

March 2007

Dying on a jet plane

The UK government, aviation and
climate injustice



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Contents

1. Climate change and flying in the UK	3
2. Subsidies and support to aviation	6
3. The UK and global injustice of flying	8
4. Misallocation of resources	12
4.1 Switching the UK to a low carbon economy	12
4.2 Assist developing countries to access low carbon energy	13
4.3 Tackling global poverty	14
5. Current measures to tackle aviation emissions	15
Appendices	18
References	21

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1. Climate change and flying in the UK

“Ghandi once said, ‘Recall the face of the poorest person you have seen and ask yourself if the step you contemplate is going to be any use to them’.”¹

- Gordon Brown

“Climate change is like eating a slap-up meal then handing the bill to the world’s poor.”²

- Ricardo Navarro, CESTA El Salvador

Since 1990, UK CO₂ emissions from aviation have risen by 125 per cent and are currently growing by between 5 and 10 per cent a year. In 2005, aviation accounted for 6.3 per cent of the UK’s CO₂ emissions.³ Given the extra warming effects of non-CO₂ emissions from aviation,^{*} aviation’s share of the UK’s contribution to climate change is higher – probably in the region of 10-15 per cent. Worldwide, one-in five flights departs from or arrives at a UK airport.⁴

The growth in UK aviation is fully supported by the UK government. In its 2003 White Paper on Aviation, the Department for Transport (DfT) planned for a massive expansion in UK airport capacity to allow for a predicted doubling of passengers in UK airports between 2002 and 2020, and a doubling of air freight between 2002 and 2010.⁵ In December 2006, this expansion was supported in both the DfT’s progress report on the aviation white paper⁶ and the Chancellor’s pre-budget report⁷. The Tyndall Centre for Climate Change has predicted that unless government policy changes, CO₂ emissions from UK aviation will have more than doubled by 2030 and trebled by 2050.⁸

The UK government’s support for the expansion in aviation contradicts its rhetoric on tackling climate change and global poverty. On tackling climate change, Tony Blair has said: “There is nothing more serious, more urgent or more demanding of leadership, here of course, but most importantly in the global community. Britain is more than playing its part.”⁹

Gordon Brown has stated: “We now have sufficient evidence that human-made climate change is the most far-reaching – and almost certainly the most threatening – of all the environmental challenges facing us. And it is the poorest members of the community – those most dependent on the natural world for their survival, and those with the fewest resources to buy their way out of unhealthy environments – that suffer the most. Indeed, it is in the issue of climate change that we can see this interaction of economic development, environmental degradation and social inequity most clearly.”¹⁰

The UK government and European Union are committed to limiting the increase in global temperatures to 2°C on pre-industrial levels.¹¹ As Gordon Brown has recognised; “At a global average of two degrees or more the

^{*} As well as CO₂, aviation produces nitric oxide and nitrogen dioxide, which at altitude form ozone, a greenhouse gas. Aviation also emits water vapour, which at altitude leads to the formation of contrails and cirrus clouds – again contributing to global warming.

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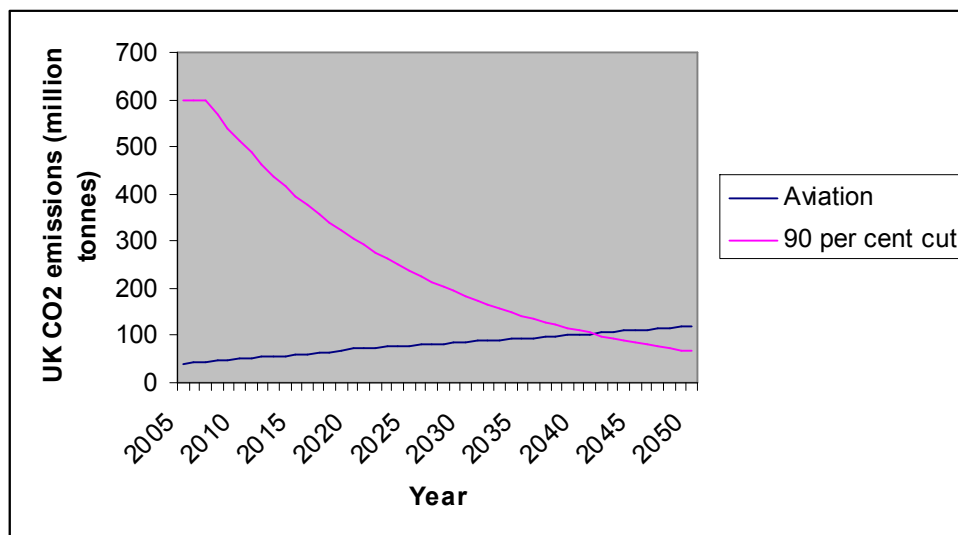
The UK government, aviation and climate injustice

consequences - for agricultural productivity, water stress, ecosystems and human health become potentially devastating.”¹²

The Treasury’s Stern Review on the economics of climate change argued that to have 50 per cent chance of keeping to a 2°C increase in global temperature requires the atmospheric concentration of greenhouse gases to stabilise at 450ppm CO₂e* .¹³ This in turn requires a global cut in emissions of 70 per cent by 2050 and 75 per cent by 2100. Given that the UK produces more than double the worldwide average CO₂ emissions per person, UK emissions need to be cut by 85-90 per cent by 2050.

