Stop
Bristol Airport
Expansion

FACT SHEET 1

AVIATION EMISSIONS: Bristol Airport and the Climate Emergency (v: 19.08.19)

The Fact Sheets are intended as a reference for issues raised by the threatened expansion of Bristol Airport and updated regularly. Sources & references at end of document. Comment and suggestions welcome.

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Overview

1 In October 2018, the Intergovernmental Panel on Climate Change (IPCC) warned that, based on a vast and incontrovertible body of scientific evidence, **we only have 12 years to save the planet from climate-related disaster**. In the past 50 years, 60% of mammals, birds, fish, insects and reptiles have disappeared because of human activity. The mass extinction of plants and wildlife is leading to a catastrophic loss of biodiversity.

2 This climate emergency will create physical, social and economic disruption on an unprecedented scale. With roughly 1°C of global warming already driven by human activity, the physical impacts are already apparent as glaciers and permafrost melt at an alarming rate leading to rising sea-levels and extreme weather conditions.

The Climate Emergency in North Somerset and the Region

3 In November 2018, Bristol City Council unanimously declared a 'climate emergency' and the aim for Bristol to be carbon neutral by 2030. In February 2019, **North Somerset Council also unanimously declared a 'climate emergency' and committed to achieving carbon neutrality by 2030**. They were followed in July 2019 by Bath & North East Somerset (BANES) council and the West of England Combined Authority (WECA).

4 The impacts of climate change are already obvious in many places around the world: food shortages, increased poverty and increased severity of heat waves, drought, hurricanes and wildfires. In the UK, we will be affected both indirectly (through stresses on global food production and increased conflict) and directly through impacts on our own agriculture, weather extremes, etc. **North Somerset, in particular Weston-super-Mare, has been identified as one of the most vulnerable locations for increased coastal flooding due to sea level rise**.

Bristol Airport: flights and carbon emissions

5 Aviation is the fastest growing sectors responsible for greenhouse gas emissions and will be the largest single source of carbon emissions by 2050. Bristol Airport will make a significant contribution. Here are the figures:

- in 2017 aviation carbon emissions at Bristol Airport were 746.77 kilo tonnes. An annual throughput of 12 million passengers is likely to produce around 920ktpa CO2e per annum,

six times greater than the 154ktpa CO2 stated in the Airport's 'Environmental Statement'.

- if further Airport expansion goes ahead in 2026 emissions will rise to 1,183.87 kilo tonnes, an increase of 437.1 kilo tonnes or **59% in less than 10 years**. This figure could be higher if a newer, less-polluting fleet of aircraft does not materialise.

Is carbon off-set an answer? A tree takes 40 years to absorb one tonne of CO2: to offset the additional emissions would require 180 million trees to be planted every year. **Equivalent to reforesting an area the size of North Somerset every four months** (and this before taking into account shrinking capacity caused by fires in the Amazon rain forest in the summer of 2019).

6 The Airport has claimed that expansion will bring environmental benefits by attracting passengers (and traffic) away from Heathrow. This is another example of the Airport misleading on issues. In fact extra CO2 emissions generated by air traffic following expansion would be 437.1 kilo tonnes a year, far exceeding any savings made by road traffic diverting from the London airports. **These 'savings' are in any case highly speculative and estimated to be at best 18 kilo tonnes a year, so net emission increase from Airport expansion will be 419 kilo tonnes per year**.

7 In 2013 the Department for Transport (DfT) aviation looked at various models for growth at UK airports in 2013 at 60% by 2050. The figure under most models for Bristol was for 10-12 million passengers per annum (mppa) at 2050. This compares with the Airport's application to achieve this figure by 2025. The current Airport planning application states that growth to 12mppa is Phase 1 of growth to 20 mppa.
By any measure the Airport application is out of all proportion to any reasonable growth prediction.

8 Aviation emits CO2 and a range of other gases and particles at altitude and forming 'contrails'. A new study suggests that the white contrails (so-called 'vapour trails') planes paint across the sky have an even bigger warming effect than previously thought. **The impact of contrails is set to triple by 2050 at current growth rates**.

9 Non-CO2 effects are variable and hard to calculate and are almost always ignored in planning and policy decisions, meaning that the climate impact of aviation is significantly underestimated. To get closer to the true impact, government guidelines for corporate reporting CO2 emissions suggests multiplying aviation emissions by 1.9.
Bristol Airport's figures break down aviation emissions into 'cruise' and 'landing and take-off'. If the former were multiplied by 1.9, that would take the airport's current total annual emissions up to the equivalent of 1,500ktCO2, and at 12 million passengers the equivalent of 2,500ktCO2 - **more than double the total CO2 from all other transport, homes, and industry in North Somerset**.

10 Bristol Airport's) planning application follows a convention where emissions are only counted for outgoing flights, with incoming flight emissions attributed to other airports. **Ignoring the 'return' half of emissions in planning application environmental statements makes no sense**: if an airport adds 10,000 more outgoing flights and 10,000 more returning flights, then the net increase is 20,000 additional flights.

11 Growth at Heathrow is expected to be 60% by 2050 (not including a third runway) which would take all the carbon allowance allotted to other UK airports. The logical conclusion is that **no regional airports should grow any further until there is a decision on Heathrow**. The 'get-out' clause is carbon offsetting and this will need particular scrutiny in future (see §5)

Further information

12 In burning fuel, aircraft produce carbon dioxide and a cocktail of other pollutants. A modern, heavily loaded jet plane produces around 0.1kg of carbon dioxide (CO_2) per passenger kilometre, **so for every passenger on a full flight to Palma (the top destination from Bristol (1,465 km), around 146kg of CO_2 will go into the atmosphere**. Older planes or those carrying fewer passengers will produce more.

