

# AIRPORT EXPANSION DOESN'T MAKE CLIMATE SENSE

**#NONENWRUNWAYS**

**THERE IS ANOTHER WAY**

**#CLIMATE  
SENSE**



**Green Party**  
for the common good

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This report was written and researched by Josephine Tucker and edited by Tom Sharman.

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# EXECUTIVE SUMMARY

Airport expansion has been a political hot potato for years. Most of the time discussion centres on whether Heathrow or Gatwick (or indeed 'Boris island') should be the site for new runways and additional flights. The Airports Commission – set up to depoliticise UK aviation decisions – is a good example: the question boiled down to the best site for expansion, rather than fundamentally questioning the need or desirability of airport expansion anywhere.

Yet that fundamental question is crucial and we are unafraid to ask it. The primary test should always be whether more runways and bigger airports in the South-East of England are compatible with our climate change obligations.

We are clear: the evidence shows that airport expansion does not make climate sense. We cannot simultaneously increase UK emissions from aviation and make our fair contribution to restricting global warming to as far below 2 degrees Celsius as possible. With crucial negotiations on a new international deal on climate change in Paris at the end of the year the UK Government should be leading by example. Instead it is pursuing policies that require ever more fossil fuels to be burnt and ever more damage done to our shared environment.

The Conservative Government's likely aviation policy flies in the face of its own legally-binding climate change commitments. We know these are inadequate but they are at least a start. Yet in aviation, as for so many other policy areas, David Cameron and George Osborne have ripped up their previous green credentials and have replaced good intentions with climate change denial.

The current path will not take us to the promised emissions cuts of 80% of 1990 levels by 2050, let alone a 50% cut by 2025. Much of the so-called 'progress' to date is largely a side-effect of recession rather than a shift to a low-carbon economy. The independent Committee on Climate Change has already voiced significant concerns about the slow pace of transformation.

Airport expansion has the potential to disrupt that slow progress and put it into reverse. The Committee on Climate Change has calculated that aviation emissions must be cut to their 2005 level by 2050. Yet flights are projected to grow by 60% in the same period. This optimistically banks on promised improvements in plane efficiency rather than taking any serious measures to curb demand for air travel.

There are real alternatives to new runways that a climate-sensitive government would pursue: many short-haul flights could be eliminated by moving passengers onto existing rail services. The tax system could be changed so that those who fly most frequently pay an increasing amount for the additional pollution they are responsible for.

The Airports Commission accepts that its recommended option of a third runway at Heathrow will generate an additional 244.6 million tonnes of CO<sub>2</sub> emissions over the 60 year appraisal period (2026–2086). It assumes that growth in Heathrow emissions can be counterbalanced by cuts in UK aviation emissions elsewhere. With the number of flights at Heathrow forecast to increase from 470,000 to 740,000 a year that looks like little more than wishful thinking.

If the aviation sector misses its emissions target so does the UK as a whole. Runaway climate change would become an ever more real prospect.

You wouldn't know it from listening to the airport expansion lobby but none of London's counterparts have plans to expand to such a degree. London is served by five airports; most European cities have just one or two each.

More significantly Heathrow and Gatwick combined already have more 'declared hourly capacity' - more planes can take off and land per hour – than any other European city. The idea that London is somehow poorly served compared to others does not stack up against the evidence.

# INTRODUCTION:

## WHAT ARE THE UK'S CLIMATE CHANGE COMMITMENTS?

Under the Climate Change Act 2008, the UK is committed to reducing carbon emissions by at least 80% of 1990 levels by 2050.<sup>1</sup>

The Act also requires the Government to set legally-binding carbon budgets for each five year period leading to 2050. (In spite of the name these capture all six greenhouse gas emissions<sup>2</sup> included in the international Kyoto agreement but all are converted into equivalent tonnes of carbon dioxide.)

Carbon budgets are set with a view to charting a manageable, cost-effective path towards meeting the 2050 target. They must take into account a range of factors including: scientific knowledge about climate change; technology availability; economic and fiscal impacts; social and poverty impacts; impacts on energy supply; international and European circumstances.<sup>3</sup>

The first carbon budgets were brought into law in the 2009 budget. This budget also established a legally binding interim target of a 34% reduction in emissions by 2020 compared with 1990 levels.<sup>4</sup>

So far, carbon budgets for the period to 2027 have been put into law. These commit the UK to a 35% reduction in emissions (compared with 1990 levels) by 2020 and a 50% reduction by 2025 (see table 1 below for details).

This is also in line with a binding EU-wide target, agreed in 2014 by EU Heads of State, to reduce greenhouse gas emissions by 40% on 1990 levels by 2030.<sup>5</sup>

The main target of the Climate Change Act (an 80% reduction in emissions on 1990 levels by 2050) cannot be changed without repealing the Act<sup>6</sup>, but the interim carbon budgets can be legally amended if there have been “significant changes affecting the basis on which the decision was made” since targets were set.<sup>7</sup>

In 1990 the UK emitted approximately 779.9 Megatonnes (Mt) of CO<sub>2</sub> equivalent (CO<sub>2</sub>e). Meeting legally binding targets would therefore mean that annual emissions must fall to approximately:

- 515 MtCO<sub>2</sub>e per year by 2020; and
- 160 MtCO<sub>2</sub>e per year by 2050.

However these figures are subject to change as estimates of 1990 emissions are revised each year.