A cut of 90 per cent in UK’s emissions is impossible if aviation is allowed to continue growing (see Graph 1 below). By 2030, aviation would account for almost half the UK’s CO₂ emissions. By 2040, even if there were no CO₂ emissions from any other sector of the UK economy, aviation would still be responsible for over 100 million tonnes of CO₂ a year, making 90 per cent cuts impossible.

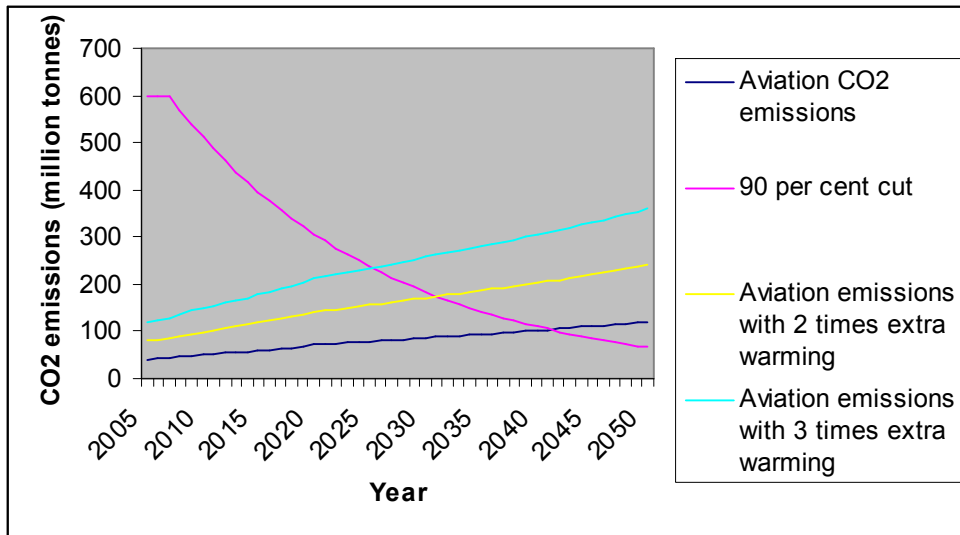
Graph 1. A) Required UK CO₂ emission cuts and B) predicted growth in CO₂ emissions from aviation



The figures in Graph 1 take no account of the extra warming effects of aviation emissions. Because of the scientific uncertainty it is difficult to ascribe the extra warming from aviation emissions in CO₂ terms.¹⁴ However, one attempt in Graph 2 below shows that by 2030, in just 23-years time, aviation would account for *all* of the UK’s contribution to climate change, if we were on track to cut emissions by 90 per cent by 2050.

* CO₂e means the ‘carbon dioxide equivalent’ which is the measure of all greenhouse gases. The CO₂e value gives a concentration of greenhouse gases which has the equivalent effect as the given amount of CO₂. ‘ppm’ is ‘parts per million’, a measure of the concentration of a gas in the atmosphere.

Graph 2. Required UK CO₂ emission cuts and predicted growth in contribution to climate change from aviation



Of course, there is no reason why aviation should be given special status at the expense of all other sectors of the economy. In fact, as Section 3 of this report shows, aviation is primarily a luxury good used predominantly by the richest people in the UK and the world. Government action now to at least halt the growth in emissions from UK aviation should therefore be viewed as a critical part of the overall effort to tackle climate change rather than as something unimportant and/or to be avoided.

Dying on a jet plane

The UK government, aviation and climate injustice

2. Subsidies and support to aviation

“And I don’t want our children to say to us: ‘You knew what needed to be done, you had the political power but you lacked the political will’.”¹⁵

- Gordon Brown

As mentioned above, the UK government is supporting a massive expansion in aviation, with a planned doubling of air passengers between 2002 and 2020, and a doubling of air freight between 2002 and 2010. The government’s white paper supports new runways at Edinburgh, Birmingham International, Stansted and Heathrow airports. In addition, the government’s white paper supports other airport expansion measures, such as new terminals or longer runways, at a total of 24 different airports in the UK*.¹⁶

It is widely reported that aviation pays no tax on fuel and no VAT. One estimate, based on data from 2002, is that in the UK this amounts to an effective subsidy to air travel of £9.2 billion a year.¹⁷ Since then UK aviation has grown considerably, thereby increasing the effective subsidy. However, Gordon Brown has doubled Air Passenger Duty, starting from February 2007, thereby acting as a reduction on the effective subsidy to aviation. WDM calculates that the net impact of these factors results in an effective subsidy to UK aviation in 2007 of £10.4 billion (see Appendix 1). £10.4 billion is the equivalent of £173 for every man, woman and child in the UK.

The planned airport expansion and the generous tax status given to aviation are not the only governmental support for the industry. Through Export Credits, preferential loans and direct subsidies, the aviation industry in the UK and EU is assisted in even more ways.

