

Airports Commission discussion paper 01: Aviation demand forecasting response by Friends of the Earth

Friends of the Earth wishes to make a constructive contribution to the work of the Airports Commission. Because we do not have the technical expertise to present a detailed critique of the DfT forecasting approach this short paper is instead preparatory to a larger submission on our principal area of concern - the interaction between the scale of future airport capacity and aviation emissions - when the Commission seeks views on that topic. Consequently we will confine ourselves to identifying a number of issues and questions to draw to the Commission's attention now, to which we can then return when addressing the issue of climate change.

As a general comment on the content and analysis of the Discussion Paper (DP): we consider it to be a good dissection of the subject, which therefore provides a basis for stakeholders to engage with the issues.

Q: To what extent do you consider that the DfT forecasts support or challenge the argument that additional capacity is needed? We first make the point that a forecast of demand, prepared on the basis of certain assumptions, does not constitute a justification in itself that this expressed demand should be met (in full), or prescribes the way in which supply (capacity) and demand should be aligned or adjusted to each other. It cannot be the case that the Commission should have as a starting assumption that forecasts should be treated in this way. A related point concerns the relationship between unconstrained and constrained forecasts. In the real world the former are always going to be constrained by whatever is the policy framework within which aviation operates, nationally and internationally. What matters, what is still at issue and will remain in transition across future decades, is how constraining that framework will be.

Then the 2013 Forecasts, and their comparison with the 2009 ones, illustrate both sides of this question. On the one hand they project an increase in demand to 2030 from 211mppa to 320mppa (Central unconstrained)/313 mppa (constrained), or approx +50%, which simplistically might be interpreted as providing a starting point for an 'additional capacity' rationale. On the other, contrasting 2013 with 2009, they now record a 31% reduction in modelled demand. So in a situation in which 145mppa of demand has dropped out of the forecasts within a period of just four years, the 2013 Forecasts crystallise a central challenge for the Commission: what is the basis on which (in terms of forecasting) it will be able to make valid recommendations concerning the level of demand that will be expressed at dates far into the future (i.e. 2030, 2040 and 2050)? By 2050 the potential spread between High and Low scenarios (311mppa) is almost as large as the Low scenario itself (350mppa). Consequently ...

Q: Does the DfT approach to demand uncertainty capture a reasonable range of uncertainty? Could the approach be improved? (As a non-technical answer) Yes it does but what the discussion paper does not address is the question of how decision makers including the Commission itself will be able to respond to that uncertainty in their subsequent analysis, leading on to decisions about capacity; nor does it address how it will tackle the inevitable increase in uncertainty as timescales extend - reflected at the moment in the spread between Low and High scenarios (see *DP figure 3.4*) - and the tension between this and the very extended gestation period for major infrastructure projects. Furthermore the reference to 'the impact of uncertainty across a number of the component variables' in *DP2.10* does not incorporate amongst those variables uncertainty in the policy and regulatory framework, which is a major omission.

So there is a paradox here that the Commission will have to resolve credibly in its analysis framework: whilst uncertainty in the forecasts up to 2020 is manageable, this short-term timescale would be insufficient to deliver additional (physical/runway) capacity; on the other hand beyond say 2030 it could be argued that the uncertainty becomes unmanageable in relation to the scale of the investment allocation and environmental/social impacts involved. A conclusion might be that the opportunity for decision makers to intervene now in the balance between aviation supply and demand extends only up to say 2030, and not beyond. This would then point towards a broader mix of policy interventions, influencing demand as much supply.

Please note that there is a difference here between this modelling of aviation forecasting demand and that for e.g HS2 which also seeks to project the shape of the demand through to the 2030s. The latter involves both modelling and a decision being under/taken *now*, for a project which is intended to commence in the immediate future; that is not the case for the airports capacity decision.