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1 Committee on Climate Change website, Carbon budgets and targets:

<https://www.theccc.org.uk/tackling-climate-change/reducing-carbon-emissions/carbon-budgets-and-targets/>

2 Carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride.

3 Climate Change Act 2008: 10. Matters to be taken into account in connection with carbon budgets:

<http://www.legislation.gov.uk/ukpga/2008/27/section/10>

4 HM Treasury, Budget 2009:

[http://webarchive.nationalarchives.gov.uk/20100407010852/http://www.hm-treasury.gov.uk/d/bud09\\_complereport\\_2520.pdf](http://webarchive.nationalarchives.gov.uk/20100407010852/http://www.hm-treasury.gov.uk/d/bud09_complereport_2520.pdf)

5 European Commission press release, 24 October 2014:

[http://ec.europa.eu/clima/news/articles/news\\_2014102401\\_en.htm](http://ec.europa.eu/clima/news/articles/news_2014102401_en.htm)

6 The Carbon Brief, Can the Government legally change the fourth carbon budget, 9 December 2013:

[http://www.carbonbrief.org/blog/2013/12/can-the-government-legally-change-the-fourth-carbon-budget-\(1\)](http://www.carbonbrief.org/blog/2013/12/can-the-government-legally-change-the-fourth-carbon-budget-(1))

7 Climate Change Act 2008: 21. Alteration of carbon budgets:

<http://www.legislation.gov.uk/ukpga/2008/27/section/21>

## The UK's carbon budgets

Carbon budgets from 2008 to 2027 are as follows:<sup>8,9</sup>

**Table 1**

		Carbon budget level (totals for budget periods) (Mt CO <sub>2</sub> e)	Equivalent average annual emissions (Mt CO <sub>2</sub> e)	% reduction below 1990
<b>2008-12</b>	(1st budget)	3,018	603.6	23%
<b>2013-17</b>	(2nd budget)	2,782	556.4	29%
<b>2018-2022</b>	(3rd budget)	2,544	508.8	35% by 2020
<b>2023-2027</b>	(4th budget)	1,950	390.0	50% by 2025

The 4<sup>th</sup> carbon budget is considerably more ambitious than the first 3 carbon budgets, and will require more of a step change to a lower carbon economy.

The 4<sup>th</sup> carbon budget (for the period 2023-2027) was reviewed in 2014 and was left unchanged,<sup>10</sup> in spite of speculation that George Osborne would seek to water it down to allow new gas projects.<sup>11</sup> The review was intended to consider whether the UK's rate of emissions cuts was in line with EU action on climate change.

The Committee on Climate Change assessed whether there had been significant changes which would justify a change in the budget, and concluded that there had not. Ed Davey, then Energy and Climate Change Secretary, stated that "it is clear that the evidence does not support amending the budget".<sup>12</sup>

The 2015 Conservative Party manifesto committed to "meet our climate change commitments" and "continue to support the UK Climate Change Act".<sup>13</sup>

It also stated that the Conservatives "will cut emissions as cost-effectively as possible, and will not support additional distorting and expensive power sector targets".<sup>14</sup>

## How were these targets set?

Both the overall target and the five-year carbon budgets are based on advice from the independent Committee on Climate Change. The Committee was established under the Climate Change Act 2008 to provide independent advice on setting and meeting carbon budgets, and to monitor progress in reducing emissions.<sup>15</sup> It is made up of seven independent experts in the fields of climate change, science and economics.<sup>16</sup>

The Committee states that the 2050 target represents "an appropriate UK contribution to global emission reductions consistent with limiting global temperature rise to as little as possible above 2 degrees Celsius".<sup>17</sup>

8 Committee on Climate Change website, Carbon budgets and targets:

<https://www.theccc.org.uk/tackling-climate-change/reducing-carbon-emissions/carbon-budgets-and-targets/>

9 Department of Energy & Climate Change, UK progress towards GHG emissions reduction targets, 19 March 2015: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/414241/20150319\\_Progress\\_to\\_emissions\\_reductions\\_targets\\_final.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/414241/20150319_Progress_to_emissions_reductions_targets_final.pdf)

10 The Carbon Brief, Government decides not to amend fourth carbon budget, 22 July 2014:

<http://www.carbonbrief.org/blog/2014/07/government-decides-not-to-amend-uk%E2%80%99s-fourth-carbon-budget/>

11 The Carbon Brief, Gas strategy: government could loosen carbon budgets to allow dash for gas, 5 December 2012:

<http://www.carbonbrief.org/blog/2012/12/gas-strategy-would-ramp-up-construction-by-loosening-carbon-budgets>

12 Liberal Democrat press release, 22 July 2014: [http://www.libdems.org.uk/global\\_warming\\_lib\\_dems\\_win\\_fight](http://www.libdems.org.uk/global_warming_lib_dems_win_fight)

13 Conservative Party manifesto 2015: <https://s3-eu-west-1.amazonaws.com/manifesto2015/ConservativeManifesto2015.pdf>

14 Conservative Party manifesto 2015: <https://s3-eu-west-1.amazonaws.com/manifesto2015/ConservativeManifesto2015.pdf>

15 Committee on Climate Change website, About us: <https://www.theccc.org.uk/about/>

16 Committee on Climate Change website, Membership of the Committee:

<https://www.theccc.org.uk/about/structure-and-governance/committee-on-climate-change/>

17 Committee on Climate Change website, Carbon budgets and targets:

<https://www.theccc.org.uk/tackling-climate-change/reducing-carbon-emissions/>

This is slightly less stringent than the target agreed internationally in Cancun in 2010, through the United Nations Framework Convention on Climate Change (UNFCCC) that commits governments to ensuring a “maximum temperature rise of 2 degrees Celsius above pre-industrial levels”.<sup>18</sup>

The 2 degrees threshold has been agreed not because this temperature rise is considered safe (it is still expected to cause increases in mortality, increased extreme weather events, and the loss of glaciers), but because it is a challenging yet achievable target that was thought to be the threshold to avert the most catastrophic impacts.

The Committee calculated the emissions reductions necessary at a global level to achieve this temperature goal, and then calculated the UK’s fair share of the total based on its share of the global population.<sup>19</sup>

The five-year budgets are designed to “reflect the most cost-effective path to achieving the long term objectives”,<sup>20</sup> with consideration given to social and economic impacts as outlined above. This means that they aim to make sure that there are continual efforts to reduce emissions, while allowing the transition to a lower-carbon economy to be made in a planned way that does not require the replacement of vast amounts of infrastructure overnight.<sup>21</sup>

Carbon budgets are developed following detailed sector by sector analysis of options to reduce emissions at least cost.

Currently, emissions from international aviation and shipping are included in the 2050 target but are not included in carbon budgets. However, the Committee have calculated that in order to meet the UK’s objectives on carbon emissions, aviation emissions need to be restricted to 2005 levels by 2050.

