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Emissions invisible

The impact of excluding international aviation from the proposed climate bill

World Development Movement

Contents

World Development Movement, 66 Offley Road, London, SW9 0LS, UK
+44 (0)20 7820 4900 www.wdm.org.uk wdm@wdm.org.uk

Summary

The government's draft climate bill does not currently include most greenhouse gas emissions from UK aviation. In order to effectively cut the UK's contribution to climate change, aviation must be fully included within the climate bill.

Aviation is a large part of the UK's contribution to climate change:

- Aviation currently accounts for 12.4 per cent of the UK's contribution to climate change
- This is more than cars (9.3 per cent), home heating (11.1 per cent) or manufacturing and construction (11.3 per cent).

The climate bill will only result in a small reduction in the UK's contribution to climate change:

- The climate bill targets a reduction in UK CO_2 emissions of 60 per cent by 2050 on 1990 levels. This does not include most aviation emissions
- The UK government is currently supporting a massive expansion in UK aviation
- By 2050, the climate bill as currently drafted will only result in a 17 per cent reduction in the UK's contribution to climate change on 2005 levels (24 per cent reduction on 1990 levels).

The climate bill expects reductions in emissions from all other sectors of the UK economy, but allows aviation to continue increasing its emissions:

- Aviation will account for almost half the UK's contribution to climate change by 2050
- Aviation's contribution to climate change will have *increased* by 213 per cent by 2050
- Road transport's contribution to climate change will have *decreased* by 56 per cent by 2050
- The richest 18 per cent of the UK population are responsible for 54 per cent of flights. It is unjust to exclude aviation from being required to cut emissions while requiring emissions reductions in other sectors.

Excluding aviation from the climate bill does not make scientific, economic, social or political sense:

- Scientific evidence points towards the urgency of reducing emissions in the next decade so planning to increase aviation emissions is foolish
- There is no economic justification for requiring other sectors to reduce emissions while encouraging an increase in aviation emissions
- Aviation is used predominantly by more wealthy people in the UK. Curbing the increase in aviation emissions could be more socially progressive than other actions
- Delaying action until the aviation sector is larger and employs more people will only make future political decisions harder

1. Introduction

Climate change is an urgent and real threat to people throughout the world. The poorest communities in the world will be those affected first and worst. For instance, unless climate change is limited, rising temperatures could lead to the disappearance of glaciers on which one-sixth of the world's population depend for dry season water supplies.[1] Millions of people could be flooded every year due to sea-level rise by the 2080s.[2]

But it is the richest countries and communities which make the greatest contribution to climate change. The UK emits 9.6 tonnes of CO_2 per person per year, in comparison with 3.6 tonnes in China, 1 tonne in India, and 0.2 tonnes in Zambia.[3] Drax power station in the UK emits more CO_2 in one year than Uganda, Kenya, Tanzania, Malawi, Zambia and Mozambique combined.[4] It is the richest countries that must therefore take the lead in combating climate change.

In March 2007, the UK government published a draft climate bill which aims to set legally binding targets for reducing UK CO_2 emissions by 26-32 per cent by 2020 and 60 per cent by 2050, on 1990 levels.[5] Although these targets are now out of date, the draft bill is a welcome statement of intent by the UK government, setting in place a framework that could ultimately shift the UK to becoming a low carbon economy.

However, in addition to the weak targets, the draft bill contains another critical flaw; it does not include all the ways in which the UK contributes to climate change. The targets for emissions reduction do not include:

- CO_2 emissions from the UK's share of international aviation and shipping.
- Non-CO_2 emissions from international and domestic aviation.

The bill states that these emissions will only be included if international agreement is reached. This report demonstrates how this omission undermines the effectiveness of the bill.

In Chapter 2, WDM shows how aviation already makes up a significant part of UK CO_2 emissions and, more importantly, an even more significant proportion of the UK's contribution to climate change; more than UK cars and UK manufacturing.

In Chapter 3, WDM demonstrates how the combination of planned aviation expansion in the UK and excluding international aviation from the climate bill from the outset will massively reduce the impact of the bill. Even if by 2050 the government achieves its 60 per cent CO_2 emissions cut target on 1990 levels, the UK's actual contribution to climate change will have been reduced by just 24 per cent on 1990 levels. The reduction in the UK's contribution to climate change on 2005 levels will be 17 per cent.

In Chapter 4, WDM explains how the government's arguments for excluding international aviation from the bill do not stack up and how it makes no scientific, economic, social or political sense to create this loophole.