For example, the UK Export Credit Guarantee Department (ECGD) is a heavy promoter of aviation, primarily through insuring the export of Airbus aircraft. Aviation accounted for almost half (23 out of 48) of the guarantees given by ECGD in 2005/06. Financially, 71 per cent of ECGDs new liability through guarantees issued in 2005/06 was to the aviation industry. This support is to the exports of two companies: Airbus and Rolls Royce. Airbus alone accounts for 68 per cent of ECGD liability in guarantees publicly listed in 2005/06 (see Appendix 2).¹⁸

The European Investment Bank also offers substantial support to the European aviation industry. In 2003, it was calculated that the European Investment Bank contributed €2 billion (£1.4 billion) a year of government-backed cheap credit to the aviation industry.¹⁹

It is widely acknowledged that EU member states provide further support to the aircraft manufacturer Airbus. As one report points out:

* Edinburgh, Glasgow International, Glasgow Prestwick, Aberdeen, Dundee, Inverness, Cardiff International, Belfast International, Manchester, Liverpool John Lennon, Blackpool, Carlisle, Newcastle, Teesside International, Leeds-Bradford International, Birmingham International, East Midlands, Bristol International, Bournemouth International, Exeter International, Stansted, Heathrow, Gatwick, Luton.

Dying on a jet plane

The UK government, aviation and climate injustice

“With regard to aircraft manufacturers, government support for the civil aircraft industry has taken various direct and indirect forms, which makes them very hard, if not impossible, to assess. Examples include synergies between military (ie, government-funded) and commercial development costs, funding of research and infrastructure, direct financial subsidies for specific aircraft projects, equity infusions, debt forgiveness, and export guarantees against losses caused by exchange-rate changes as well as export guarantees.”²⁰

And Lufthansa claim that since 1991, EU member states have paid over €20 billion (£13.5 billion) in direct rescue aid for airlines.²¹ However, the multitude of support channels, manufacturers and operators make it difficult to calculate the extent of government hand-outs to the aviation industry in Europe.

Dying on a jet plane

The UK government, aviation and climate injustice

3. Inequality, flying and the global injustice of climate change

*"And I make this promise: tackling climate change must not be the excuse for rich countries to impose a new environmental colonialism: sheltering an unsustainable prosperity at the expense of the development of the poor."*²²

- Gordon Brown

*"A lot of Labour party people say that the dramatic growth in air traffic is the poor getting on the plane for the first time, but it's not that at all. Half the population never gets on a plane. What's happening is that relatively few people, instead of going away once a year on holiday, are going three or four times a year to Barcelona or Prague or wherever. That's all very nice, but not at the cost of the continuation of life on planet Earth."*²³

- Ken Livingstone

*"I wish people in the north could be held to account and be more responsible. They are creating problems for us, yet we have to deal with them ... If we increase carbon from aviation, unless something is done, the world cannot cope. Flying and driving in the North is very easy but do people realise the consequences? We cannot deal with the carbon we have, we cannot afford to create more."*²⁴

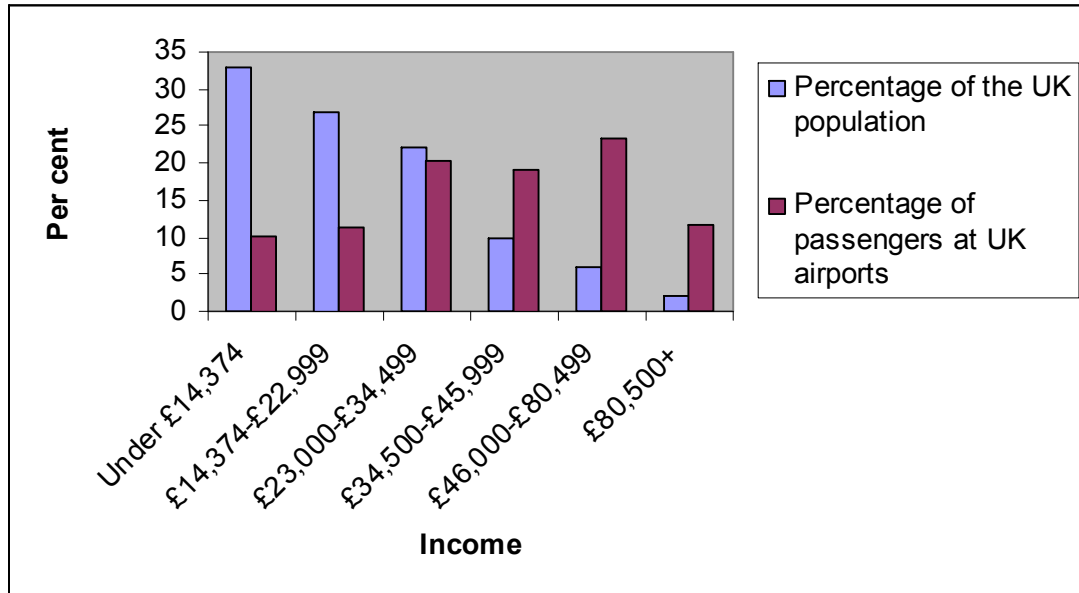
- Mumbi Murage, Porini Association, Kenya

*"The wide availability of air travel is still limited to the affluent developed world and to the elite few in the developing countries. However, the environmental costs of aviation can be global: climate change will affect every person and its consequences may be most damaging for those in the developing world."*²⁵

- Royal Commission on Environmental Pollution

Flying is an activity dominated primarily by the rich. The richest 18 per cent of the UK population are responsible for 54 per cent of flights, whilst the poorest 18 per cent are responsible for just 5 per cent.²⁶ The average salary of passengers at UK airports is £48,000.²⁷ And this means that the support and effective subsidies the UK government provides to the aviation industry are going primarily to rich people. Air passengers from the richest 18 per cent of the population receive an effective subsidy of £5.6 billion a year whilst air travellers from the poorest 18 per cent of the population receive £0.5 billion.