Carbon budgets have been developed assuming that this target will be met, so if it is not met then greater emissions reductions will be needed elsewhere.

The Committee believes this to be achievable while still allowing demand for flying to grow by 60% on 2005 levels, through improvements in plane efficiency, increases in biofuel use and improved air space management.<sup>22</sup> This, however, assumes that the carbon intensity of flying can be reduced by 35% by 2050. The Committee has not set out how this can be achieved, and some say that it is not realistic.

Many have criticised the carbon budgets for not being ambitious enough. Friends of the Earth believes that the 80% reduction target should be achieved by 2030 not 2050, for the UK to “do its fair share in tackling global climate change”.<sup>23</sup>

At the moment, as will be seen below, not enough progress in emissions reductions is being made to meet the current targets, let alone something bolder.

## How does progress since 2008 measure up?

The UK met its first carbon budget successfully, with emissions falling steadily from 648.9 Mt CO<sub>2</sub>e in 2008 to 583.1 Mt CO<sub>2</sub>e in 2012.<sup>24</sup>

The Committee on Climate Change also reported in June 2015 that the UK was on track to meet the 2nd and 3rd carbon budgets.<sup>25</sup>

However, there is no room for complacency. So-called ‘progress’ to date is largely a side-effect of the recession which reduced overall economic activity, rather than a shift to lower carbon economy.

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18 UNFCCC, The Cancun Agreements, November 2010: [http://unfccc.int/meetings/cancun\\_nov\\_2010/meeting/6266.php](http://unfccc.int/meetings/cancun_nov_2010/meeting/6266.php)

19 Committee on Climate Change website, Setting a target for emission reduction: <https://www.theccc.org.uk/tackling-climate-change/the-science-of-climate-change/setting-a-target-for-emission-reduction/>

20 Committee on Climate Change website, The Climate Change Act and UK regulations: <https://www.theccc.org.uk/tackling-climate-change/the-legal-landscape/global-action-on-climate-change/>

21 Committee on Climate Change website, Carbon budgets and targets: <https://www.theccc.org.uk/tackling-climate-change/reducing-carbon-emissions/carbon-budgets-and-targets/>

22 Committee on Climate Change, Factsheet: aviation: <https://www.theccc.org.uk/wp-content/uploads/2013/04/Aviation-factsheet.pdf>

23 Friends of the Earth website, UK climate campaign: <https://www.foe.co.uk/page/uk-climate-campaign>

24 Department of Energy & Climate Change, UK progress towards GHG emissions reduction targets, 19 March 2015: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/414241/20150319\\_Progress\\_to\\_emissions\\_reductions\\_targets\\_final.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/414241/20150319_Progress_to_emissions_reductions_targets_final.pdf)

25 Committee on Climate Change, Meeting carbon budgets: progress in reducing the UK’s emissions, June 2015: [https://www.theccc.org.uk/wp-content/uploads/2015/06/6.737\\_CCC-BOOK\\_WEB\\_030715\\_RFS.pdf](https://www.theccc.org.uk/wp-content/uploads/2015/06/6.737_CCC-BOOK_WEB_030715_RFS.pdf)

The Committee has voiced significant concerns about the rate of progress in adopting low-carbon measures, noting that:<sup>26</sup>

- Most of the emissions reductions so far have been a side-effect of the recession.
- Some reductions have been achieved by reducing coal use in the power sector but there has been little progress across other sectors.
- Meeting future carbon budgets will require reducing emissions by at least 3% a year, and the underlying rate of emissions reduction due to low-carbon measures lags far behind this.
- In 2011, for example, greenhouse gas emissions fell overall by 7%. But less than 1% of this was due to the adoption of emissions reduction measures. The rest was due to mild winter temperatures (meaning less need for heating), rising energy prices (constraining demand), falling real incomes (reducing economic activity in general) and short-term changes in the energy mix.

The Committee's June 2015 report stresses that more widespread changes will be needed across the economy in future years.

To meet the fourth carbon budget (2023-27), and ultimately the 2050 target, "significant action" is needed.

## Do the government's latest plans make climate sense?

Friends of the Earth says that "the Government's plan to meet existing budgets is way off course" and that "the Government needs to toughen climate policy across all sectors of the economy".<sup>27</sup>

The Government has been heavily criticised by environmental organisations for its decision to scrap subsidies for onshore wind and commercial solar (the two cheapest forms of renewable energy), slashing energy efficiency budgets, lowering taxes on polluting firms and introducing a tax on clean energy.<sup>28</sup>

These actions are simply not in line with legally-binding emissions reductions targets, the UK's EU obligations, and most important the urgent need to act on climate change before it is too late. The Government says it is committed to implementing the Climate Change Act, but its actions speak louder than its words.

In the following sections we will show why the Government's aviation plans are incompatible with its climate change obligations.

We will also show how the UK's plans stack up against those of other countries.

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26 Committee on Climate Change website, How the UK is progressing:  
<https://www.theccc.org.uk/tackling-climate-change/reducing-carbon-emissions/how-the-uk-is-progressing/>

27 Friends of the Earth website, UK climate campaign: <https://www.foe.co.uk/page/uk-climate-campaign>

28 BBC News, Energy Secretary Amber Rudd criticised ahead of climate speech, 24 July 2015:  
<http://www.bbc.co.uk/news/science-environment-33638495>

# AIRPORT EXPANSION

## Aviation emissions targets

All emissions from aviation and shipping are included in the 2050 target to reduce emissions by 80% on 1990 levels. However, emissions from international aviation and shipping (starting or ending outside the UK) are not currently included in the interim carbon budgets.