WDM concludes by calling on the government to include international aviation emissions in the bill's reduction targets from the outset so that this new legislation can be an effective tool in ensuring the UK plays its part in combating climate change.

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2. Aviation is already a major contributor to climate change

2.1 Calculating emissions

The UK government does not include greenhouse gas emissions from international transport within its official reporting and targets concerning the UK's contribution to climate change. This decision stems from the fact that the Kyoto protocol does not include international transport emissions. However, just because there is no global political agreement on how to count such emissions, this does not mean they make no contribution to climate change.

The UK government does report on international aviation and shipping as a memo item in its reporting on carbon dioxide emissions. In 2005, they were reported as producing 40.9 million tonnes of CO_2 – 6.8 per cent of the UK's total CO_2 emissions.[6] Of this, international aviation accounts for 35.0 million tonnes and international shipping 5.9 million tonnes.

However, CO_2 is not the only determinant of the UK's contribution to climate change. The UK government also reports on emissions of five other greenhouse gases: methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. The contribution of these greenhouse gases is expressed in terms of the equivalent amount of carbon dioxide (CO_2eq) which would have produced the same warming.

Again, this does not cover all the non-CO_2 contributors to climate change generated by the UK. Emissions of nitric oxide, nitrogen dioxide and water vapour by aviation at altitude also contribute to global warming. Estimates of the extent of the extra warming generated by these vary. In 1999, the Intergovernmental Panel on Climate Change (IPCC) calculated that up until 1992, the warming caused by aviation was 2.7 times that of the warming of its CO_2 emissions alone. It went on to predict that between 1992 and 2050, the warming caused by aviation would be 2 to 4 times larger than aviation's CO_2 emissions alone.[7]

The UK government accepts that aviation makes a greater contribution to climate change than CO_2 emissions alone. The Treasury's pre-budget report in 2006 stated that aviation makes a contribution to climate change 2 to 4 times greater than CO_2 emissions.[8] The Department for Transport uses a figure of 2.5 times more warming from UK aviation than CO_2 alone.[9] Given that this is a specific figure accepted by the UK government, this report multiplies aviation CO_2 emissions by 2.5 to give the CO_2 equivalent emissions of UK aviation.

The UK government reports that in 2005, the latest year for which full figures are available, the UK's contribution to climate change was the equivalent of emitting 656.2 million tonnes of CO_2 (throughout this report, this is expressed as CO_2eq).[10] However, this figure does not include CO_2 emissions from the UK's share of international aviation

and shipping, or the non-CO_2 emissions of domestic and international aviation. These 'invisible emissions' totaled 97 million tonnes of CO_2eq in 2005.[11] The UK government therefore ignores 12.9 per cent of the UK's contribution to climate change in its official figures and targets (see Table 1).

Table 1: Official and actual UK contribution to climate change in 2005[12]

	UK CO_2eq emissions in 2005
Official UK government figure	656.2 million tonnes
CO_2 emissions from international aviation and shipping	40.9 million tonnes
Extra warming from domestic and international aviation emissions	56.1 million tonnes
Total UK emissions	**753.2 million tonnes**

2.2 Comparing aviation with other sectors of the UK economy

The UK government and the aviation industry both attempt to suggest that aviation makes-up a tiny proportion of the UK's contribution to climate change. David Miliband, Secretary of State for the Environment, has said: *"Air flights are responsible for about 2 per cent of CO_2 emissions, 3 per cent of CO_2 equivalent."*[13] Ryanair have paid for adverts in the UK press asserting that *"aviation accounts for 2 per cent of CO_2 emissions"*.

The intention of such rhetoric from the government and aviation industry is to deflect attention away from the need for government action to limit aviation's contribution to climate change. The figures used by the government and industry are misleading. Aviation was estimated to be responsible for 2 per cent of *global* CO_2 emissions in *1992*. A more recent estimate which includes all of aviation's contribution to global warming, is that aviation is responsible for between 4 and 9 per cent of the global contribution to climate change.[14]

As regards UK government policy, it is the proportion of *UK emissions* from aviation which is important. UK international and domestic aviation emitted 37.4 million tonnes of CO_2 in 2005.[15] This is 6.3 per cent of the UK's total CO_2 emissions. However, once the multiplier of 2.5 is applied to aviation emissions, and greenhouse gas emissions from other sources are included, aviation is responsible for 12.4 per cent of the UK's contribution to climate change.[16]

UK aviation makes a greater contribution to climate change than UK cars; UK manufacturing and construction; or emissions direct from UK residential buildings[i] (see Table 2). The only sector which makes a greater contribution to climate change than UK aviation is public electricity and heat.