Graph 3. Income of UK air passengers in contrast with income of UK population²⁸



It is commonly perceived that the recent growth in flying has been due to people on lower incomes taking advantage of cheaper air fares. However, this is not the case. The growth in flying over the past few years has been due to rich people flying more, whilst those on the lowest incomes are actually flying *less*. In 2000, over 8 million leisure trips were taken from UK airports by passengers earning less than £14,374 a year. In 2004, the same group of people flew less, with just over 7 million trips. In contrast, people earning over £28,750 a year made 28.8 million leisure trips in 2000, and this rose to 36.5 million in 2004.²⁹

The inequality in access to flying is mirrored globally. North America accounts for 38.4 per cent of worldwide aviation, but holds just 5.1 per cent of the world's population. Europe accounts for 30.9 per cent of aviation worldwide, but only 14.3 per cent of the world's population. In contrast, Africa holds 13.2 per cent of the world's population, but accounts for 2 per cent of aviation. Asia-Pacific has 55.3 per cent of the world's population but 22.4 per cent of aviation.

Table 1. Disparity between regional access to aviation and population

	Percentage of world aviation ³⁰	Percentage of world population ³¹
Africa	2.0	13.2
Asia-Pacific	22.4	55.3
Europe	30.9	14.3
Latin America	3.6	8.6
Middle East	2.7	3.5
North America	38.4	5.1

These figures only take account of the inequality in flying between countries. Where flying takes place in developing country regions, it is almost certainly

Dying on a jet plane

The UK government, aviation and climate injustice

dominated by indigenous middle-classes, tourists and employees of multinational companies. Flying is primarily an activity of the rich.

Whilst flying is an activity of the rich, the climate change which it is contributing to will affect the poorest people in the world the most. The Intergovernmental Panel on Climate Change reported in February 2007 that in the absence of decisive action by governments to limit climate change, average global temperatures could rise by between 2.2 and 4.4°C by the end of the 21st Century.^{* 32}

A 3°C rise in temperature will lead to:³³

- Between 150 and 550 million more people at risk of hunger due to drought and lower crop yields, one to three million more of whom die each year due to malnutrition.
- Up to 170 million more people affected by coastal flooding each year.
- The proportion of the land surface suffering from severe drought at one time will increase from 10 per cent today up to 40 per cent.

A 4°C rise in temperature will lead to:³⁴

- Between a 30 and 50 per cent reduction in water availability in southern Africa.
- Drastic declines in agricultural yields in tropical regions, including 15 to 35 per cent decline in sub-Saharan Africa.
- Between 70 and 80 million more people exposed to malaria in Africa alone.
- Up to 300 million more people affected by coastal flooding each year.
- Disappearance of most glaciers round the world, threatening the dry season water supply of billions of people in Latin America and Asia.

Preventing an increase in global temperatures beyond 2°C is still possible. However, as outlined in Section 1, the UK cannot make its share of the reductions in emissions required to keep the global increase to 2°C, whilst allowing aviation emissions to continue to grow. For there to be any basis to the UK government's rhetoric on limiting climate change and making poverty history, it has to act now to halt the growth in emissions from aviation.

* These models do not include most positive feedbacks in the climate system, where increasing temperatures cause further warming, so temperature increases could be even higher. The IPCC estimates are widely seen as conservative.

Hypothetical example of aviation injustice one

Richard is a 28-year old professional working in the City of London. He gets paid £50,000 a year. In 2007 he has already been on a long-weekend skiing break in the French Alps. Later in the year, he intends to go on weekend breaks to Barcelona and Florence with his girlfriend. He's also due to join a friend's stag weekend in Prague. In June Richard is planning a two-week trip to Mauritius.

The total CO₂ emissions from Richard's flying alone in one year is 4.1 tonnes. This is more than the average Chinese citizen emits from *all activities* in one year; 3.6 tonnes.³⁵

If, more accurately, the extra warming effects of aviation are included, the CO₂ equivalent emissions from Richard's flying are between 8.2 and 16.4 tonnes. In contrast, *the average* UK citizen can be estimated to produce 12.7 tonnes of CO₂eq from *all activities*.³⁶

The effective subsidy Richard receives from not paying tax on fuel and VAT is £830 for all his flights in 2007.

Hypothetical example of aviation injustice two

Jane is a 36-year old middle-manager from Manchester, who earns £35,000 a year. This year Jane is planning to take a main holiday in Slovenia over the summer. She also intends to go on a shopping holiday to New York with some girlfriends. Finally, Jane will probably take one trip to a European city such as Paris, but will wait to see when she can get a good deal.