Initially this was because of concerns over how aviation emissions were to be allocated to countries under the EU emissions trading scheme. But in 2012 the Committee on Climate Change advised that the 3<sup>rd</sup> and 4<sup>th</sup> carbon budgets should be extended to include international aviation and shipping.<sup>29</sup> However, the Government deferred any decision until 2016, when the 5<sup>th</sup> carbon budget is due to be legislated for.<sup>30</sup>

Although not formally included in carbon budgets, the Committee on Climate Change has calculated that in order to meet the overall target, aviation emissions must be restricted to a maximum of 37.5 Mt CO<sub>2</sub> (equivalent to their 2005 level) by 2050. Carbon budgets have been developed assuming that this target is met. Failure to meet aviation targets will therefore either mean that deeper carbon cuts have to be found in other sectors (which will be extremely challenging under a business-as-usual scenario) or that the 2050 national emissions target will be missed, by up to 25%.<sup>31</sup>

Aviation and shipping have been given more headroom than any other sector – they are permitted 120% growth in emissions compared with 1990, while other sectors must cut emissions by 85%.<sup>32</sup> This is because it is currently impossible to significantly decarbonise flying, and it is a sector deemed to be of high economic importance.

It is important to note that the aviation target applies only to CO<sub>2</sub> emissions. Other aviation emissions (including water vapour and nitrogen oxides) are also significant contributors to climate change as they increase the effect of other greenhouse gases in the atmosphere. Aircraft can also cause formation of ice clouds (contrails) and increase cloudiness, causing additional warming. These effects are not currently included in carbon targets because of debate and uncertainty over how they should best be measured, but they are certainly significant and probably mean that the carbon target is insufficiently stringent to fully address the impact of aviation on the climate.<sup>33</sup>

In the past, the Government used a multiplier of 1.9 on aviation's carbon emissions in order to capture these additional impacts.<sup>34</sup> This approach has now been abandoned, partly because of the risk of creating perverse incentives, but it indicates that the aviation emissions target, and associated goals such as the number of flights to be permitted, may be almost twice as high as they should be.

For the purposes of this report we examine the implications of airport expansion on the prospects for achieving the 37.5 Mt CO<sub>2</sub> goal, as this has some official acceptance, but it is worth remembering that even this goal is weak.

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29 Committee on Climate Change, Scope of carbon budgets: statutory advice on inclusion of international aviation and shipping, April 2012: [https://www.theccc.org.uk/archive/aws/IA&S/CCC\\_IAS\\_Core\\_ScopeOfBudgets\\_April2012.pdf](https://www.theccc.org.uk/archive/aws/IA&S/CCC_IAS_Core_ScopeOfBudgets_April2012.pdf)

30 The Guardian, Ed Davey defers decision on aviation and shipping in carbon targets, 19 December 2012: <http://www.theguardian.com/environment/2012/dec/19/ed-davey-aviation-shipping-carbon>

31 Committee on Climate Change, Scope of carbon budgets: statutory advice on inclusion of international aviation and shipping, April 2012: [https://www.theccc.org.uk/archive/aws/IA&S/CCC\\_IAS\\_Core\\_ScopeOfBudgets\\_April2012.pdf](https://www.theccc.org.uk/archive/aws/IA&S/CCC_IAS_Core_ScopeOfBudgets_April2012.pdf)

32 Aviation Environment Federation, All set for take off? Aviation emissions to soar under Airports Commission proposals, 16 June 2015: <http://www.aef.org.uk/uploads/All-set-for-take-off-AEF-report.pdf>

33 Committee on Climate Change, Meeting the UK aviation target – options for reducing emissions to 2050, December 2009: <https://www.theccc.org.uk/archive/aws2/Aviation%20Report%2009/21667B%20CCC%20Aviation%20AW%20COMP%20v8.pdf>

34 AirportWatch, Aviation and climate change policy in the UK, July 2011: [http://www.aef.org.uk/downloads/Aviation\\_and\\_Climate\\_Change\\_Policy\\_July2011\\_\(2\).pdf](http://www.aef.org.uk/downloads/Aviation_and_Climate_Change_Policy_July2011_(2).pdf)

## What will it take to achieve the aviation target?

The Committee on Climate Change believes that the 37.5 Mt CO<sub>2</sub> target could be reached while still allowing demand for flying to grow (by 60% on 2005 levels) because it expects to see improvements in plane efficiency, increases in biofuel use and more efficient air space management.<sup>35</sup> Together these are expected to reduce the carbon intensity of flying by 35% by 2050. It also expects to see a small shift away from flying to rail or videoconferencing.

But demand for flying is projected to increase by 125% and 150% on 2005 levels by 2050 even without a new runway.<sup>36</sup> Holding it to 60% growth will require significant further steps to reduce demand – in other words, to stop people flying as much.

This could mean some or all of: increasing the price of flying through carbon taxes; restricting airport growth; or restricting the allocation of take-off and landing slots to planes. Any price increase would have to be large. Even with a carbon price projected to increase to £200 per tonne by 2050 (compared with less than £20 today), demand is only expected to fall to 105–115% of 2005 levels.<sup>37</sup>

A member of the Committee on Climate Change has indicated that pricing carbon emissions somewhat higher, at £330 per tonne (as suggested by the Airports Commission) would increase the price of a return flight from London to New York by £500.<sup>38</sup>

## Is a new runway compatible with climate targets?

### 1. The view of the Airports Commission

In 2013, the Airports Commission concluded that “there is a clear case for at least one net additional runway by 2030 across a range of scenarios, including where the UK is meeting its climate change targets”.<sup>39</sup>

This was based on the finding that demand for airports in the London area would outstrip capacity by 2050, even with a cap on national demand growth keeping this to 60% of 2005 levels.

In July 2015 the Airports Commission released its final report.<sup>40</sup> Having assessed three proposals for airport expansion – two at Heathrow and one at Gatwick – it recommended a new north-west runway at Heathrow. Again it concluded that “one new runway, even fully utilised, is compatible with continued progress towards reducing carbon emissions”.

The Commission projects that the runway will generate an additional 244.6 million tonnes of CO<sub>2</sub> emissions to Heathrow over the 60 year appraisal period (2026–2086) and an additional 4 million tonnes CO<sub>2</sub> per year in 2050.

The great majority of this (236 million out of 244.6 million tonnes CO<sub>2</sub>) will come from increased air travel. The rest of the increase is down to ground movements of aircraft, passenger travel to and from airports, airport operations, and the construction of the runway and associated facilities.<sup>41</sup>

The Commission's final report admits that the new runway would have an adverse impact on carbon emissions, but they manage to argue this problem away. If aviation emissions are capped by government policy, they say, without specifying how this can realistically be achieved, these emissions will not increase the national total but will have to be reallocated from aviation elsewhere in the country.