[i] Does not include electricity consumption from the national grid.

Table 2: UK contribution to climate change by sector[17, ii]

Emissions source	Emissions (CO_2eq million tonnes)	Per cent of UK's contribution to climate change
Public electricity and heat	172.3	22.9
Civil aviation[iii]	93.5	12.4
Manufacturing and construction	85.1	11.3
Residential	83.3	11.1
Passenger cars	73.1	9.3
Other road transport	52.3	7.4
Agriculture	49.6	6.6
Energy production	42.1	5.6
Commercial and institutional buildings	23.4	3.1
Waste treatment	20.2	2.7
Industrial processes	13.5	1.8
Civil shipping[iv]	10.1	1.4
Military aviation and shipping	2.8	0.4
Railways[v]	2.0	0.3
Other	29.9	4.0
Total	**753.2**	**100**

3. Excluding aviation undermines the climate bill

3.1 Emissions invisible: CO_2 from international aviation

The UK government's draft climate change bill sets a target of reducing CO_2 emissions by between 26 to 32 per cent on 1990 levels by 2020 and 60 per cent on 1990 levels by 2050.[18] However, the draft bill fails to include CO_2 emissions from international transport or non-CO_2 emissions from aviation or the basket of five other greenhouse gases.

The government is currently supporting a massive expansion in UK 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 aviation 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[vi].[19]

[ii] Non-CO_2 emissions in this table are assigned as follows:
Aviation: 37.4 million tonnes of CO_2 x 2.5 = 93.5 million tonnes of CO_2eq.
Methane: 49.3 million tonnes of CO_2eq. Split 40 per cent to waste treatment (landfill) (19.7 million tonnes), 37 per cent agriculture (18.2 million tonnes), and 23 per cent other (11.3 million tonnes).
Nitrous oxide: 39.6 million tonnes of CO_2eq. Split 68 per cent agriculture (26.9 million tonnes), 14 per cent road transport (5.5 million tonnes), 18 per cent other (7.1 million tonnes).
Hydroflurocarbons, perfluorocarbons and sulphur hexafluoride: 10.7 million tonnes CO_2eq placed in 'other'.
[iii] Domestic and international.
[iv] Domestic and international.
[v] Only diesel – emissions from electric trains are counted under public electricity.
[vi] 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.

Emissions invisible

The impact of excluding international aviation from the climate bill

The Tyndall Centre for Climate Change has predicted that unless the government's policy changes on aviation expansion, CO_2 emissions from UK aviation will have more than doubled by 2030 and trebled by 2050.[20] In Tables 3 and 4 below, we predict how UK CO_2 emissions will change in 2020 and 2050. Assuming that the government does meet its targets as set out in the climate bill, and that aviation emissions grow as predicted by the Tyndall Centre, then:

- By 2020, reported cuts in CO_2 of 26 per cent will in reality only be 18 per cent
- By 2050, the government will say it has cut CO_2 by 60 per cent, but it will actually have been cut by 42 per cent
- By 2020, the UK government will be ignoring 13 per cent of UK CO_2 emissions
- By 2050, the UK government will be ignoring 33 per cent of UK CO_2 emissions
- In 2050, aviation will account for 33.3 per cent of UK CO_2 emissions.

Table 3: Total UK CO_2 emissions (millions of tonnes)

Year	Government targeted CO_2 emissions	Actual CO_2 emissions
1990	589.3	611.7
2005	556.2	597.1
2020	436.1	501.0[vii]
2050	235.7	351.8[viii]

Table 4: Percentage reduction in UK CO_2 emissions

Year	Government targeted CO_2 emission reduction	Actual CO_2 emission reduction
1990	0	0
2005	- 5.6%	- 2.4%
2020	- 26%	- 18%
2050	- 60%	- 42%

Table 5: Predicted emissions from aviation and international shipping

Year	International aviation CO_2 emissions	International shipping CO_2 emissions[ix]	Domestic aviation CO_2 emissions
1990	15.7	6.7	1.3
2005	35.0	5.9	2.4
2020	59.0	5.9	3.8
2050	110.2	5.9	7.0

3.2 Emissions invisible: Non-CO_2 from aviation

The draft climate bill does not include non-CO_2 contributors to climate change. Therefore, the analysis above does not give the true picture of how the UK's contribution to climate change has and will be reduced. The figures below take account of all contributors to climate change, including the multiplier on aviation emissions of 2.5 times the CO_2 alone.