The total CO₂ emissions from Jane's flying alone in one year is 2.3 tonnes. This does not include the extra warming effects of aviation. Doing so increases the CO₂eq emissions from Jane's flying to between 4.6 and 9.2 tonnes.

The effective subsidy Jane receives from not paying tax on fuel and VAT is £420 for all her flights in 2007.

4. Misallocation of resources

“Climate change presents a unique challenge for economics: it is the greatest and widest-ranging market failure ever seen.”³⁷

- UK Treasury’s Stern Review on the economics of climate change

The Stern review is absolutely right that climate change represents a massive market failure. In such circumstances the government’s job must be to reverse policies that compound this market failure and implement policies that correct it.

So rather than promoting the growth of aviation, the UK government should instead be using its resources to promote the development of a low carbon economy in the UK, assist developing countries in expanding energy supply without increasing greenhouse gas emissions, and tackle global poverty.

Below, we calculate that with less than £10.4 billion the UK could provide cavity wall and loft insulation for every UK household living in fuel poverty (£1.8 billion); provide clean sustainable electricity over ten years to every household in the world currently lacking an electricity connection (£4.6 billion a year); and provide the finance needed to ensure the Millennium Development Goal to halve the proportion of people without access to safe drinking water and sanitation is met in sub-Saharan Africa (£3.4 billion a year).

Of course, if proper taxation was levied on aviation in the UK, the amount of aviation would likely fall, so the tax take would fall as well. The examples below highlight the misallocation in resources of the favourable tax treatment granted to the aviation industry. And assuming that proper taxation was introduced in order to initially halt the growth in aviation emissions, the tax proceeds would still be very high.

4.1 Switching the UK to a low carbon economy

What the UK government could do

It is estimated that 3.7 million households in the UK live in fuel poverty.³⁸ Providing cavity wall insulation for 3.7 million households would cost an estimated £950 million, whilst providing loft insulation would, at current market rates, cost an estimated £850 million; £1.8 billion in total.³⁹ These one-off payments would help tackle fuel poverty, have a significant impact on CO₂ emissions from households and have a positive impact on poor UK household disposable incomes.

These payments are one-off. So, after one year, £1.8 billion would be available for other projects, such as promoting the development of renewable electricity projects like off-shore wind and tidal.

What the UK government actually does

In October 2005, the Government estimated it spends £545 million a year on measures to combat, mitigate and adapt to climate change.⁴⁰ £545 million a year equals £9 for every man, woman and child in the UK. It is 0.1 per cent of government spending, and 0.04 per cent of national income.

The Department for Trade and Industry has a £12.5 million a year fund to provide grants to assist households wishing to install household renewable energy systems such as solar panels and wind turbines. However, demand for grants is far higher than £12.5 million a year, so the DTI has resorted to allocating grants on the first day of every month. The March 2007 grants sold out by 10:15am on 1 March, just 75 minutes after becoming available.⁴¹

£12.5 million is 0.003 per cent of government spending and 0.0006 per cent of UK national income.

4.2 Assist developing countries to access low carbon energy

The UK and other rich countries have a historical responsibility to tackle climate change. One estimate is that the UK is responsible for 6.2 per cent of historical CO₂ emissions.⁴²

Tackling climate change firstly requires rich countries both to make radical cuts in emissions and show that shifting to a low carbon economy is possible. But it also requires rich countries to recognise their historical responsibility and assist developing countries in gaining access to low carbon technology through providing finance and allowing technology transfer to easily take place. Funds from rich countries must be made in addition to aid commitments they already have.

What the UK government could do

It is estimated that 1.6 billion people have no access to electricity, and 2.4 billion people rely on wood, charcoal or dung as their main source of energy for cooking and heating. The result is that two and a half million women and children die each year from indoor pollution caused by cooking fires. It would cost £4.6 billion a year for ten years to provide 1.6 billion people in the world with access to clean sustainable energy.⁴³

For example, in one-year, £1.6 billion could provide 5 million homes in Peru with 50W home solar systems. £1.3 billion could provide 5 million homes in Sri Lanka with 100W wind battery chargers.⁴⁴

What the UK government actually does

In response to a parliamentary question in March 2006 asking what support DfID gives to providing renewable energy projects in the developing world, Minister for International Development Gareth Thomas stated that DfID had spent £3.6 million on research, primarily for energy for rural communities, since 1997. No other bilateral funding appears to have been given.⁴⁵ £3.6 million over ten years equals £360,000 a year, which is less than 1p for every man, woman and child in Britain.

Dying on a jet plane

The UK government, aviation and climate injustice

4.3 Tackling global poverty

What the UK government could do

The Water and Sanitation Program estimate that it would cost £3.4 billion every year until 2015 to meet the water and sanitation Millennium Development Goals in sub-Saharan Africa;⁴⁶ to halve the proportion of people without sustainable access to safe drinking water and sanitation by 2015. As well as meeting the water and sanitation Millennium Development Goal, providing clean water and sanitation is vital to meet other Millennium Development Goals on promoting gender equality, reducing child mortality and combating disease.

