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# DISCUSSION PAPER 01: AVIATION DEMAND FORECASTING

## Submitted by WWF-UK to the Airports Commission

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### Introduction

WWF-UK is keen to engage with the Airports Commission, providing evidence to help the Commission assess whether additional UK airport capacity is needed. WWF-UK has worked extensively on aviation policy for over five years and our focus has been on the climate impact of aviation and the need to keep aviation growth within the environmental limits recommended by the Committee on Climate Change. WWF's aviation policy work also extends to EU ETS and ICAO so we are well aware of the interconnectedness of UK aviation policy to regional and international frameworks.

Among NGOs, WWF-UK has particular expertise in alternatives to travel. We have conducted two major research exercises with FTSE 500 companies which have identified a permanent shift away from Business as Usual, pre-recession levels of flying in favour of lower carbon alternatives such as rail and videoconferencing. WWF-UK also runs the One in Five Challenge, which was commended in the DfT's Aviation Policy Framework (Section 2.43). This scheme challenges organisations to cut their flights by 20% within five years and has achieved remarkable results, discussed further in this submission. We believe this work demonstrates that UK plc does not need more airport capacity to remain profitable and competitive.

WWF-UK, together with RSPB and HACAN, has already sent the Commission a draft copy of a new report by CE Delft on Aviation Policy Development which provides the economic criteria we hope will be used in project appraisal. This report will be launched at the House of Commons on 17 April and we have invited Phil Graham of the Airports Commission Secretariat to attend this event.

We have provided all relevant evidence to this response but have not sought to answer all questions. Over the course of this inquiry, we would be pleased to provide further written submissions and oral evidence to the Committee as we have done for the Transport Select Committee (on airport capacity) and the Energy and Climate Change Committee (on the inclusion of international aviation and shipping emissions in the Climate Change Act).



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## WWF's view of DfT forecasts

Future airport capacity decisions should not be determined by DfT forecasts of passenger demand. This would constitute a sad return to a 'predict and provide' basis for policymaking, which according to the Transport Assessment Guideline (TAG), the Department has sought to move 'away from' since 2003, in order to include a full range of economic, social and environmental considerations to produce a more integrated transport policy.

We also take issue with some of the inputs used in these forecasts, in particular assumptions regarding oil price, rate of GDP growth, aviation taxation, and the ability of alternatives such as videoconferencing to replace flights. In our opinion these inputs are unrealistic and have resulted in an overestimation of future demand.

DfT forecasts also have a poor track record for accuracy, especially in recent years when there has been far more instability in the economy and rising oil prices, which WWF agrees are the key drivers affecting aviation demand. As the Commission points out, the average error in the forecast was over 30% for the period 2007 to 2012. As this instability is likely to continue for the foreseeable future, near term forecasts are likely to be equally subject to error. Both unconstrained and constrained DfT forecasts have been revised repeatedly downwards since 2007, as shown in Table 1.

**Table 1: UK terminal passenger forecasts, central estimates (million passengers per annum, mppa)**

Forecast year	Unconstrained				Constrained (maximum use)			
	DfT (2007)	DfT (2009)	DfT (2011)	DfT (2013)	DfT (2007)	DfT (2009)	DfT (2011)	DfT (2013)
2010	270	260	211	211	270	260	211	211
2020	385	365	275	260	355	345	270	255
2030	495	465	345	320	425	405	335	315
2040	-	-	425	390	-	-	405	370
2050	-	-	520	480	-	-	470	445

Source: DfT (2007), DfT (2009), DfT (2011), DfT(2013).

WWF agrees with both the DfT and Commission that the UK aviation market is hitting maturity and future growth will be much slower than previously, although some growth is inevitable linked to population growth. We note that, according to Civil Aviation Authority (CAA) figures, terminal passenger numbers have yet to return to their 2007 peak, for both London and regional airports. Given the observed fall in passenger numbers over recent years, the likelihood of continuing downward revisions in DfT forecasts and the overoptimistic inputs used in these forecasts, WWF remains deeply unconvinced by the DfT's conclusion that the five largest airports in the South East of England will be full by 2030.

WWF believes that decisions regarding future airport capacity need to be set within the environmental limits to aviation growth recommended by the Committee on Climate Change (CCC) in their 2009 report on *Meeting the UK Aviation Target*. This clearly states that unconstrained expansion of airports is not consistent with the Climate Change Act and our legally binding climate targets. Although international aviation emissions are not yet formally included in UK Climate Change Act, with this decision delayed until 2016, there is a presumption of inclusion as the Government has accepted that there are to be no changes in existing carbon budgets, which consider international aviation emissions to be within the trajectory for achieving the national 2050 target.

