



4. Displacement of benefits

Understanding displacement

The findings of the NEF review of the three key business case documents focuses in particular on the issue of displacement. In economic and social impact accounting displacement refers to a situation where an intervention (in this case the expansion of an airport) moves ‘value’ or ‘outcomes’ from one location to another (as opposed to creating or removing value/outcomes). Whether new value is created or not can also be referred to as ‘additionality’. Failing to account for displacement can lead to over-claiming, typically with regard to the benefits created by a scheme. NEF have serious concerns that the business case for expansion of Bristol airport has failed to properly account for the displacement of value.

Does the proposed expansion create or displace value?

The key questions to consider when preparing a business case for airport expansion are: ‘How many of the additional flights and passengers that will move through an expanded Bristol airport will be newly created?’ versus ‘How many have been displaced from another airport?’ The airports that could lose a share of the growth of aviation passengers as a result of expansion of Bristol Airport include:

- Bournemouth, South West – approx. 113 km driving distance from Bristol Airport.
- Cardiff, Wales – approx. 96 km driving distance from Bristol Airport.
- Exeter, South West – approx. 105 km driving distance from Bristol Airport.
- Newquay, South West – approx. 236 km driving distance from Bristol Airport.

There is a very strong argument that the majority of the value ascribed to Bristol Airport’s expansion (a net present value of £1.38 billion between 2018 and 2028 – see Table 5.4 of the Assessment) is displaced from these airports and is not newly created value. The reason for this, as shown in **Table 1**, is that all of the other airports located within the defined boundary (South West and South Wales) have a significant amount of excess capacity. Indeed, based on the DfT’s modelling neither Cardiff, nor Exeter, nor Newquay airport will reach their maximum capacity at any point during the model period up to 2050. Logically, if there was to be significant unmet demand for greater airport capacity in the region it could be met by additional flights departing from these airports.

Reflecting this finding, and of critical importance, the cost-benefit analysis presented in the Assessment assumes *total displacement* in terms of the carbon emissions created by additional flights from Bristol Airport. That is, expanding Bristol airport will add no new flights to the national total. Specifically the Assessment states:

... in line with our assumption that airlines will simply redeploy capacity elsewhere, we have not assumed any additional carbon costs from flights associated with the expansion. The carbon emissions associated with the majority of the two million additional passengers may not be incurred at Bristol Airport if it cannot expand but they will still be incurred elsewhere.

The Assessment (page 58)

This assumption of total displacement has a very significant positive effect on the scheme’s cost-benefit ratio. For comparison, NEF has calculated the social cost of the carbon emissions



(net present value from 2018 to 2050) of the proposed scheme assuming that no displacement is applied. Using the carbon emissions present in the Environment Statement⁴ (environmental impact assessment) and the CCC's best-case-scenario for future fuel efficiency improvements, this equates to a net present value of around -£406 million and an average cost of £24 million per year over the period. This would reduce the net present value of the scheme presented in the Assessment by 26%.^{vii}

As well as applying to carbon emissions, displacement applies to the wider economic benefits generated. In the Assessment this is referred to as “factor displacement”. In direct contradiction of their earlier decision to apply total displacement to the carbon cost, the business case applies zero displacement to the economic benefits. In this regard the Response states:

Product displacement effects have been considered and are felt to be very limited within the study areas.

The Response (Page 8)

The effect of this decision is to accrue all of the induced economic benefits in the South West and South Wales regions as new value. Given that the figures in **Table 1** show considerable spare capacity in neighbouring airports, this is not remotely credible. When, in the Response, York Aviation applies more reasonable displacement values of 25%, 50%, and 75% to North Somerset, the West of England, and the South West and South Wales respectively, the benefits diminish significantly. Specifically the economic value to the South West and South Wales drops from £380 million per year to £100 million per year.

It is notable that the decision to apply zero displacement to the wider economic benefits in the Assessment was at odds with the Government's Transport Assessment Guidance (TAG), which states:^{viii}

When estimating the complete extent of additionality, scheme promoters should consider a large enough geographical area to capture fully the behavioural responses of households and firms at the national level. With respect to supply-side effects of non-transport factors of production, the default assumption is 100% displacement; this applies for all types of economic modelling. The onus is on the scheme promoter to present credible evidence that the particular transport investment will affect a non-transport factor of production. If the scheme promoter is unable to present credible evidence of additionality, the particular economic impacts will be considered displaced from elsewhere...