What the UK government actually does

The UK Department for International Development say they currently spend £80 - £90 million a year on water and sanitation.⁴⁷ Overall, in 2005, the UK government spent £4.1 billion on overseas aid, through the Department for International Development's bilateral spending and multilateral institutions such as the World Bank and European Commission. At 0.33 per cent of GDP, this was actually a reduction on UK aid in 2004 of 0.36 per cent of GDP*.⁴⁸ In 1970, the UK committed to spending 0.7 per cent of national income on overseas aid, but thirty-seven years later it is still nowhere near implementing its commitment. After ten years of a Labour government, UK aid spending as a proportion of UK national income is still not back to the level it was under the last Labour government: 0.51 per cent in 1978.

Table 2. Possible ways for the UK government to use potential tax revenues from aviation

Activity	Cost
Cavity wall and loft insulation for every household in the UK living in fuel poverty	£1.8 billion
Clean sustainable electricity to every household in the world currently lacking a connection	£4.6 billion a year for ten years
Meet the Millennium Development Goal of halving the proportion of people without safe access to water and sanitation by 2015	£3.4 billion a year until 2015.
Total	£9.8 billion

* The OECD state that UK overseas development aid in 2005 was 0.48 per cent of GDP. However, this includes one off debt relief payments for Nigeria and Iraq, which should not be counted as official aid. The actual aid given by UK taxpayers was 0.33 per cent of GDP in 2005.

5. Current measures to tackle aviation emissions

“Air flights are responsible for about 2 per cent of CO₂ emissions, 3 per cent of CO₂ equivalent. If we fly more we have to do less of something else. That is why we are implementing the Emissions Trading Scheme, where more emissions from flying will be offset by cuts elsewhere.”⁴⁹*

- David Miliband, Secretary of State for the Environment

“Under current proposals [to include aviation within the European Emissions Trading Scheme] the impact on airfares is projected to be relatively minor – perhaps raising fares by only £3.10 for a return short haul flight. Meanwhile, unless airlines are forced to buy their emissions permits through auction, they are expected to earn windfall profits – perhaps between £2.4 billion and £2.7 billion.”⁵⁰

- House of Commons Environmental Audit Committee

The aviation industry and UK government argue that aviation emissions are being tackled by being included in the European Union Emissions Trading Scheme (ETS). The European Commission is currently planning for aviation to be included in the ETS from 2011/2012. By 2012, aviation emissions will have grown by 30 per cent. However, the Commission has also predicted that including aviation will only increase prices for air travel by between €1.80 (£1.20) and €9 (£6) on a return ticket,⁵¹ which will have little impact on the growth in aviation. By 2012, a €9 increase in fares may well be more than offset by the continuing trend of declining air fares (currently 1.5 per cent a year).

In addition, the ETS only addresses CO₂ emissions, so does not cover the other warming effects of aviation, currently estimated to be 2 to 4 times greater than CO₂ alone. This means that the net effect of including aviation in the emissions trading scheme will be to *increase* the extent of human-induced climate change. Caroline Lucas MEP states: “As aviation is likely to be a net buyer of permits, ground-level emissions will be replaced by emissions with at least twice the climatic impact.”⁵²

For example, to cover a growth in emissions of 100,000 tonnes of CO₂, an airline could buy a permit to emit 100,000 tonnes of CO₂ from a power station. The power station will reduce its CO₂ emissions by 100,000 tonnes whilst the airline will increase its emissions by 100,000 tonnes. However, the actual warming effect caused by the aviation emissions will be 200,000 to 400,000 tonnes of CO₂. In this example, including aviation in the emissions trading scheme would actually lead to *an increase* in global warming of the equivalent of 100,000 to 300,000 tonnes of CO₂.

* David Miliband is being deliberately misleading with his use of statistics. These figures are based on a *global* estimate of CO₂ emissions from aviation in 1992 – 15 years ago. A more up-to-date estimate is that aviation is responsible for between 4 and 9 per cent of the global contribution to climate change. In addition, as explained in Section 1, the UK is responsible for far more aviation than the global average. UK aviation creates more than 6 per cent of UK CO₂ emissions, and 10-15 per cent of the UK's contribution to climate change.

Dying on a jet plane

The UK government, aviation and climate injustice

A further problem is that emission permits for the aviation industry will primarily be granted to companies rather than auctioned. Because airlines will be given permits almost entirely for free, the Institute for Public Policy Research has estimated that this could lead to windfall profits for airlines of up to €4 billion (£2.7 billion),⁵³ while WWF estimates €3.5 billion (£2.4 billion).⁵⁴

In December 2006, Gordon Brown appeared to acknowledge the limitations of current policy by increasing Air Passenger Duty. The Treasury's own calculations were that the increase in Air Passenger Duty would lead to CO₂ reductions of 1.1 million tonnes of CO₂ by 2010 on what would otherwise have happened.⁵⁵ It is currently predicted that UK emissions from aviation will grow by 11.3 million tonnes of CO₂ by 2010.⁵⁶ Before the increase in Air Passenger Duty, CO₂ emissions from UK aviation were set to increase by 35 per cent by 2010. They are now predicted to increase by 31 per cent. Furthermore, as Gordon Brown's pre-Budget report made clear, the government supports increasing rather than limiting aviation growth:

"To avoid the economic consequences of constraining aviation growth, further expansion of UK airport capacity is needed. Heathrow plays a unique role in the UK as a hub airport, and demand for capacity already significantly exceeds supply, leading to less competition, greater congestion, reduced choice and higher prices for passengers. Where there are net benefits from doing so, the Government supports the expansion of UK airports, including at Heathrow, and will identify the necessary mitigation measures to allow relevant limits on air quality and noise to be met."⁵⁷

In response to a Freedom of Information request from the World Development Movement, the government has refused to release the basis of their predictions of the effect of the increase in Air Passenger Duty.⁵⁸ However, on the basis of the Treasury's figures, we can estimate how the Treasury assesses consumer responses to price changes (known as 'price elasticity' in economics jargon) in aviation. Taking the increase in Air Passenger Duty along with the predicted increase in price of aviation from inclusion in the Emissions Trading Scheme, and setting it against the continuing fall in the cost of aviation and predicted emission growth rates, we estimate UK aviation emissions will still increase by 84 per cent by 2020, down from a 92 per cent increase if nothing was done.*

The recent increase in Air Passenger Duty was nowhere near enough to correct for the low tax status of aviation. But Air Passenger Duty is also not the ideal tax to levy. It charges only passengers rather than freight, and takes no account of the efficiency of the plane. Also, taxing passengers rather than emissions means a full flight pays far more tax than a half-empty flight, even though the emissions of the two flights could be the same.

* The price difference in 2020 with and without the increase in Air Passenger Duty and inclusion in the Emissions Trading Scheme is estimated at 12 per cent. Based on the Treasury's figures, price elasticity is estimated to be 0.36. Therefore, there is a 4.3 per cent cut in aviation in 2020 because of increased Air Passenger Duty and the Emissions Trading Scheme, which amounts to a fall of 2.5 million tonnes of CO₂ on what it would have been otherwise. This means a growth in UK aviation emissions of 84 per cent in 2020 rather than 92 per cent.

Ideally, taxes on aviation should be levied directly on emissions. This can be done simply by taxing fuel – which is directly related to emissions. Unfortunately, there are well-publicised international legal problems in introducing taxes on international aviation fuel. However, taxing fuel used by UK domestic flights is entirely legal, as would be fuel taxes on flights within the EU, if all EU member states agreed.

Whilst a direct tax on fuel use in all international flights to and from the UK would be difficult, there are other alternative approaches to taxing aviation apart from Air Passenger Duty. One such possibility is to levy a tax on flights rather than passengers. This would tax freight as well as passengers, and a full aircraft would pay less tax per passenger than a half-full one. A tax on flights could also take account of the fuel efficiency of the aircraft and the distance flown – thereby making the tax more closely related to the actual emissions of the plane. Higher taxes on less fuel efficient planes would give the aviation industry an incentive to develop and use more fuel efficient planes in the future.

If the UK government were genuinely concerned about tackling climate change and making poverty history, it would:

- Commit to, at the least, halt the growth in emissions from aviation;
- Scrap plans for airport expansion;
- Introduce a proper environmental tax on aviation.

Appendices

Appendix 1. Calculation of effective subsidy to the aviation industry

In 2002, the Treasury estimated that fuel duty on aircraft fuel at the same rate as for petrol would raise £5.7 billion from UK aviation.⁵⁹ CO₂ emissions have risen by 20.6 per cent from 2002 by 2005. Given that CO₂ is directly related to fuel use, the effective subsidy will therefore have increased to £6.9 billion in 2005. Extrapolating to 2007, if we assume aviation emissions have continued to grow at 5 per cent a year (a low estimate), then the increase on 2002 levels is 32.9 per cent; so £7.6 billion.

The effective subsidy UK aviation receives from not paying tax on fuel use will be £7.6 billion in 2007.

Sewill calculated in 2003 that the revenue raised from imposing VAT on all flights leaving Britain would be £4 billion a year, on 2002 data. VAT payable depends on two factors: the growth in passenger numbers and the fall in price.

Passenger numbers at UK airports in 2002 were 188.9 million.⁶⁰ By 2005, this figure had grown to 228.4 million.⁶¹ This is an increase of 20.9 per cent from 2002 to 2005. Assuming that passenger numbers have continued to grow at around 6 per cent a year, in 2007 passenger numbers will be 256.6 million; an increase of 35.8 per cent on 2002 levels.

However, this increase has to be set against the fall in prices, estimated to be 1.5 per cent a year over the medium term. Calculating this gives an estimate of an effective subsidy of £5 billion in 2007.

The effective subsidy UK aviation receives from not paying VAT will be £5 billion in 2007.

These effective subsidies have to be set against what the government collects in Air Passenger Duty. In 2002, APD brought in £0.9 billion a year. Applying the increases in passenger numbers raises this to £1.2 billion in 2007. The doubling of APD in February 2007 is predicted to increase the APD tax take by £1 billion, raising the figure to £2.2 billion.