The best basis for planning future capacity, in both the CCC’s and WWF’s opinion, is to allow for a 60% increase in passenger demand and a 55% increase in Air Traffic Movements (ATMs) to 2050, compared to 2005 levels. This would result in aviation not exceeding 25% of the 2050 carbon budget or 37.5 MtCO<sub>2</sub>, not 35% of ‘allowed UK greenhouse gas emissions’ as suggested by the Commission in Section 3.35.

WWF, together with the Aviation Environment Foundation (AEF) conducted an assessment of available UK airport capacity in 2011 to see how available airport capacity, by region, compares with meeting the CCC’s limits to growth. As shown in Table 2, our analysis shows that there is ample capacity, even in the South East, to accommodate aviation growth to 2050 within the CCC’s recommended limits, based on larger planes and increased plane loading at Heathrow.

**Table 2: Maximum available ATMs vs ATMs associated with CCC recommendations for 2050**

Region	2009 ATMs	Max mppa in 2050 under CCC emissions cap	Average passengers per ATM (2009)	ATMs Associated with CCC emissions cap in 2050	Maximum Available ATMs	Under / over provision
Scotland	319,639	36.8	67.8	542,773	867,200	324,427
Wales	20,537	5.1	79.37	64,256	170,000	105,744
Northern Ireland	83,229	11.3	86.15	131,167	240,000	108,833
North of England	328,459	75.5	106.56	708,521	1,300,918	592,397
Midlands	154,356	22.6	89.14	253,534	389,119	135,585
South West	98,277	11.3	80.08	141,109	635,000	493,891
South East (adjusted)	1,081,606	202.1	198 / 123 *	1,349,000	1,346,000	-3,000
<b>Total</b>	<b>2,086,103</b>	<b>364.7</b>	<b>105.28</b>	<b>3,190,360</b>	<b>4,948,237</b>	<b>1,757,877</b>

Source: [http://assets.wwf.org.uk/downloads/airport\\_capacity\\_report\\_july\\_2011.pdf](http://assets.wwf.org.uk/downloads/airport_capacity_report_july_2011.pdf)

### The impact of capacity constraints on frequency and number of destinations served by the UK

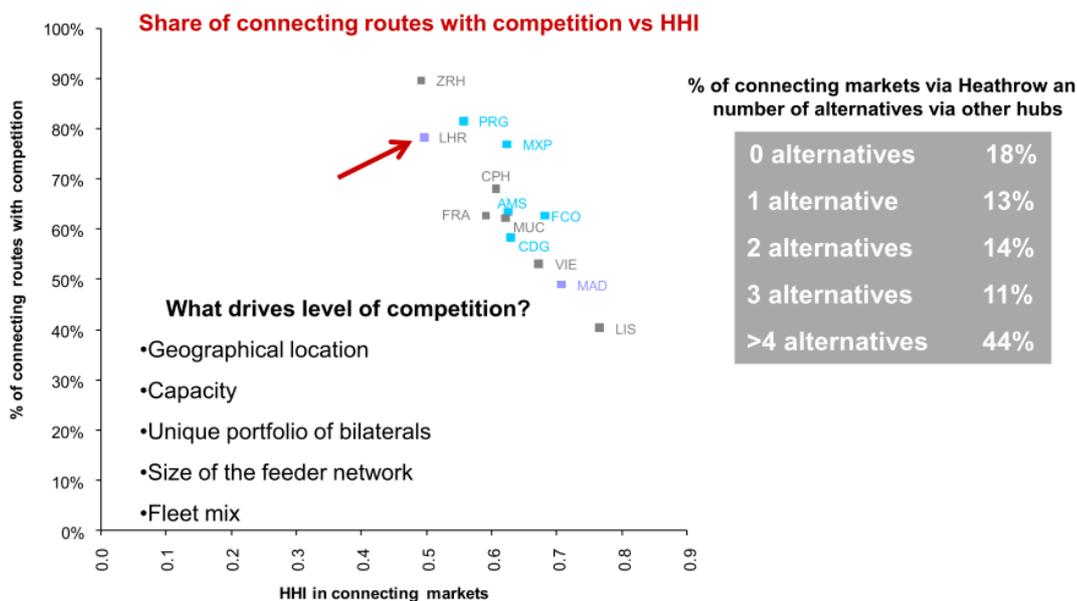
WWF does not accept the argument—often heard from those in favour of significant airport expansion—that capacity constraints are undesirable as this will reduce connectivity resulting in lower economic growth.

