

The Airports Commission's economic fudge: How the economic case for expansion dissolves once climate change limits are accounted for



August 2015

The dominant narrative in the Airports' Commission's case for a new runway focuses on the economic benefit that it would bring to the UK, and the media presentation of the Commission's work has largely repeated this storyline, quoting the Commission's headline figure of 'up to £147 billion benefit'¹, with the addition that the environmental impacts will nevertheless make it controversial politically. But in fact the economic case for expansion rests on a highly selective presentation of the analysis undertaken by the Commission which gives a misleading impression about the strength of the economic case.

The Commission's economic appraisal

The Commission conducted its economic appraisal using, broadly, two very different approaches in preparing its economic case. The first is a modified version of the Government's recommended methodology for assessing the costs and benefits of proposed transport schemes. Known as WebTAG (Web-based Transport Analysis Guidance), this takes a 'welfare' approach and aims to capture both the direct economic benefits of a scheme and its environmental and infrastructure costs. The Government's guidance document on this² states that "Development of analysis using WebTAG guidance is a requirement for all interventions that require government approval", and that it constitutes "binding guidance on all departments". The appraisal methodology sets out in detail how to take appropriate account of economic, environmental and social impacts of a proposed project, as well as the impacts on public accounts. The Commission developed its own approach to cost benefit analysis described by its economic advisers as "WebTAG +" and including an estimate for some of the wider benefits of expansion not ordinarily included under WebTAG.

Alongside this, however, the Commission also commissioned analysis using a methodology it describes as a "novel" approach to capturing possible indirect GDP and GVA benefits as a result of expansion. This "Computable General Equilibrium (CGE) model" relies on the assumption that aviation growth has 'spillover' effects in the form of increased trade, business growth, productivity improvements, and job creation. Among the papers published with the final report was a note³ from the Commission's expert economic advisers providing comments on the Commission's approach to estimating wider economic benefits. This

¹ <https://www.gov.uk/government/news/airports-commission-releases-final-report>

² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/427073/webtag-tag-overview.pdf

³ Economy: expert panellist wider economic impacts review

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/438981/economy-expert-panelist-wider-economic-impacts-review.pdf

welcomes the attempt to adopt complementary approaches alongside WebTAG but expresses a number of concerns about the findings generated by the CGE model. These include:

- too much weighting being given to the assumption that increased seat capacity will lead to wider benefits (for example in terms of increased trade), given that the direction of causality is in some cases unclear:
- likely double counting between the direct and wider impact channels in the PwC calculations; and
- inexplicable results, such as GDP impacts of more than twice the size of the direct welfare and wider economic benefit gains (while it might be expected that they would be lower).

The conclusion of the reviewers is that “While the content of the model itself has been well-tested, the same cannot be said of the front end, where an increase in capacity is converted into an increase in trip-making, trade, tourism and finally productivity. Furthermore the interpretation of the result – what exactly do they mean and is their basis transparent – is an issue. Overall, therefore, we counsel caution in attaching significant weight either to the absolute or relative results of the GDP/GVA SCGE approach (PwC report) within the Economic Case”.

The results of these economic appraisals vary according to the forecasting assumptions. In particular, the Commission has run economic assessments that allow for the possibilities both that the Government will introduce policies to limit CO2 emissions to a level consistent with the Climate Change Act (the carbon capped forecast), and alternatively that aviation emissions will not be constrained to a level that reflects legal requirements but will be included in international carbon markets (the carbon traded forecast).

What answers are generated by the Commission’s economic appraisals?

1. £1.4 billion benefit

Since WebTAG is the appraisal that Government guidance requires to be undertaken, it might be expected that the Commission’s WebTAG analysis would be central to its economic conclusions. In fact, however, the results were not included in headline figures or statements to the press and were instead presented in a table on page 147 of the Commission’s final report. These indicate that under a carbon cap (the ‘CC’ figure), the benefit of the recommended new Heathrow runway (in the third column) would be only £1.4 billion over sixty years.

Table 7.1: Net present value and social benefit calculation, *assessment of need*, £ billion, 2014 prices⁶⁰