So, from taxation, the subsidy to the UK airline industry is:

Fuel tax:	£7.6 billion
VAT:	£5.0 billion
APD:	- £2.2 billion

= £10.4 billion, an increase on the figure of £9.2 billion currently widely quoted and accepted. The increase in APD in 2007 has been more than wiped out by the growth in aviation in recent years.

Appendix 2. Support to the aviation industry from UK ECGD

The Export Credit Guarantee Department insure the exports of UK companies. The ECGD's goals include "to ensure its activities accord with other Government objectives, including those on sustainable development, human rights, good governance and trade".⁶²

The ECGD is a heavy promoter of aviation, primarily through insuring the export of Airbus aircraft.

Table 3. ECGD guarantees issued to aviation in 2005-06⁶³

Country	Exporter	Buyer	Project	ECGD Maximum Liability
Austria	Airbus S.A.S.	Austrian Airlines	Airbus Aircraft	£10,264,368
Azerbaijan	Airbus S.A.S.	Azerbaijan Airlines	Airbus Aircraft	£14,546,293
Chile	Airbus S.A.S.	Lan Airlines	Airbus Aircraft	£11,523,611
China	Airbus S.A.S.	China Eastern Airlines	Airbus Aircraft	£17,299,562
China	Airbus S.A.S.	China Southern Airlines	Airbus Aircraft	£96,087,797
Czech Rep.	Airbus S.A.S.	Czech Airlines	Airbus Aircraft	£4,809,503
El Salvador	Airbus S.A.S.	Taca International Airlines	Airbus Aircraft	£13,373,155
Israel	Rolls-Royce	El Al Israel Airlines Limited	Engine	£10,024,182
Kenya	Rolls-Royce	Kenya Airways	Engines	£9,352,076
Korea, Rep.	Airbus S.A.S.	Asiana Airlines	Airbus Aircraft	£36,152,861
Malaysia	Airbus S.A.S.	Air Asia	Airbus Aircraft	£23,503,264
Morocco	Airbus S.A.S.	Royal Air Maroc	Airbus Aircraft	£5,573,011
Netherlands	Airbus S.A.S.	KLM	Airbus Aircraft	£35,513,458
Netherlands	Airbus S.A.S.	Aercap Aviation Solutions Bv	Airbus Aircraft	£58,436,380
New Zealand	Rolls Royce	Air New Zealand	Engines	£23,400,930
Philippines	Airbus S.A.S.	Cebu Pacific Air	Airbus Aircraft	£13,791,796
Qatar	Airbus S.A.S.	State of Qatar Airways	Airbus Aircraft	£54,731,461
Taiwan	Airbus S.A.S.	China Airlines	Airbus Aircraft	£41,958,197
Taiwan	Airbus S.A.S.	Eva Airways	Airbus Aircraft	£29,105,538
Thailand	Airbus S.A.S.	Thai Airways International Public Company	Airbus Aircraft	£178,354,787
Turkey	Airbus S.A.S.	Turkish Airlines	Airbus Aircraft	£27,298,948
United States	Airbus S.A.S.	Boullioun Aircraft Holding Company Inc.	Airbus Aircraft	£76,010,111
United States	Airbus S.A.S.	International Lease Finance Corporation	Airbus Aircraft	£251,264,611

Aviation accounts for 23 of 48 guarantees given by ECGD in 2005/06. Financially, 71 per cent of ECGDs new liability through guarantees issued in 2005/06 was to the aviation industry. This support is to the exports of two companies: Airbus and Rolls Royce. Airbus alone accounts for 68 per cent of ECGD liability in guarantees publicly listed in 2005/06.

Dying on a jet plane

The UK government, aviation and climate injustice

Appendix 3. Calculations for hypothetical examples⁶⁴

Richard

CO₂ emissions from Richard's flying:

Alps: 0.4 tonnes

Barcelona: 0.4 tonnes

Florence: 0.4 tonnes

Prague: 0.4 tonnes

Mauritius: 2.5 tonnes

= 4.1 tonnes of CO₂

CO₂eq emissions from Richard's flying:

Alps: 0.8-1.6 tonnes

Barcelona: 0.8-1.6 tonnes

Florence: 0.8-1.6 tonnes

Prague: 0.8-1.6 tonnes

Mauritius: 5-10 tonnes

= 8.2 to 16.4 tonnes of CO₂eq

Effective subsidy for Richard:

Alps: £87

Barcelona: £97

Florence: £99

Prague: £79

Mauritius: £552

= £910

- £80 (Air Passenger Duty of £10 for each European flight and £40 for the Mauritius flight).

= £830 effective subsidy

Jane

CO₂ emissions from Jane's flying:

New York: 1.5 tonnes

Slovenia: 0.5 tonnes

Paris: 0.3 tonnes

= 2.3 tonnes of CO₂

CO₂eq emissions from Jane's flying:

New York: 3 – 6 tonnes

Slovenia: 1 – 2 tonnes

Paris: 0.6 – 1.2 tonnes

= 4.6 – 9.2 tonnes of CO₂eq

Effective subsidy for Jane:

New York: £312

Slovenia: £106

Paris: £62

= £480

- £60 (Air Passenger Duty of £10 for each European flight and £40 for the New York flight).

= £420 effective subsidy

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