Firstly, we do not accept that capacity constraints are undesirable as these will be needed if the UK is to achieve its climate targets. Secondly, we do not believe that such constraints would necessarily come at the sacrifice of connectivity, especially if flights with lower economic value are moved from congested airports to those with spare capacity, or if large regional airports such as Birmingham and Manchester were to expand their number of routes. This is also suggested in the DfT 2013 forecast on p26 of the Commission document which shows a substantial implied route gain due to capacity constraints by 2050 for these two regional airports.

Finally, we do not believe there is any hard evidence to show that connectivity is linked to economic growth. Indeed, according to the latest report by CE Delft commissioned by WWF, RSPB and HACAN, to be published in April: “The relationship between connectivity and GDP has not been studied in much detail in the academic literature. Even less is known about the possible existence of a causal relation between connectivity and economic growth, trade or other relevant economic parameters. The available empirical evidence suggests there is a weak correlation, mostly for less developed economics, but there is no evidence of causation.”

WWF believes that capacity constraint may ultimately be less relevant to defending the UK’s aviation position than the extent to which it can withstand growing international competition for connecting passengers. As shown in Table 3, nearly 80% of the connecting routes served by Heathrow now have competition, mostly from Frankfurt, Amsterdam and Charles de Gaulle. Only Zurich and Prague have higher rates of connectivity overlap than Heathrow.

Table 3: Percentage of connecting markets via Heathrow having competition vs HHI\*



Source: Burghouwt & Lieshout (2012): SEO Netscan

Source: SEO Economic Research, 2012

\* Herfindhal-Hirschman Index (HHI) is a measure of market concentration

This suggests that the 50% seat capacity advantage now enjoyed by Heathrow and other London airports over European competitors (Source: OAG 2012) may be better used to increase the frequency and number of destinations where there is less connectivity overlap. There could also be better ways to increase UK connectivity than maintaining our ‘hub status’, eg through an increase in point-to-point flights to emerging markets from other airports than Heathrow.

### DfT forecasts and trends in international aviation

As pointed out in this document, DfT forecasts do not fully capture the international transfer passenger market, which means that the DfT model cannot assess how any increase in UK aviation capacity will affect its share of this market.

WWF believes that it is inevitable that UK aviation will lose some international market share given the economic shift towards China and India, giving rise to mega hubs in Dubai and Beijing. Understanding the impact of such developments should be considered in future forecasting approaches, perhaps through the use of scenario testing or probability analysis.

### How to strengthen the DfT model, input data and assumptions in order to present a more accurate picture of current and future aviation demand

WWF has concerns about a number of the inputs used in the DfT model which we believe produce higher growth forecasts. In particular, we believe that the model’s input assumptions

on oil price, GDP growth and taxation are not sufficiently plausible or likely. WWF believes that DECC oil price predictions beyond 2030, which assume a price of \$135/barrel from 2030 to 2050, lacks credibility. GDP growth of 2% per annum to 2030 is also too optimistic. No increases to aviation taxation, through fuel duty or VAT, are included in the forecast even though there is growing pressure at EU to introduce these taxes and little justification for these exemptions. A sensitivity analysis conducted by AEF on each of these inputs shows that slight changes to these assumptions, making them more realistic, would significantly reduce aviation demand from 10 to 25%. <http://www.aef.org.uk/?p=1513> We would therefore like to see a wider range of assumptions and scenarios tested in the forecasts.

We also disagree with the model's assumptions regarding the potential of videoconferencing to replace flying. This suggests that videoconferencing would result in a 10% reduction in business flights by 2050 for the lower bound forecasts but lead to a 5% increase in business air travel by 2050 in the upper bound forecasts. Instead, we believe that videoconferencing and other 'virtual meeting' technologies can replace 30% of business flights by 2050. This is based on our own research and evidence base, working with companies to reduce their business flying.

WWF research into changing business travel and meeting practices with FTSE 500 companies shows that 96% of companies expect that they will make changes to the way they conduct business over the next 10 years as a result of climate change, with more than 60% reducing their flying in favour of rail and videoconferencing. Nearly half of companies have already cut their flights by an average of nearly 20% as a result of the recession and have no intention of returning to previous levels of flying.

[http://assets.wwf.org.uk/downloads/moving\\_on\\_report.pdf](http://assets.wwf.org.uk/downloads/moving_on_report.pdf)

Our One in Five Challenge scheme to help some of the UK's leading companies reduce their flying also illustrates these trends. Two year members have cut 41% of their flights, saving an average of £2.4 million.

[http://assets.wwf.org.uk/downloads/second one in five challenge annual report 2010 11 1.pdf](http://assets.wwf.org.uk/downloads/second_one_in_five_challenge_annual_report_2010_11_1.pdf)

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