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35 Committee on Climate Change, Factsheet: aviation: <https://www.theccc.org.uk/wp-content/uploads/2013/04/Aviation-factsheet.pdf>

36 Committee on Climate Change, Scope of carbon budgets: statutory advice on inclusion of international aviation and shipping, April 2012: [https://www.theccc.org.uk/archive/aws/IA&S/CCC\\_IAS\\_Core\\_ScopeOfBudgets\\_April2012.pdf](https://www.theccc.org.uk/archive/aws/IA&S/CCC_IAS_Core_ScopeOfBudgets_April2012.pdf)

37 Committee on Climate Change, Scope of carbon budgets: statutory advice on inclusion of international aviation and shipping, April 2012: [https://www.theccc.org.uk/archive/aws/IA&S/CCC\\_IAS\\_Core\\_ScopeOfBudgets\\_April2012.pdf](https://www.theccc.org.uk/archive/aws/IA&S/CCC_IAS_Core_ScopeOfBudgets_April2012.pdf)

38 The Carbon Brief, Raise carbon price to address aviation emissions, says Airports Commission, 1 July 2015: <http://www.carbonbrief.org/blog/2015/07/raise-carbon-price-to-address-aviation-emissions/>

39 Airports Commission, Interim report, December 2013: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/271231/airports-commission-interim-report.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/271231/airports-commission-interim-report.pdf)

40 Airports Commission, Final report, July 2015: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/440316/airports-commission-final-report.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/440316/airports-commission-final-report.pdf)

41 Airports Commission, Business case and sustainability assessment – Heathrow airport northwest runway, July 2015: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/440315/business-case-and-sustainability-assessment.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/440315/business-case-and-sustainability-assessment.pdf)

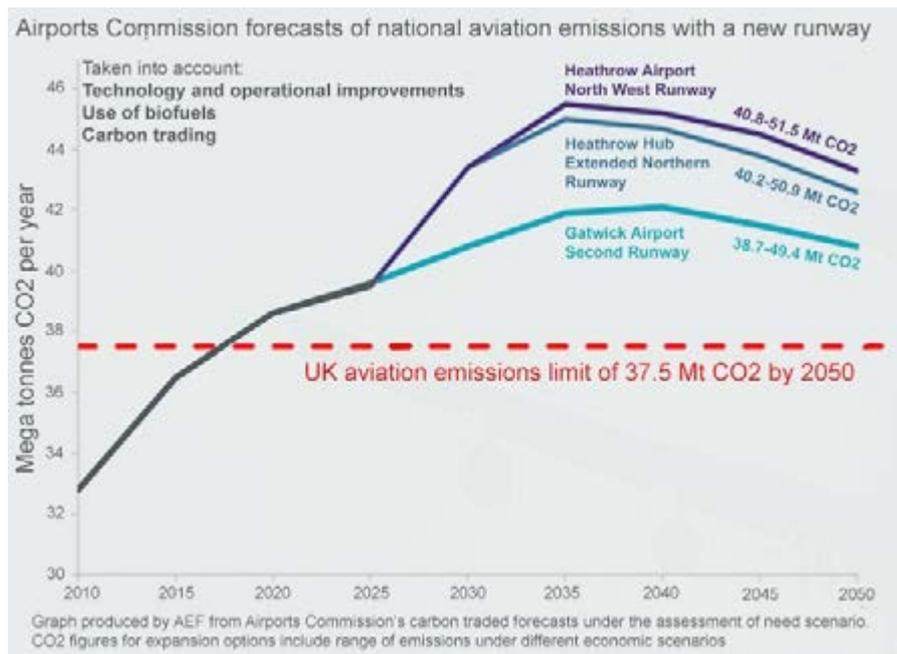
## 2. The problems with the Airport Commission's assessment: why a new runway doesn't make climate sense

There are several problems with the view of the Airports Commission that a new runway at Heathrow can be built while still meeting the UK's legally-binding emission reduction targets.

First, it will require strong action to keep aviation emissions to the 37.5 Mt cap even without an additional runway, and there are no signs that the government intends to put in place the sort of measures which would be needed to do this.

The following graph, produced by the environmental NGO Aviation Environment Federation (AEF) using figures from the Airports Commission, shows that emissions are already forecast to exceed the cap and that any of the three runway proposals considered would push carbon emissions significantly further above it. The Commission's recommended option - the north-west runway at Heathrow - has the highest emissions forecast of all.

A new runway at Heathrow is expected to increase the number of flights at Heathrow from the current figure of just over 470,000 to 740,000 a year – an increase of over 50%.<sup>42</sup>



Source: <http://www.aef.org.uk/uploads/All-set-for-take-off-AEF-report.pdf>

The Airports Commission published a letter to the Chair of the Committee on Climate Change alongside its final report. In the letter Sir Howard Davies outlined an “indicative set of policies that could enable aviation emissions for each shortlisted scheme to be restricted a level consistent with the planning assumption [37.5 Mt CO<sub>2</sub> by 2050]”. The letter stated that the new runway would need to be accompanied by a “significant package of measures”, for example a carbon price of around £330 per tonne in 2050, significantly higher biofuels usage than that predicted by the Committee on Climate Change, and a “range of operational efficiency improvements”.<sup>43</sup>

<sup>42</sup> Heathrow airport website, Our proposal: <http://www.heathrow.com/company/company-news-and-information/airports-commission/our-proposal>

<sup>43</sup> Letter from Sir Howard Davies (Chair of Airports Commission) to Lord Deben (Chair of Committee on Climate Change), 1 July 2015: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/439686/strategic-fit-letter-to-lord-deben-chair-of-committee-on-climate-change.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/439686/strategic-fit-letter-to-lord-deben-chair-of-committee-on-climate-change.pdf)

However, the Commission does not specify that these should be a precondition for expansion. And recent research by the AEF has found that they are likely to be highly unrealistic.<sup>44</sup> AEF concludes that a new runway is incompatible with UK climate targets, as set out in the following paragraphs:

**1. The efficiency improvements assumed by the Airports Commission from biofuels, operational efficiency and new aircraft designs are unrealistic**

The main source of biofuel which does not have unacceptable environmental or social impacts is from waste materials. But the amount that can be sourced in this way without incurring prohibitive costs is likely to have only “a very small impact on the sector’s emissions”. The Government forecasts that biofuels will make up just 2.5% of aviation fuel by 2050.