| Appraisal results | Gatwick Second Runway | | Heathrow Extended Northern Runway | | Heathrow Northwest Runway | |
|--|-----------------------|-------------|-----------------------------------|-------------|---------------------------|-------------|
| | CT | CC | CT | CC | CT | CC |
| Consumer surplus (includes removal of scarcity rents and frequency benefits) | 47.1 | 27.2 | 46.5 | 29.1 | 54.8 | 33.6 |
| Producer surplus | -41.8 | -24.7 | -31.6 | -21.9 | -38.4 | -25.8 |
| Government revenue | 2.5 | 1.0 | 1.5 | 1.3 | 1.8 | 1.9 |
| Delays | 2.4 | 2.6 | 0.8 | 2.4 | 1.0 | 3.0 |
| Wider economic impacts | 8.1 | 5.5 | 10.0 | 6.6 | 11.5 | 7.7 |
| Noise | -0.4 | -0.4 | -1.4 | -1.1 | -1.0 | -1.5 |
| Air quality | -0.2 | -0.1 | -0.6 | -0.6 | -0.8 | -0.8 |
| Carbon emissions | -1.0 | -0.6 | -0.8 | -0.6 | -0.9 | -0.7 |
| Biodiversity | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total benefits | 60.1 | 36.3 | 58.7 | 39.3 | 69.1 | 46.2 |
| Total dis-benefits | -43.3 | -25.8 | -34.4 | -24.3 | -41.1 | -28.8 |
| Net social benefit | 16.8 | 10.5 | 24.4 | 15.1 | 28.0 | 17.4 |
| Scheme and surface access cost (includes capex and all SA costs) | -6.0 | -5.0 | -14.1 | -14.0 | -16.1 | -16.0 |
| NPV (net social benefits and PVC) | 10.8 | 5.5 | 10.2 | 1.0 | 11.8 | 1.4 |

From page 147, *Airports Commission final report, July 2015*⁴

It is important to note that this is the result of the Commission's 'WebTAG +' modelling which departs from the standard WebTAG methodology in a number of respects but most significantly, the accompanying commentary and documentation indicates, in that it includes a valuation of 'wider economic impacts' that was not included in earlier drafts of this work and would not ordinarily be counted under WebTAG. The Commission's economic advisers argue in relation to this approach that given the limitations of the Government methodology, it is justifiable "to pay attention to Government guidelines but not to be ruled by the rulebook".

It is interesting, however, to note what conclusion the cost benefit analysis might reach if these extra economic benefits had not been added. Since the Commission does not present this analysis directly, it is necessary to patch together information published in different places and at different times to find the answer.

2. -£9 billion loss

⁴ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/440316/airports-commission-final-report.pdf

In November 2014 the Commission published the following chart as a summary of its WebTAG assessment of a Heathrow North West runway based on its work to date. This was completed only for one of its five economic scenarios, 'Assessment of need', and in fact by the time of the final report this scenario was the only one featuring in most of the discussion. The supporting rationale for the partial presentation of information was in some cases unclear (for example why the environmental costs were calculated for the 'carbon capped' scenario but not for the 'carbon traded' scenario or why the benefit of reduced delays had conversely been calculated for the carbon traded but not the carbon capped scenario). In relation to the 'transport economic efficiency' benefits, meanwhile, the Commission said the omission of calculations for the carbon capped scenario (as requested by the CCC) was problematic as the initial figures suggested that carbon costs would 'dominate' the appraisal⁵.

Table 2.12: Heathrow Airport North West Runway costs and benefits, present value (£ billion, 2014 prices)

| Appraisal results | Assessment of Need | | Global Growth | | Relative Decline of Europe | | Low-cost is King | | Global Fragmentation | |
|--------------------------------|--------------------|----------------|---------------|----|----------------------------|----|------------------|----|----------------------|--------|
| | CT | CC | CT | CC | CT | CC | CT | CC | CT | CC |
| Carbon-traded (CT)/capped (CC) | CT | CC | CT | CC | CT | CC | CT | CC | CT | CC |
| Monetised | | | | | | | | | | |
| Transport economic efficiency | 18.3 | | 42.0 | | 16.4 | | 41.6 | | 10.3 | |
| Delays | 0.8 | | 0.8 | | 2.2 | | 1.4 | | 2.1 | |
| Noise | | (1.5) | | | | | | | | |
| Air quality | | (0.5) | | | | | | | | |
| Carbon emissions | | (0.7) | | | | | | | | |
| Biodiversity | | (0.02 to 0.07) | | | | | | | | |
| Scheme and surface access cost | (16.8) | (16.8) | (16.8) | | | | | | | (16.8) |
| Non-monetised | | | | | | | | | | |
| Wider economic impacts | | | | | | | | | | |
| Surface access | | | | | | | | | | |
| Quality of life | | | | | | | | | | |
| Community | | | | | | | | | | |
| Place | | | | | | | | | | |
| Local economy | | | | | | | | | | |
| Water and flood risk | | | | | | | | | | |

From *Heathrow Airport North West runway: Business case and sustainability appraisal*, Airports Commission, November 2014⁶

On 1st July 2015 the final report was published and was accompanied, together with numerous technical papers, by a letter⁷ to Lord Deben, Chair of the CCC, in response to his