[vii] 436.1 + 5.9 million tonnes of CO_2 from international shipping + 59.0 million tonnes of CO_2 from international aviation.

[viii] 235.7 + 5.9 million tonnes of CO_2 from international shipping + 110.2 million tonnes of CO_2 from international aviation.

[ix] In recent years, there has been no discernable trend in CO_2 emissions from international shipping. We have therefore assumed that this figure will be constant.

The analysis assumes that:

- There are no further cuts in methane, nitrous oxide, hydroflurocarbons, perfluorocarbons and sulphur hexafluoride beyond those which have occurred from 1990 to 2005[x]
- CO_2 emissions reported by the UK government are cut as targeted
- Aviation emissions grow as outlined above, and international shipping emissions remain constant.[xi]

Table 6: Actual reduction in UK's contribution to climate change, 1990-2050

Year	Government targeted CO_2eq emissions	Actual CO_2eq emissions
1990	775.2	823.2[xii]
2005	656.2	753.2[xiii]
2020	535.7[xiv]	694.8[xv]
2050	335.3[xvi]	627.2[xvii]

The UK government is only recognising a portion of the UK's contribution to climate change in its targets for a 26 per cent cut in CO_2 emissions by 2020 and 60 per cent cut by 2050. The estimate above is that even if the government achieves these targets for reducing CO_2 from some sources, the UK's actual contribution to climate change will have fallen by 16 per cent by 2020 on 1990 levels and by 24 per cent by 2050. On 2005 levels, there will be cuts of just 8 per cent by 2020 and 17 per cent by 2050.

By 2050, the government will be reporting CO_2eq emissions of 335.7 million tonnes. In reality, there will be an additional 291.9 million tonnes of emissions from international aviation and shipping, and extra warming from non-CO_2 emissions from domestic aviation. The government will be ignoring *almost half* of the UK's contribution to climate change as aviation will account for 46.7 per cent of this contribution in 2050. The Department for Transport has gone so far as to predict that under current policies, aviation will account for one-third of the UK's contribution to climate change by 2050 although this is based on different assumptions to the Tyndall Centre for Climate Change relating to, for example, the potential for improvements in fuel efficiency of aircraft.[21]

The government reports that the annual contribution to climate change of the UK is 656.2 million tonnes of CO_2eq (when in fact it is more like 753.2 million tonnes), and it acknowledges that this needs to be drastically reduced. However, under the terms of

[x] This may be a slightly harsh prediction. Over 2002 to 2005, CO_2eq emissions from the basket of five greenhouse gases fell by 10.3 per cent. However, the government does not include targets for the basket of five greenhouse gases in its draft climate change bill, and so no evaluation can be made of future falls under the terms of the bill.
[xi] In recent years, there has been no discernable trend in CO_2 emissions from international shipping. We have therefore assumed that this figure will be constant.
[xii] 775.2 + 6.7 million tonnes of CO_2 from international shipping, 39.3 million tonnes of CO_2eq from international aviation and 2 million tonnes of CO_2eq from radiative forcing of domestic aviation.
[xiii] 656.2 + 5.9 million tonnes of CO_2 from international shipping, 87.5 million tonnes of CO_2eq from international aviation and 3.6 million tonnes of CO_2eq from radiative forcing of domestic aviation.
[xiv] 436.1 + 99.6 million tonnes of CO_2eq from basket of five greenhouse gases
[xv] 535.7 + 5.9 million tonnes of CO_2 from international shipping, 147.5 million tonnes of CO_2eq from international aviation and 5.7 million tonnes of CO_2eq from radiative forcing of domestic aviation.
[xvi] 235.7 + 99.6 million tonnes of CO_2eq from basket of five greenhouse gases
[xvii] 335.3 + 5.9 million tonnes of CO_2 from international shipping, 275.5 million tonnes of CO_2eq from international aviation and 10.5 million tonnes of CO_2eq from radiative forcing of domestic aviation.

the draft climate bill and current government policies the UK will still be responsible for 627.2 million tonnes of CO_2eq in 2050.