TAG (page 4)



5. Tourism impacts

Challenges understanding how tourism impacts are derived

In the consideration of tourism, the Assessment first considers inbound tourism. The number of visitors to the different study areas who travel via Bristol Airport has been combined with visitor spend data from VisitBritain. It is initially unclear as to how the former data were obtained, though it is later clarified that this was CAA Passenger Survey data. However, it remains unclear what averages have been used – the VisitBritain data can be disaggregated, but not down to the North Somerset level. A too-broad average (such as the whole UK) may overstate the level of spend. The Response seems to indicate that the average national-level visitor spend has been applied at each study area level. As an example of the potential for this to affect the outputs, the total UK average spend per visit for those on holiday was £682 in 2018. The same value for the South West in 2018 was approximately one-third lower, at £459. Looking at the totals in Table 4.4 of the Assessment, this would mean that the annual GVA impact and jobs created by expansion of the airport for the largest study area are significantly overstated. While the lack of transparency makes it difficult to verify these numbers, we would recommend that for decision-making purposes, tourism benefits are considered to be at least one-third lower than presented in the Assessment.

Following this analysis, the Assessment moves on to consider the impact of outbound tourism. Generally, the discussion of this topic is robust and, while it understates any negative effects of outbound tourism, the Response correctly points out that the UK Government has made a judgement that outbound tourism is of sufficiently little negative consequence to not be considered when making plans to boost inbound tourism. In the further information supplied it is also interesting to note that, of the major regional airports, Bristol Airport has the highest distance-travelled by foreign inbound passengers. This is likely to indicate that many visitors using Bristol Airport are travelling to further afield than the local study areas. This underscores the importance of taking proper account of displacement. Table 2, from the Response, is reproduced here.

Table 2: Average distance travelled by short-haul international passengers at major UK regional airports (miles) reproduced from the Response.ⁱⁱ

Airport	UK outbound	Foreign inbound
Birmingham	38	27
Bristol	54	47
Edinburgh	36	22
East Midlands	40	35
Glasgow	39	27
Leeds Bradford	27	22
Liverpool	38	25
Manchester	46	36
Newcastle	33	21
Weighted average	42	31



6. Further commentary on wider economic impacts

Diverging from standard practice on productivity impacts

The Assessment's modelling of the wider economic impacts of the proposed scheme focuses on its impact on business productivity in the region. As discussed above NEF has significant concerns regarding the misapplication of displacement in this process. In addition, we offer here some commentary on the specific approach used to quantify productivity impacts. It is notable that, as shown in Table 3, some major recent airport expansion schemes have not been able ultimately to include an estimate of productivity impact in their final appraisal due to uncertainty around the modelling process.

The process used in the Assessment to calculate the business productivity impacts of the proposed expansion is based on an approach developed by Oxford Economics for TfL as part of the Airports Commission process. The approach first assumes a relationship between national air travel and national productivity and then, using a Generalised Travel Cost model,^{ix} estimates the number of business journeys that occur only due to the existence of the airport. However, it is notable that, while developed for the Airports Commission, this was not the method used ultimately to evaluate productivity improvements.^x The chosen method was a complex Spatial Computable General Equilibrium (S-CGE) model. Nor was it used in the DfT's subsequent review and updated appraisal,^{xi} which instead use the UK Government's recommended *conventional appraisal* approaches of assessing:

- Change in business output in imperfectly competitive markets.
- Change in tax impact from relocation of workers.
- Change in increase in tax-take resulting from labour market impacts ('tax wedge').
- Change in increased productivity arising from more trade (which was separated into impacts on imports and exports).

The Generalised Travel Cost process used by York Aviation accords with standard practice for such analysis, which can be seen when a fuller description is presented in the Response. However, the results presented hinge upon deviation from the standard practice, through a transformation applied using the Oxford Economics relationship. As such, the approach used does not fit the DfT's Transport Appraisal Guidance. Not following this guidance prevents comparison with similar schemes and also, in this case, allows for the overstatement of impact, due to not considering the theoretical underpinnings of how a transport investment might lead to productivity improvements.

Table 3 places the claimed passenger additionality and productivity benefits in the context of other DfT standard calculations. These other, much larger, schemes claim between £0 and £3 billion in wider economic benefits during a 60-year appraisal period. However, the much smaller Bristol Airport scheme is claimed to deliver almost £1 billion of Wider Economic Impact during one-sixth of this time-frame.

Further to this, the results as presented, do not take account of the potential for land-use change^{xii} that would distort the traditional 'rule of half' assumption. The concept, which the Review questions, appears to be misunderstood in the Response: the answer to the query on



land-use change references land use within the development site, rather than throughout the study area. Land-use change has the potential to alter demand for travel within the study area; it would have been appropriate for the model used to have been clarified as assuming a fixed area of land usage.