Operational efficiencies can theoretically be achieved by routing aircraft more directly, and reducing hold time while aircraft wait for landing slots. But in practice there are difficulties in applying these measures, due to: the patchwork and decentralised nature of air traffic management; conflicts between flight paths which minimise emissions and those which minimise noise; the fact that Heathrow operates at nearly full capacity giving limited flexibility to deal with delays efficiently; and the tendency for pilots to attempt early arrivals when there may not be a landing slot available.

The efficiency of new aircraft has not improved significantly since 2000. Nor do airlines necessarily select the most efficient models, often prioritising other criteria.

Overall, other research and the Government’s own figures tend to support the Committee on Climate Change’s assumption that the carbon intensity of flying can be reduced by only around 0.8% per year until 2050. There is no basis for the Airports Commission to suggest that significantly higher improvements can be expected, without a move from government to set stricter aircraft efficiency standards or to restrict biofuel use in other sectors – neither of which has been indicated.

**2. So, to be compatible with emissions targets, a new runway would have to be accompanied by either a significant increase in the cost of flying or severe restrictions on the number of aircraft permitted to arrive and depart from regional airports. Neither is likely to be implemented.**

Restricting air traffic movements to the necessary level while allowing growth in the South East would effectively mean reducing air travel in other regions of the UK. AEF analysis finds that in order to meet the carbon cap, building a new north-west runway at Heathrow would require an 11% reduction in the total number of passengers projected to fly from each of Scotland and Northern Ireland in the future, and a 55% reduction in passenger numbers from the West Midlands, where Birmingham airport is located.

However, the Government’s Aviation Policy Framework is clear in its support for growth at regional airports, which states that, “The Government recognises the very important role airports across the UK play in providing domestic and international connections and the vital contribution they can make to the growth of regional economies”. The Framework even argues, counter to the view of the Airports Commission, that it is regional airports which, “have an important role in helping to accommodate wider forecast growth in demand for aviation in the UK”.<sup>45</sup> So, it does not appear likely that regional airports are likely to see such severe restrictions.

Simply raising the price of carbon to the level necessary to constrain demand growth this strongly is not enough on its own. If uniformly applied it could mean increasing the price of a return ticket to Europe by £220 (and to New York by £500). The government has not given any indication that it would support a significant increase in the cost of flying; in fact, air passenger duty was recently cut for children, making family trips cheaper.<sup>46</sup> Nor are there signs that we can expect a functional international carbon trading system to set a suitable price in the near future.

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44 Aviation Environment Federation, All set for take off? Aviation emissions to soar under Airports Commission proposals, 16 June 2015: <http://www.aef.org.uk/uploads/All-set-for-take-off-AEF-report.pdf>

45 Department of Transport, Aviation Policy Framework, March 2013: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/153776/aviation-policy-framework.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/153776/aviation-policy-framework.pdf)

46 The Telegraph, Family holidays now up to £142 cheaper, 1 May 2015: <http://www.telegraph.co.uk/travel/travelnews/air-passenger-duty/11576263/Family-holidays-now-up-to-142-cheaper.html>

### 3. When the carbon cap and the costs of environmental measures are included, the benefits of a new runway appear substantially reduced.

The Airports Commission also concluded that when the costs of carbon capping measures are included, the economic benefits of a new runway fall by almost half (40%), although this fact is not given any prominence in the final report.<sup>47</sup> Other research suggests that when all environmental and access costs are included, and if improved analytical methods are used, the new runway might even bring a net loss of £9 billion to the economy, or at most a far smaller benefit than is often quoted, at less than £1.5 billion.<sup>48</sup>

The Airports Commission did specify in its final report that the new runway should be accompanied by a range of measures to mitigate its environmental and community impacts. However, action to reduce carbon emissions from air travel was noticeably – and inexplicably – absent from this list.

Heathrow is already responsible for more CO<sub>2</sub> emissions for international scheduled passenger flights than any other airport in the world.<sup>49</sup>

It is virtually inevitable that with a new runway, the UK would fail to meet the carbon target for aviation.

## What will happen if the aviation emissions target is missed?

If the aviation sector misses its emissions target, it is extremely unlikely that the UK will be able to meet its overall target to reduce emissions by 80% on 1990 levels, by 2050.

The Committee on Climate Change has stated that the 85% emissions cuts already demanded from other sectors are “at the limit of what is feasible” with the current economic approach.<sup>50</sup> Under a business-as-usual scenario there will be very little scope to find further cuts elsewhere if the aviation sector misses its targets.

## Other environmental impacts of a new runway

### Air quality

Air pollution causes 29,000 excess deaths in the UK each year.<sup>51</sup>

Heathrow is a hotspot for air pollution, and legal standards for levels of nitrogen dioxide are already frequently breached in the area due to a combination of aircraft and road traffic emissions.<sup>52</sup>

Government figures show that the A4 road (which runs along the edge of Heathrow airport) is forecast to have the second highest level of air pollution in the UK by 2030 even without an additional runway. Annual nitrogen dioxide levels are forecast to reach 47 and 48 micrograms per m<sup>3</sup> at two measurement points along this road – well above the legal EU limit of 40 micrograms per m<sup>3</sup>.<sup>53</sup>

Aircraft emissions are estimated to cause around 16,000 premature deaths each year worldwide, of which around 4,000 are from emissions during landing and take-off which affect communities next to airports. Some studies suggest that these impacts are as significant as the climate change impacts of aviation, and more significant than the impacts of aviation-related accidents.<sup>54</sup>

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47 [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/439686/strategic-fit-letter-to-lord-deben-chair-of-committee-on-climate-change.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/439686/strategic-fit-letter-to-lord-deben-chair-of-committee-on-climate-change.pdf)