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4. Excluding aviation from the bill makes no sense

4.1 The government's argument for excluding aviation is weak

In a letter on 13 March 2007, Secretary of State for the Environment David Miliband wrote to UK NGOs including the World Development Movement, saying:

"We are very mindful of the need to consider emissions arising from international aviation and shipping. Discussions on including international aviation and shipping in a post-2012 regime under the Kyoto protocol have begun and we are active in lobbying for support within the international community (of course the relatively small domestic aviation emissions are already included). The Bill will allow for the Government to include such emissions in its targets and budgets once such agreement is reached. I think that it is right to work through the calculation and accounting issues on an international basis before putting this into law." [22]

Behind this justification lie several potential arguments:

- First, that we should remain in line with the Kyoto Protocol until or unless international aviation is included.
- Second, that there has not yet been a reasonable methodology designed to account for each country's share of international aviation emissions.
- Third, that the UK does not want to prejudice negotiations on an international system of accounting for aviation emissions by adopting its own system.
- Fourth, that if at some point in the future an international system is developed that differs from the UK's, this will require a change to the climate bill.
- Fifth, that it is less politically palatable for the UK to 'go it alone' on accounting for, and then reducing its international aviation emissions.

The weight of recent evidence on climate change suggests that the Kyoto Protocol, which after all is ten years old, has to be seen as a minimum on which to build rather than as defining the maximum limits of action. Governments often see international treaties as setting a baseline rather than a top line for policy and there is no reason to view Kyoto as any different. A comprehensive approach to addressing climate change requires the UK's share of aviation emissions to be identified, monitored and reduced. Including these emissions in the proposed climate bill is an important first step.

Logical approaches to attributing aviation emissions to particular countries do exist and WDM argues it makes sense to use one of them now and take the necessary action to curb emissions growth. The UK government already uses a method of measuring CO_2 emissions from international aviation and shipping; calculating the use of fuels at UK airports and seaports. It can quite simply include these emissions formally within its targets and reporting in the climate bill.

Furthermore, including international transport emissions within the bill will show the international leadership required to get an international agreement on including all

transport emissions within a post-Kyoto regime. Whilst the UK holds less than 1 per cent of the world's population, one-in-five flights globally either departs or arrives at a UK airport.[23] As a major player in the international aviation industry, UK leadership is vital in securing action on international transport emissions.

The idea that by having an existing system the UK would somehow undermine the negotiations is a little far-fetched. Governments often have pre-established policies and positions going into international negotiations and the fact that the UK already had a system would not prevent the government from agreeing to something different.

The exact approach adopted in the climate bill could be modified to fit any future post-Kyoto agreement that included aviation. In contrast, waiting until 2012 or beyond for such an international deal to be done is a high risk strategy given the continuing growth of the aviation sector. 'Going it alone', choosing a system now and taking action based on that system, is likely to be easier and more politically palatable than having no system until some point in the future when much more drastic action will be required (see section 4.5).

4.2 Excluding aviation does not make scientific sense

The scientific advice in the recent IPCC reports has only served to emphasise the urgency of tackling climate change and the need for action to reduce emissions, particularly over the next decade, if we are to avoid the worst impacts.

The UK government has rightly stated that its goal must be to prevent what has become known as 'dangerous climate change'; in other words preventing average global temperatures from rising more than 2°C on pre-industrial levels.[24] This 2°C threshold is widely regarded as a point beyond which the impacts of climate change, particularly on the poorest people in the world, will become truly catastrophic.

The objective of staying within the 2°C threshold should be clearly stated and made a central part of the bill. The rest of the bill should be constructed as the framework for making the UK's contribution to achieving this overarching objective and there is no way this can be achieved without including the CO_2 emissions from international aviation and the non-CO_2 emissions from aviation which contribute to global warming – because these are rapidly increasing. Delaying action on aviation is to ignore what the science is telling us.

As mentioned in the introduction, it is fair to point towards ongoing debate over the extent of non-CO_2 emissions from aviation on warming; current estimates put them at between 2 and 4 times the warming of CO_2 alone. But the response of the government to scientific uncertainty should not be to ignore the issue but should be to ensure emissions are covered as accurately as possible, and allow flexibility to recalculate past, present and future emissions on the basis of greater accuracy in future science.

The UK government, through the Department for Transport uses a specific warming factor of 2.5, and this would seem a reasonable starting point.

