The Airports Commission's final report – has it closed the carbon gap?

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"One new runway can be accommodated within our climate change commitments", Howard Davies has confidently claimed[1]. Or did he actually mean one new runway's worth of emissions, spread across the whole country? More to the point, has the Commission actually been able to somehow square the circle in terms of airport expansion and climate change commitments?

In January this year, we set out the 'carbon gap' in the Airports Commission's analysis[2], and posed three questions we wanted the Commission to answer. So how well does their final report address these?

1. We said the Airports Commission should 'Explain why its CO2 emissions forecasts are lower than the Government's latest forecasts, what assumptions have been made and how sensitive the results are to them.'

The Commission's final document on forecasts includes one section that seems to be directed precisely at our question.

> Some stakeholders also noted that the Commission's forecasts of CO2 are below those published in the latest DfT forecasts. The Commission has investigated why adopting the DfT assumptions with Commission demand forecasts produces a higher annual improvement in fuel efficiency. The difference in fuel efficiency is due to an increase in the proportion of demand served by larger aircraft, and through better matching of aircraft to route flown following the improvements to the modelling of aircraft sizes in the Commission's forecasts. The reason that this improves fuel efficiency is that larger aircraft tend to serve long haul routes, and therefore deliver more seat-kilometres per tonne of fuel burnt.[3]

On all aspects other than that of fleet mix, the Commission says (biofuel usage, and the introduction of more efficient aircraft, for example), it has used the same assumptions as the Department for Transport. Yet the difference between the two forecasts in terms of aviation emissions in 2050 without expansion is significant: the Commission's baseline emissions forecast for 2050 is 15% lower than the Government's latest figure.

[1] 'Howard Davies on aviation and climate change' https://www.gov.uk/government/news/airports-commission-releases-final-report

[2] http://www.aef.org.uk/2015/01/20/carbon-gap-airports-commissions-new-runway/

[3] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/439687/strategic-fit-updated-forecasts.pdf, paragraph 4.21

For the Government to accept the Commission's forecasts it will need to explain why its own predictions in 2013 in terms of future aircraft mix and the proportion of larger aircraft were so wrong. Otherwise, the Commission's estimates of the cost of achieving carbon limits – already barely credible – will need to be revised upwards.

2. We said that the Commission should "*Set out in meaningful detail what policy developments would be required in order to limit emissions to the aviation cap while building new capacity.*"

On this, again, we actually come quite close to being quoted. An open letter from the Commission to the Committee on Climate Change[4], published alongside the final report, refers to "criticisms made by some environmental NGOs that it is not enough simply to assert that emissions will be restricted to 37.5 MtCO2 in 2050 and that it is important also to demonstrate how this might be achieved" The Commission's answer to the challenge is a paper titled 'Economy: carbon policy sensitivity test'[5]. This sets out a threefold answer to the question of how the carbon cap could be delivered:

(i) **Increase the carbon price from the £196 currently predicted for 2050 to £334.** In the modelling, this reduces anticipated aviation emissions from 43.3 to 41 Mt CO2. But there is no explanation of how this would be achieved. Including aviation in international carbon markets at all is still under negotiation.

(ii) **Increase biofuel uptake** from the 2.5% of aviation fuel by 2050 anticipated by the Department for Transport to 5.6% (for the Heathrow North West runway). This, the Commission says, could reduce emissions by a further 2.3 Mt (so to 38.7 Mt), but would require two kinds of policy intervention:

- *Government investment in biofuel demonstration plants*; these are assumed to receive public subsidy of 25% in the cost of setting up the plant (the price of which has now been shown to be higher than Government previously estimated). Clearly there would need to be Government appetite for action, available public funds, and private investment for this option to be forthcoming.
- *The introduction of mandatory biofuel usage*; this measure accounts for the majority (4.6%) of the total estimated increase in biofuel use. But so far it has been strongly resisted by the aviation industry given the extra costs it would represent.

