
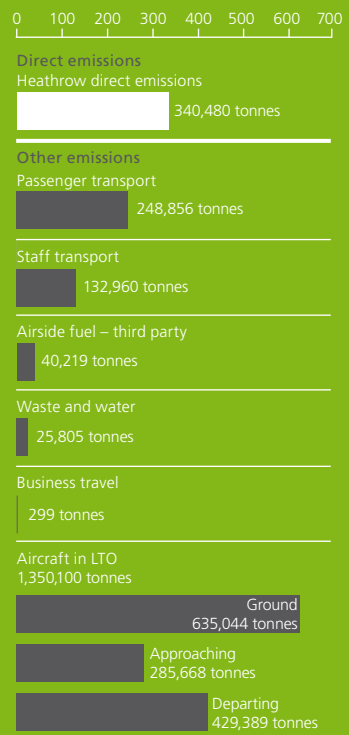


Figure 10: Other carbon emissions



Improving efficiency

In December 2008, industry group Sustainable Aviation issued a CO₂ reduction roadmap. This demonstrates that CO₂ emissions from UK aviation can be reduced to 2000 levels by 2050, through new technologies, operational efficiencies and low carbon fuels. View the roadmap at www.sustainableaviation.co.uk.

Emissions trading

An open emissions trading scheme (ETS) represents the most efficient and effective way for aviation to address its climate impact. Emissions trading means that part of the industry's climate impact will be offset by reductions in other industries, but paid for by the aviation industry.

The European Commission completed legislation during 2008 that means that arriving and departing EU flights will be part of the EU ETS from 2012.

The cap set for aviation from 2012 is stringent, with the industry having to purchase 15% of its permits. We view this legislation as an interim step towards a global aviation climate policy framework. We are a founder of the Aviation Global Deal (AGD) group which is promoting aviation's inclusion in the global climate agreement to be negotiated in Copenhagen in 2009.

Tax

The 2008 DfT Emissions Cost Assessment demonstrates that Air Passenger Duty more than covers the aviation industry's external costs of CO₂ emissions. However, we believe that Air Passenger Duty remains a blunt instrument and does not create incentives to improve environmental performance.

We continue to press the Government to revise or remove this new tax from 2012, when aviation will be included within the EU ETS.

Working in partnership

We participate in The UK Corporate Leaders' Group on Climate Change. In 2008 we were signatories to two high-profile initiatives in the form of an open letter to UK party leaders as well as to policy makers taking part in the Poznan negotiations.

Read our latest position on climate change in responses to Government and Parliamentary inquiries on our website (www.baa.com).

Our plans

BAA targets

To reduce our absolute CO₂ emissions from fixed sources by:

- 15% on 1990 levels by March 2010.
- 30% on 1990 levels by March 2020.

Heathrow targets

- To reduce CO₂ emissions from fixed sources at Heathrow by 6% against the 2009 business-as-usual forecast.

We plan to publish our carbon footprint alongside our approach to managing other sources of CO₂ and will play an active role in the Aviation Global Deal group.



Read more about our approach to reducing energy use and climate impacts in our individual airport corporate responsibility reports available at www.baa.com