Table 3: Comparisons of airport expansions^{xiii}

	Bristol Airport expansion - the Assessment	London Gatwick Airport expansion (DfT 2017)	London Heathrow Airport expansion (NW) (DfT 2017)
Additional passengers at airport	Scaling to 2 million by 2026	+13 million (2030), +24 million (2040), +47 million (2050)	+46 million (2030), +46 million (2040), +43 million (2050)
Additional passengers at national level	Scaling to 2 million by 2026 (implicit in the Wider impact calculations)	+2.2 million (2030), +8.4 million (2040), +20.8 million (2050)	+26.6 million (2030), +31.5 million (2040), +31.3 million (2050)
Wider Economic impacts			
Productivity	£883 million between 2018 and 2028	Not included in appraisal due to uncertainty	Not included in appraisal due to uncertainty
Business output	Not calculated	£1.2 billion, 2024 to 2084	£1.4 billion, 2024 to 2084
Tax wedge	Not calculated	-£1.1 to 0.1 billion, 2024 to 2084	£0.5 to 0.1 billion, 2024 to 2084
Total	£0.9 billion between 2018 and 2028	-£0.1 to 1.3 billion, 2024 to 2084	£1.8 to 3.1 billion, 2024 to 2084



7. Total effect on the results

Presented in Table 4 are the results from the Assessment, as split across study areas and impact types.

Table 4: Reproduction of the Economic Impact of Bristol Airport in 2026 – Impact of the 12 mppa (million passengers per annum) Planning Consent from the Assessment¹

		Direct	Indirect and Induced	Economic Footprint	Productivity	Tourism	Wider Impacts	Grand Total
North Somerset	GVA (£m)	£50	£20	£70	£20	£0	£20	£90
	Jobs	275	250	525	125	0	125	650
	FTEs	250	200	450	100	0	100	550
West of England	GVA (£m)	£70	£40	£110	£70	£30	£100	£210
	Jobs	575	625	1,200	525	325	850	2,050
	FTEs	525	525	1,050	400	275	675	1,725
South West and South Wales	GVA (£m)	£70	£70	£140	£190	£190	£250	£390
	Jobs	800	1,325	2,125	1,875	1,875	3,025	5,150
	FTEs	700	1,050	1,750	1,475	1,475	1,375	4,125

Table 5 represents the results, presented in the same format as Table 4, with the factors identified in this review accounted for, where possible. This includes: adjusting the Tourism Impact to account for the lower spend for tourists in the South West; assuming a high level of displacement for the Indirect and Induced impact in the South West and South Wales study area; and assuming total displacement for the productivity gain, in line with the DfT's Guidance.



Table 5: Adjusted Table 5.3, in line with the notes made in this review

		Direct	Indirect and Induced	Economic Footprint	Productivity	Tourism	Wider Impacts	Grand Total
North Somerset	GVA (£m)	£50	£20	£70	£0	£0	£0	£70
	Jobs	275	250	525	0	0	0	525
	FTEs	250	200	450	0	0	0	450
West of England	GVA (£m)	£70	£20	£90	£0	£20	£20	£110
	Jobs	575	325	900	0	215	215	1,115
	FTEs	525	275	800	0	180	180	980
South West and South Wales	GVA (£m)	£70	£0	£70	£0	£40	£40	£110
	Jobs	800	0	800	0	760	760	1,560
	FTEs	700	0	700	0	600	600	1,300



- i 'Development of Bristol Airport to Accommodate 12 Million Passengers Per Annum'. Economic Impact Assessment, November 2018, York Aviation on behalf of Bristol Airport Limited.
- ii Review of Economic Impact Assessment - For Bristol Airport Expansion Project, February 2019, Jacobs on behalf of North Somerset Council.
- iii 'Development of Bristol Airport to Accommodate 12 Million Passengers Per Annum: Economic Impact Assessment'. Response to Comments Received, March 2019, York Aviation on behalf of Bristol Airport Limited.
- iv 'Development of Bristol Airport to Accommodate 12 Million Passengers Per Annum: Environmental Statement', December 2018. Wood Environment & Infrastructure Solutions UK Limited, on behalf of Bristol Airport Limited.
- v Committee on Climate Change. 2019. *'Net Zero – the UK's contribution to stopping global warming'*.
- vi Department for Transport. Traded Carbon Prices. Available at: <https://www.gov.uk/government/collections/carbon-valuation—2#update-to-traded-carbon-values:-2018> [accessed 18/06/2019]
- vii We have utilised the higher estimate of the BEIS carbon prices for policy appraisal. This is appropriate given the imminent increase in carbon prices due to the government's upcoming commitment to net-zero greenhouse gas emissions. See: <https://www.gov.uk/government/collections/carbon-valuation—2>
- viii TAG Unit A2.1 'Wider Economic Impacts Appraisal. Transport Analysis Guidance (TAG)'. May 2018. Department for Transport.
- ix Economic models that predict travel demand behaviours through assigned value to people's time, and deriving the total economic cost of different journey options.
- x 'Airports Commission 1. Strategic Fit: GDP/GVA Impacts', June 2015, PwC on behalf of the Airports Commission.
- xi Updated Appraisal Report: Airport Capacity in the South East, October 2017, DfT.
- xii Changes to land-use within the whole study area that occur as a result of the investment; for example, a housing developer increasing the density of local housing, or from the relocation of a business into a new area.
- xiii 'Updated Appraisal Report: Airport Capacity in the South East', October 2017, DfT.