Therefore to the question ... **Q: Is the DfT model suitable to underpin an assessment of the UK's aviation connectivity and capacity needs?** our answer would be that this is not so much question of the adequacy of the DfT model (on which the DP comments at paras 3.36 & 38) as to the inherent difficulty of making airport capacity decisions in a context where these decisions are surrounded by an array of economic/social/environmental constraints -such as is the case in the UK but may not be in many other countries with greater land availability, less dense urban populations, etc, etc. And our answer to the question **Q: Do you consider that the DfT modelling approach presents an accurate picture of current and future demand for air travel? If not, how could it be improved?** ... would be – No for its representation of the period beyond 2020 because – having seen the SSE (Stop Stansted Expansion) response to the DP - we accept their critique of the PATM assumptions in the modelling; No to its representation of future demand beyond 2030; and no also to the possibility of improvement for the period say beyond 2030 (when it's being used to actually take decisions for large-scale capacity) because its difficulties are inherent.

Q: Do you agree with the source of the input data and assumptions underpinning the DfT model? and **Q: Do you agree with the choice of outputs modelled?** This relates to the DP's discussion of such issues in paras 3.8-16. In our 2011 response to the DfT Sustainable Aviation Framework scoping document we undertook a more detailed scrutiny of some of the forecasting inputs/outputs (on the basis of additional information sought from and provided by the Department) because we felt that the narrative treatment/interpretation in the 2011 Forecasts gave insufficient weight to the influence of continuing reductions in aviation costs, and consequently fares, on the scale of future demand, and also the scope for fiscal demand management. (That section of our response is appended for illustrative purposes).

We would urge the Commission to satisfy itself that each of the range of inputs set out in Annex C of the 2013 Forecasts is credible and where necessary to require that additional scenarios are tested. Whilst it is relatively common to question the particular oil price assumptions (Annex C2 – provided by DECC) we would also ask you to review/retest those assumptions acting to constrain demand by price ('real carbon price' and 'real weighted APD rate' *annex C2*); and then to rework /reassess the conclusions to be drawn from *Annex C3* aviation costs and *Annex C4* fares. This is significant because e.g, as the DP notes: "The 2013 central forecast projects an increase in emissions until 2030 when this trend is expected to slow in line with the effects of market maturity and airport constraints take effect." 3.33 ... but not because of the effect of carbon constraints, and this will be because of the carbon price assumption. In our view such a reassessment of the various components of financial demand management are an essential part of the Commission's need to thoroughly review and present a credible 'no new capacity' option alongside 'additional capacity' ones.

We mentioned at the start that this submission is preparatory to our main focus on aviation and climate change. We should therefore just note that the figures for CO2 emissions in *DP table 3.5* (which are taken with a minor discrepancy from 2013 Forecasts *Annex G2* Constrained) – increasing from 33m tonnes in 2010 to 43.5m in 2030 and 47m tonnes in 2050 – are not consistent with (because they breach) the '2005-50 aviation emissions target' of the previous government – which Friends of the Earth does not in any case accept – or the 2009 analysis of the Committee on Climate Change which, based on that target, required 2050 emissions to return to 37.5m tonnes (*DP 3.35* refers).

Conclusions

Friends of the Earth consider that the more important issues concerning forecasting are not to be found in technical aspects of the forecasts themselves but rather in the subsequent process as to how they are able to be used for the purposes of policy and decision making:

- We believe they contain a problematic for the Commission: how to resolve their inherent uncertainty (particularly beyond 2030) alongside its requirement to make recommendations about the need for capacity infrastructure which involves development timescales that extend into the period where that uncertainty becomes unmanageable. Thus there is not just "the need for any forecasting approach to be able to deal effectively with uncertainty" *DP 1.4* ; the Commission's approach will have to do the same as well. We welcome the fact that 'uncertainty' features prominently in the DP analysis (e.g paras *2.10, 5.1-2*) and would suggest a discussion as to the Commission's thinking on this point. But the conclusion we draw immediately is that - unless the Commission wishes to propose the option of an entire new airport swapping with the closure of an existing one (so e.g 'Boris Island opens/Heathrow closes') - then it should largely confine its period of search 'up to 2030' and not beyond, because this would be unsafe.