48 Aviation Environment Federation, Airports Commission's climate and economic analyses, 17 August 2015: <http://www.aef.org.uk/2015/08/17/aef-briefings-airports-commissions-climate-and-economic-analyses/>

49 Aviation Environment Federation website, Climate change and aviation: <http://www.aef.org.uk/issues/climate/0/>

50 Letter from Lord Deben (Chair of Committee on Climate Change) to Sir Howard Davies (Chair of Airports Commission), 3 July 2015: [https://www.theccc.org.uk/wp-content/uploads/2013/07/CCC\\_letter\\_aviation\\_commission.pdf](https://www.theccc.org.uk/wp-content/uploads/2013/07/CCC_letter_aviation_commission.pdf)

51 Committee on the medical effects of air pollutants (2010), The mortality effects of long-term exposure to particulate air pollution in the United Kingdom: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/304641/COMEAP\\_mortality\\_effects\\_of\\_long\\_term\\_exposure.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/304641/COMEAP_mortality_effects_of_long_term_exposure.pdf)

52 Aviation Environment Federation, Airport expansion and air pollution: <http://www.aef.org.uk/uploads/Airport-Expansion-and-Air-Pollution-Briefing.pdf>

53 Aviation Environment Federation, Government projections reveal a two runway Heathrow would be second worst area for air pollution in the UK by 2030, 20 February 2015: <http://www.aef.org.uk/2015/02/20/government-projections-reveal-a-two-runway-heathrow-would-be-second-worst-area-for-air-pollution-in-the-uk-by-2030/>

54 Steve Yim et al, Global, regional and local health impacts of civil aviation emissions, MIT: 26 February 2015: [http://iopscience.iop.org/1748-9326/10/3/034001/pdf/1748-9326\\_10\\_3\\_034001.pdf](http://iopscience.iop.org/1748-9326/10/3/034001/pdf/1748-9326_10_3_034001.pdf)

UK aviation emissions are estimated to cause 110 premature deaths a year (data from 2005).<sup>55</sup>

With the number of flights set to increase by more than 50% if the new runway goes ahead, bringing a corresponding increase in passengers, we can only expect air pollution from both aircraft and vehicles to increase.

The Airports Commission’s report states that “additional operations... must be contingent on acceptable performance on air quality”. This sounds strong, but their definition of acceptable performance is in fact very weak. All it requires is that air quality impacts at Heathrow must not delay compliance with EU limits – in other words, as long as there is somewhere else in the country that remains even more polluted than the Heathrow area, there’s no problem.<sup>56</sup>

The pollution implications of a third runway are such that remaining the second-most polluted site in the country can only be achieved with considerable investment in air quality mitigation measures (such as improved public transport access, emissions charging, and incentives for airlines to shut down an engine during taxiing), as the following table (taken from the Airports Commission’s final report) shows:

**Table 2. NO<sub>2</sub> forecasts (micrograms / m<sup>3</sup>)**

Heathrow (A4) without new runway	Heathrow (A4) with new runway	Marylebone Road NO <sub>2</sub> forecast (expected to be the most polluted site in the absence of a new runway)	Heathrow (A4) NO <sub>2</sub> with new runway and mitigation measures
47.4	48.7	48.6	45.1–46.3

Even with such measures, air quality in the Heathrow area will remain significantly in breach of EU limits. This will clearly (a) make compliance much harder to achieve, and (b) have significant negative health impacts.

We don’t think that increasing pollution and putting in place just enough mitigation to avoid being most polluted site in the country constitutes “acceptable performance on air quality”.

And, as with carbon mitigation, the airport’s proposals for air pollution mitigation may again be far too optimistic. The Commission’s consultants acknowledge that they can’t really say whether Heathrow’s promise not to increase traffic is really feasible, for example.<sup>57</sup> The final report itself acknowledges that “In order to render the scheme compliant with the Directive, it may be necessary to consider more dramatic mitigating actions, above and beyond those which the Commission believed it was credible to assess at this stage”.

This has led the AEF to conclude that the Airports Commission “cannot say confidently whether or not expansion would be legal”.<sup>58</sup>

As with carbon emissions, it seems that proponents of airport expansion are asserting that environmental impacts can be managed, but without setting out any convincing programme of measures to do so.

## Noise

Already, more people are affected by noise at Heathrow than at any other European airport.<sup>59</sup>

A 2013 study found that long term exposure to aircraft noise is linked to increase in high blood pressure and increased heart attack risk.<sup>60</sup>

Government policy is to “limit and where possible reduce the number of people in the UK significantly affected by aircraft noise” and that “the acceptability of growth in aviation depends to a large extent on the industry continuing to tackle its noise impact”.<sup>61</sup>

55 Steve Yim et al, Air quality and public health impacts of UK airports. Part II: Impacts and policy assessment, Atmospheric Environment, March 2013: <http://www.sciencedirect.com/science/article/pii/S1352231012009818>

56 Airports Commission, Final report, July 2015: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/440316/airports-commission-final-report.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/440316/airports-commission-final-report.pdf)

57 Aviation Environment Federation, The Heathrow noise sweeteners that act as a smokescreen for third runway pollution, 3 July 2015: <http://www.aef.org.uk/2015/07/03/the-heathrow-noise-sweeteners-that-act-as-a-smokescreen-for-third-runway-pollution/>

58 Aviation Environment Federation, Davies Commission recommendations beset with environmental hurdles, says Aviation Environment Federation, 1 July 2015: <http://www.aef.org.uk/2015/07/01/davies-commission-recommendations-beset-with-environmental-hurdles-says-aviation-environment-federation/>

59 The Telegraph, Noisy Heathrow ranks last in Airports Commission study, 5 July 2015: <http://www.telegraph.co.uk/finance/newsbysector/transport/10162703/Noisy-Heathrow-ranks-last-in-Airports-Commission-study.html>

60 Frank Schmidt et al, Effect of nighttime aircraft noise exposure on endothelial function and stress hormone release in healthy adults, European Heart Journal, 2 July 2013: <http://eurheartj.oxfordjournals.org/content/early/2013/07/01/eurheartj.eht269.full>