4.3 Excluding aviation does not make economic sense

Whilst the UK's draft climate change bill will have little effect on the UK's contribution to climate change, it will have a large effect on the relative contributions to climate

change of different sectors of the UK economy. As aviation emissions expand rapidly, other sectors of the economy will be making large cuts in emissions. Table 7 below estimates how the 627.6 million tonnes of CO_2eq produced by the UK in 2050 will be split between sectors:

- It assumes that as under current government policy, both domestic and international aviation are allowed to continue to grow
- Emissions from the basket of five non-CO_2 greenhouse gases are constant from 2005
- CO_2 emission reductions are split equally between all sectors other than aviation.

Table 7. Emission reductions by sector, 2005-2050[25, xviii]

Emissions source	Emissions (CO_2eq million tonnes)	Percentage change on 2005	Per cent of UK's contribution to climate change
Civil aviation[xix]	293.0	+213%	46.7
Public electricity and heat	71.0	-60%	11.3
Agriculture	47.0	-5%	7.5
Manufacturing and construction	35.1	-60%	5.6
Residential	34.3	-60%	5.5
Passenger cars	32.0	-56%	5.1
Other road transport	22.9	-56%	3.7
Waste treatment	19.9	-1%	3.2
Energy production	17.4	-60%	2.8
Commercial and institutional buildings	9.6	-60%	1.5
Civil shipping[xx]	7.6	-25%	1.2
Industrial processes	5.6	-60%	0.9
Military aviation and shipping	1.2	-57%	0.2
Railways[xxi]	0.8	-60%	0.1
Other	29.8	0	4.8
Total	**627.2**	**-17%**	**100**

There is no sound economic justification for facilitating a massive increase in aviation emissions while at the same time trying to reduce emissions in other sectors of the UK economy.

4.4 Excluding aviation does not make social sense

As just described, excluding international aviation and shipping related CO_2 and non-CO_2 emissions from the Bill means that other sectors in the UK economy will have to shoulder the responsibility for emissions reductions. Much obviously depends on how emissions reductions are achieved but it is worth considering the potential social justice implications of excluding aviation (at least in the short to medium term) while requiring emissions reductions in other sectors. 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]

[xviii] CO_2 emissions are reduced by 61 per cent rather than 60 per cent, to take account of the increase in CO_2 emissions from domestic aviation.
[xix] Domestic and international.
[xx] Domestic and international.
[xxi] Only diesel; electric counted under public electricity.

The growth in flying over the past few years has been due to richer 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.[27] Compared to greenhouse gas emissions reduction in other sectors, it may be that curbing growth in aviation emissions is one of the more socially progressive actions the government could take.

4.5 Excluding aviation does not make political sense

This report demonstrates that we must address emissions from aviation if we hope to tackle climate change. Right now, the government has the choice to curb the growth in the aviation industry. Delaying action on aviation will only make it more difficult both politically and practically as the UK will be in the position of needing to reduce emissions from an expanded and even more economically (and politically) significant aviation industry. Proposing measures now that will mean jobs are created in other sectors but that growth in aviation is halted is surely better, and politically more palatable, than having to propose measures in future that will require cut backs, and potential job losses, in aviation.

This government's strategy is like planning to binge-eat and become addicted to fast-food knowing full well that a difficult crash-diet will be needed in future. Surely it is better to start consuming in moderation now.

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5. What the UK government should do

The UK government has to get real about the UK's contribution to climate change in order to devise the most effective policies for reducing the UK's emissions. If aviation emissions remain invisible, they will continue to grow while other sectors of the economy are set on a reduction path. Ultimately, there will be negligible cuts in the UK's actual contribution to climate change – and the battle to avoid some of the worst effects of climate change will be lost.

The UK government has to include within the climate bill:

- CO_2 emissions from international transport as currently reported by the UK government
- All non-CO_2 contributors to climate change, including the extra warming caused by aviation emissions.

To halt the growth in aviation's contribution to climate change, the UK government has to:

- Scrap plans for airport expansion
- Introduce a proper environmental tax on aviation.

For more on the injustice of aviation's contribution to climate change, see:
'Dying on a jet plane: The UK government, aviation and climate injustice'
http://www.wdm.org.uk/resources/reports/climate/dyingonajetplane19032007.pdf

Appendix

Table 8. Growth rate of UK CO_2 emissions from aviation 1997 - 2005[28]

Year	Growth rate of UK CO_2 emissions from aviation
1997	9.8%
1998	9.5%
1999	6.8%
2000	10.1%
2001	0%
2002	- 2.3%
2003	2.4%
2004	10.3%
2005	5.4%

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