⁵ Airports Commission consultation document November 2014, paragraph 2.41 (not currently available online)

⁶ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/374664/evidence-base-heathrow-north-west-final.pdf

requests for the Commission’s economic analysis to reflect the need for aviation emissions to be constrained. The Commission’s reply includes a table that fills in the earlier blanks in relation to the ‘transport economic efficiency’ benefits under a carbon cap. It also introduces an estimate not included in the previous table for ‘wider economic benefits’. The text notes that economic benefits of expansion are reduced by around 40% by a requirement to meet the carbon cap, but that “the table shows just benefits and not the costs of the schemes”.

| Appraisal results (£bn) | Gatwick | | Heathrow-NW | | Heathrow-ExN | |
|-------------------------------|-------------|------------|-------------|-------------|--------------|-------------|
| | CT | CC | CT | CC | CT | CC |
| Transport economic efficiency | 7.8 | 3.5 | 18.3 | 9.7 | 16.4 | 8.5 |
| Wider economic impacts | 8.1 | 5.5 | 11.5 | 7.7 | 10.0 | 6.6 |
| TOTAL | 15.9 | 9.0 | 29.8 | 17.4 | 26.4 | 15.1 |

Letter from Sir Howard Davies to Lord Deben, chair of the Committee on Climate Change 1st July 2015

These figures can be used to complete the blank space left in the interim report under ‘transport economic efficiency’ for the recommended North West runway scheme. The cost benefit table from November 2014 doesn’t include the ‘delay’ benefit under a carbon cap, but if this is copied across from the ‘carbon traded’ column, and a mid-way value is taken for biodiversity costs, the total net impact of the scheme in terms of monetised impacts using the Government’s WebTAG approach becomes -£9.045 billion. Building a runway would, this suggests, result in a net loss to the UK of £9 billion.

By the time of the final report, the transport economic efficiency metric had in fact been replaced by an estimate of consumer and producer surplus, and there had been changes to the estimates for the benefits from reduced delays, and for the costs associated with biodiversity, scheme delivery, and air quality. Overall, however, it is the inclusion of ‘wider economic benefits’ in the later analysis that made the big difference in terms of the result.

3. £147 billion benefit

Neither of these figures however, appears in the Commission’s main messaging. Instead, despite all the shortcomings of the CGE model noted by its own economic experts and despite the Commission’s own warnings that the findings of this innovative approach should be treated with caution, ‘up to £147 billion benefit’ to the UK (the economic benefit associated with the carbon traded forecast under the CGE approach) was the only figure that appeared in the Commission’s publicity.

Conclusion

⁷ 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

The Airports Commission has claimed, and the media has uncritically repeated, that a new runway at Heathrow would deliver 'up to £147 billion benefit' for the UK. But this figure is based on analysis that takes no account of the environmental or surface access costs of expansion, and that the Commission's own specialist economic advisers have criticised for double counting and questionable assumptions in relation to the indirect benefits associated with increased seat capacity.

The results generated by using the Government's methodology for cost benefit analysis meanwhile, are dramatically different: the Commission's own figures, based on this methodology, suggest that building a third runway at Heathrow would result in a net £9 billion loss to the UK once all environmental and surface access costs are included. With some 'wider economic benefits' included, the benefit over sixty years would still be only £1.4 billion, as quoted in the Commission's final report.

Annex – summary of figures and sources

Comparison of economic analysis uses figures from:

- Airports Commission Final Report, July 2015
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/440316/airports-commission-final-report.pdf
- Heathrow Airport North West Runway: Business Case and Sustainability Assessment, November 2014
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/374664/evidence-base-heathrow-north-west-final.pdf
- Airports Commission letter to Lord Deben, chair of the Committee on Climate Change, 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

| Values in £billion | Final report July 2015 | Values in £billion | Heathrow NW appraisal Nov 14 plus letter to CCC Jul 15 |
|--------------------------------|------------------------|-------------------------------|--|
| Consumer surplus | 33.6 | Transport economic efficiency | 9.7 |
| Producer surplus | -25.8 | | |
| Government revenue | 1.9 | | |
| Delays | 3 | | 0.8 |
| Wider economic impacts | 7.7 | | |
| Noise | -1.5 | | -1.5 |
| Air quality | -0.8 | | -0.5 |
| Carbon emissions | -0.7 | | -0.7 |
| Biodiversity | 0 | | -0.045 |
| Total benefits | 46.2 | | 10.5 |
| Total disbenefits | -28.8 | | -2.745 |
| Net social benefit | 17.4 | | 7.755 |
| Scheme and surface access cost | -16 | | -16.8 |
| NPV | 1.4 | Total net impact | -9.045 |