(iii) **Mandate airline operational measures**

This final measure, the Commission says, could reduce emissions by 1.2 Mt, bringing the total level, even with a third runway, down to the carbon cap of 37.5 Mt. While

[4] 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

[5] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/439679/economy-carbon-policy-sensitivity-test.pdf

emissions reductions through 'operational measures' often focus on more direct routing the Commission, to its credit, admits than future air traffic efficiencies will be hard if not impossible to come by while at the same time allowing for an increase in traffic. Instead, therefore, the Commission's proposals relate to:

- **Enforcing lower cruising speeds***.* This, the Commission says, would result in an increase in airline costs. It seems likely, therefore, to face industry opposition. The feasibility and cost of any necessary enforcement measures are not considered and we are not aware of any examples of governments so far successfully implementing such a measure.
- **Lower-carbon powering of airfield taxiing (such as shifting to electric power)** This would require aircraft to switch off at least one of their engines once on the ground and to use electric power, one engine, or towing.
- **Reductions in 'contingency fuel' carried by airlines for safety reasons**. This would have the aim of reducing aircraft weight and therefore fuel burn. Interestingly, both this measure and a reduction of fuel burnt during taxiing are anticipated by the Commission to be zero cost for airlines. But this raises the question of why they are not taking place in any case given airlines' strong commercial interest in reducing fuel cost. Government would need therefore to identify what the current barriers are to their implementation and what it would take to remove them.

Overall, while the Commission's work on policy measures helps to move the debate out of the realm of theory, it falls a long way short of being able to describe any credible means of bringing emissions down to a level consistent with the Climate Change Act while building a new runway. The questions of how the price of carbon can be raised to £334 per tonne, and of whether the proposed policy interventions on biofuel and operational improvements are politically and commercially feasible, remain to be answered.

3. **We said that the Commission should "*Fully include the economy-wide cost of keeping national aviation emissions to within 37.5 Mt in its cost benefit analyses, in line with the recommendations of the Committee on Climate Change" and that "This analysis should be presented prominently in the final report."***

This is such an important topic that we have given it its own briefing. While the Commission did produce some economic analysis that reflects the need for CO2 constraints on aviation, it has bent over backwards to hide its own conclusions on this topic, and to downplay the fact that properly including carbon costs very largely trashes any economic case for expansion.

By way of summary, the Commission's answers to the question of what economic impact a new runway could have vary wildly. The figures it has churned out for the economic impact of a new Heathrow runway include the following:

1) **'Up to' £147 benefit**. This was the figure quoted by Howard Davies on the day of the report announcement and uncritically reported in almost all the press coverage. But it arises in fact from a methodology about which that the Commission itself has advised caution and which was heavily criticised by the Commission's expert economic advisers for double counting and questionable assumptions. It takes no account of the costs of expansion.
2) **£1.4 billion benefit.** This, by contrast, is what the economic benefit looks like using the Government-approved approach for the economic analysis of transport projects, which requires environmental and surface access costs to be included. The Commission's cost benefit analysis deviates in one important way however from the official methodology, namely that it includes some additional 'wider economic benefits', introduced into the final analysis but not in the previous economic appraisals. It's interesting therefore to look at the outcome of the Commission's cost benefit without these. Hence point 3…
3) **£9 billion loss.** When the Commission published its sustainability and economic appraisals of its three shortlisted schemes in November 2014, it omitted to include a figure for the 'transport economic efficiency' benefit of expansion under a carbon cap. It corrected this shortcoming by way of a letter to the Committee on Climate Change published alongside its final report, but didn't in that letter bring together its findings on both costs and benefits, presumably because doing do in fact demonstrates a significant financial loss to the UK as a result of building a new runway.

Conclusion – the carbon gap looks increasingly hard to close

AEF has consistently pushed the Airports Commission for answers in terms of the climate change impacts of a new runway, and its final report does come clean on some of these. But the headline messages handed to politicians ignore this new analysis and instead glide over the massive climate challenge that a new runway would pose.

Big issues, meanwhile, remain unresolved. Whose forecasts of future air traffic mix are right – the Commission's or the Governments? Are the measures that would be needed to reduce emissions to the level of the carbon cap actually deliverable? And is there actually a robust economic case for expansion once environmental and other costs are factored in?

Despite its reforecasting of aviation emissions, the Commission has failed to present a credible case for how, in the real world, emissions from aviation can be limited to a level consistent with UK climate policy if a new runway is built. It's now for the Government to admit that building a new runway makes neither economic nor environmental sense.