61 Department of Transport, Aviation policy framework, March 2013: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/153776/aviation-policy-framework.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/153776/aviation-policy-framework.pdf)

Heathrow says that by taking various mitigating measures it will be able to reduce the number of people “*significantly affected*” by noise, but their plans have been criticised both for being unrealistic, and for adopting a too-high threshold of what constitutes a significant effect. With a new runway, more people will be affected by lower levels of noise, which are still sufficient to cause disturbance.<sup>62</sup>

### Ecological impacts

A new north-west runway at Heathrow would risk harm to bird populations from an internationally designated site, as well as requiring culverting and diversion of several rivers and streams – which is known to affect biodiversity - and an impact on a nationally rare plant species (Pennyroyal). It will also affect more than 400 hectares of green belt.<sup>63</sup>

### Flood risk

Any new runway development at Heathrow would take place in an area “already at significant risk of flooding”, and would cause the loss of vital floodplain storage. Major river works will be needed to prevent flooding, according to the Airports Commission. Not only will these affect wildlife habitat in and around the rivers, these will be “challenging” from a flood risk management perspectives. However, the Commission simply states that because such large impacts could be expected from any major development, “there is no reason to believe... that these challenges would undermine the viability of either of the Heathrow schemes”. In other words, these impacts can be ignored.<sup>64</sup>

Overall, the Commission found that the north-west runway has the worst environmental impacts of any of the schemes, even after the mitigation measures proposed by Heathrow are included. It would also mean the loss of 783 homes, an entire community at Longford and most of Harmondsworth, and high quality agricultural land.<sup>65</sup> As seen above, it also has the most projected carbon emissions.

## How does London’s airport capacity compare with other cities?

Heathrow airport does operate closer to capacity than most rival hubs in Europe. Proponents of airport expansion in London make the case that the main airports in Paris and Frankfurt have four runways to Heathrow’s two, and Amsterdam’s Schiphol has six.

However, London as a whole is served by five airports while those cities have just one or two each. Furthermore, the ‘declared hourly capacity’ of leading European airports shows that, put together, Heathrow and Gatwick already deal with more arrivals and departures than any of their counterparts.

**Table 3. Declared hourly capacity**

Airport	Peak movements per hour
<b>London Heathrow &amp; Gatwick combined</b>	<b>144</b>
Frankfurt	120 (planned) <sup>67</sup>
Paris Charles de Gaulle	117 <sup>68</sup>
Amsterdam Schiphol	110 <sup>69</sup>
Madrid	98 <sup>70</sup>
London Heathrow	89 <sup>71</sup>
London Gatwick	55 <sup>72</sup>

62 AirportWatch website, What Heathrow’s 3rd runway proposal says on noise (not very convincing), 13 May 2014: <http://www.airportwatch.org.uk/2014/05/what-heathrows-3rd-runway-proposal-says-on-noise-not-very-convincing/>

63, 64, 65 Airports Commission, Final report, July 2015: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/440316/airports-commission-final-report.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/440316/airports-commission-final-report.pdf)

66 The Guardian, Heathrow’s two runways – how do other airports compare? 2 July 2015: <http://www.theguardian.com/world/datablog/2015/jul/02/heathrow-two-runways-other-airports-europe-compare>

67, 68, 70, 71, 72 Mayor of London, Inner Thames estuary feasibility study: supporting technical documents, 23 May 2014, page 6: <https://tfl.gov.uk/cdn/static/cms/documents/u-runway-utilisation.pdf>

69 Slot Coordination website, Amsterdam Airport Schiphol: <http://www.slotcoordination.nl/declared-capacity.asp>

# THE ALTERNATIVE: CURBING DEMAND FOR AIR TRAVEL

## Switching from air to rail

HACAN research from 2013 found that 9 of the top 10 routes operating from Heathrow were served by short-haul flights.<sup>73</sup> Many of these could be replaced by existing rail services, such as Eurostar. Further improvements to the British and European rail network would make domestic and European short-haul flights completely unnecessary. With reduced demand for short-haul air travel the case for new runways becomes ever weaker.

## Fairer taxation

The costs and benefits of air travel are currently unevenly spread. While the impacts of climate change will be spread across the global population, and local environmental impacts felt most by those living closest to airports, the benefits accrue to a small section of UK society. Research by the New Economics Foundation (NEF) indicates that an estimated 15% of the UK population takes about 70% of the flights. More than half of the people living in Britain took no flights abroad in 2013.<sup>74</sup>

To address this NEF proposes a Frequent Flyer Levy – an idea championed by Caroline Lucas MP and Keith Taylor MEP. Under NEF's plans everyone would be entitled to one tax-free return flight each year. Tax kicks in at a low rate from the second flight and goes up a notch for each extra flight in that year.<sup>75</sup> The intention is to make the potential cost of a plane ticket ever more expensive for frequent flyers and therefore discourage multiple flights in a single year. It also follows the polluter-pays principle – ensuring that those who are responsible for the most pollution pay most towards the cost of cleaning up the mess.

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73 HACAN, Short-haul flights: still clogging up Heathrow's runways, 7 April 2013: <http://stopcityairportmasterplan.tumblr.com/post/47446229952/press-release-short-haul-flights-clogging>

74 NEF, A free ride website: <http://afreeride.org/wonkery/>

75 NEF, A free ride website: <http://afreeride.org/>

# CONCLUSION

Heathrow already has some of the highest carbon emissions of all the airports in the world, affects more people with noise than any other European airport, and causes dangerous and illegal air pollution.

The Airports Commission claim that the carbon emissions and other environmental impacts of a new runway can be mitigated, but have presented no convincing case for how this can feasibly be done.

Aviation has already had generous treatment when it comes to emissions reduction targets, and the UK already has enough airport capacity to allow aviation to grow as far as the UK's legally binding carbon target will permit.

A new runway will almost certainly mean that these national targets cannot be reached. Instead, the UK should show climate leadership in Paris and say no to airport expansion.

A new runway anywhere in the South-East of England simply doesn't make climate sense.



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