- The forecasting input assumptions, and the use then to be made of the outputs, requires careful study and scenario testing within the Commission's development of a 'no new capacity' option. This is already understood in the Discussion Paper: "Forecasts of this kind will also support us in developing an understanding of how demand might respond to: (i) Changes in the real cost of air fares, for example as a result of changes in oil prices [*but could be as a result of other price changes as well*] (ii) Changes in the fiscal or regulatory environment, for example initiatives to mitigate the effect of climate change" *DP 2.22*

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*for Friends of the Earth
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Appendix – extract from Friends of the Earth response to DfT Sustainable Aviation Framework scoping document 2011

"... The paradox is that whilst the industry makes repeated references about customers reduced 'ability to fly' as a result of changes to taxation (or whatever) the reality is that it is the continuous and major reductions in the historic cost of air travel that have driven levels of demand ever upwards (and therefore towards airport capacity limits; thus creating the capacity supply/demand 'dilemma' which it is then argued can only be met by substantial increases in capacity supply); a trend which the modelling underpinning the 2011 Forecasts projects will continue through to 2050.

Data series provided by DfT to FOE relating to the *2011 Forecasts* Annex C.14 assumption for the annual growth rate in air fares ('compiled from assumptions about changes in fuel costs, non-fuel costs, taxation and other environmental charges' – the latter includes the cost of carbon) identifies a fall from around £170-80 in 2008/10 to around £160 in 2020 and then stability thereafter all the way to 2050; and this follows a major historic reduction from around £250 in 1997 (constant 2008 prices).

Other DfT cost series reinforce this analysis. Fuel costs between 2010-50 drop by 17% Central case, or increase by just 13% High case and 42% High High case (but with an intermediate upward bulge; there's also a change in the modelling assumption at 2030 for all cases). Nonfuel costs between 2010-30 drop by 17% (shorthaul) and 20% (longhaul). Even in 2050 applied carbon costs represent a relatively small proportion of total costs. The following table summarises these various cost/price trends.

Air Travel costs - indexed

Year	Fuel cost HighHigh	Nonfuel Cost Short Haul	Nonfuel Cost Long Haul	Carbon cost modelled	Air Fares
1997/8	100	100	100		100
2008	295	74	71	100 (2012)	58
2020 modelled	602	68	64	127	57
2050	423	62	58	959	63

Data source: DfT Aviation Analysis, 2008 prices. Indexing: FOE, rolling 3 year average

So - accepting these model outputs at their face value - despite the various types of cost (columns 2-5) falling or rising through to 2050, the aggregate consequence for fares appears to be that - having reduced over the last 15 years by around 35% in real terms as the lowcost business model took hold, with low oil prices and no carbon costs to bear - they still stay broadly stable all the way to 2050, despite major future forecast increases to the fuel and carbon components. The policy conclusion that must be drawn from these cost series - which compares so favourably to the trend impacting other UK transport modes; where it is the passengers having to use sustainable bus and rail modes on a daily basis that are in fact those being 'priced off' - is that there exists a considerable headroom for air fares to 'bounce back up' if this were now judged to be a more important policy requirement.

Accepting the evidence of this cost base analysis, as it then flows through into air fares - which has never been represented or featured sufficiently prominently in the policy discussion and balancing - we don't believe it can be argued that the state of aviation economics can be used as an argument against proceeding with a demand management framework. Instead the policy emphasis now needs to be on air fares moving upwards as a necessary adjustment as this industry takes its place alongside all others within the global low carbon economy. The high 'propensity to fly' for discretionary leisure purposes exhibited by the [UK](#) top 4 deciles means that demand management applied to this sector would be both affordable and fiscally progressive."