13 The effect of aviation emissions on climate change is estimated to be between 2 and 4 times worse than the effect of carbon dioxide alone because of the toxicity of the cocktail and the heights at which they are emitted.

14 The UK Committee on Climate Change (UK CCC) [5] expects growth in the aviation sector of around 5% p.a. The 'Further Ambition' scenario allows a 60% increase in passenger demand above 2005 levels by 2050 (demand is currently around 30% higher). **A reduction in emissions would be possible if demand were to be lower e.g. 20-40% above 2005 levels** would imply a further saving in emissions of 4-8 $MtCO_2e$). This could reflect a future change in consumer preferences and social norms, or more ambitious government and international policy to limit growth in demand.

15 The Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) designed by the air industry recommends international offsetting. This is essentially the industry monitoring itself and the scheme has many flaws and is difficult to monitor. The UK Committee on Climate Change (CCC), the statutory committee advising the UK Parliament climate change, also **recommends that carbon offsetting should be for the aviation sector should be contained within the U.K**

16 The UK CCC report states that the aviation sector should not rely on 'afforestation' (i.e. planting new trees on new lands) to offset its emissions but look to technologies that directly capture carbon from the air, paid for by the aviation industry. This is welcome but doesn't address the urgency of the climate emergency.

17 The CCC wants to reduce UK aviation emissions to 31metric tonnes (Mt) of CO_2 by 2050, 25% less than the level currently predicted by the Department for Transport. The Government currently predicts aviation emissions of over 40 Mt by 2050, the original figure of emissions set in 2005 was 37.5 Mt. This is going to be **exceedingly difficult even with new efficient aircraft and technological advances such as biofuels**.

18 An Intergovernmental Panel on Climate Change (IPCC) report states that 'the annual costs of removing emissions from the atmosphere are potentially large in our scenarios (e.g. of the order of £10 billion in 2050, possibly as high as £20 billion). **These could be paid by industries, like aviation, that have not reduced their own emissions**

to zero. That would imply increasing costs (e.g. for flights) from 2035, as emission removals scale up in our scenarios.'

7 Looking Forward

19 In 2017 the total transport sector, including international aviation and shipping (IAS) accounted for over a third of UK greenhouse gas emissions (34% by source or 37% by end user). **Aviation in particular has grown significantly, with levels in 2017 more than double 1990 level**.

20 So the government will need to constrain demand for air travel, to and from UK airports consistent with an emissions reduction pathway to net zero. The UK Committee on Climate Change (CCC) has suggested carbon pricing, reforms to Air Passenger Duty, and policies to manage the use of airport capacity as measures to constrain the increase in passenger numbers to 20-60% of 2005 levels.

21 Other options include an immediate halt on expansion of airport capacity and the introduction of pricing mechanisms such as a frequent flyer levy and removal of tax breaks on aviation fuel for domestic and EU flights. These would be **fair and effective ways of limiting the disproportionate amount of air travel by a small proportion of people**, with two thirds of flights from the UK made by less than 20% of people.

22 The current hype around electric aircraft is known in the trade as the 'peak of inflated expectations.' They will come, but it will take a long time to arrive. It should also be remembered that manufacturing aircraft uses immense amounts of natural resources and produces huge amounts of pollution. Their environmental impact is not limited to flight.

23 In October 2018, EasyJet issued a press release stating it planned to introduce a short-haul electric fleet of aircraft within 10 years, working in conjunction with a start-up company called Wright Electric. The chief executive officer of Wright Electric, Jeff Engler has since acknowledged that the projected range of 335-miles is beyond the capabilities of today's batteries and that the lithium-ion battery technology required may not progress quickly enough to achieve this goal within the next decade.

24 Finally, take a sceptical look at UK Government claims its commitment to carbon reduction. **Carbon emissions are routinely misrepresented by the UK government**. For example, statistics indicating we have reduced carbon emissions by 40% since 1990 exclude international aviation and shipping (IAS) (3). Nor is there mention that we have outsourced most of our carbon-emitting activities – we still purchase the goods from cheaper sources that we still consume but no longer manufacture in the UK.

Sources and references

Essential sources of information on emissions and the climate emergency
Numbers refer to above paragraphs(§).

§1 The Intergovernmental Panel on Climate Change (IPCC). 8 Oct 2018. *http://www.ipcc.ch/report/sr15/*

§2 The Carbon Brief organisation. *https://www.carbonbrief.org/*

§4 Climate Change Risk Assessment Report 2017 prepared for the Committee on Climate Change UK.
https://www.theccc.org.uk/wp-content/uploads/2015/10/CCRA-Future-Flooding-Main-Report-Final-06Oct2015.pdf
§5 Adrian Gibbs (2019), 'Just Plane Wrong'. Isonomia, Bristol.
https://www.isonomia.co.uk/just-plane-wrong-bristol-airports-expansion-application/
§6 [Insert link]
§7 *Parish Councils Airport Association (May 2019). Addendum 5 'Further comments by the PCAA to Bristol Airport application 18/P/5118/OUT on Climate Change.*
§8 'Contrails: aviation's dirty secret'
https://www.sciencemag.org/news/2019/06/aviation-s-dirty-secret-airplane-contrails-are-surprisingly-potent-cause-global-warming
§9 Campaign Against Climate Change response to BAL planning application. https://planning.n-somerset.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=PJML85LPMKI00
§10 Adrian Gibbs (2019), 'Just Plane Wrong'. Isonomia, Bristol.
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§13 *International Panel on Climate Change, First report on aviation for the Intergovernmental Panel on Climate Change'* [detail tbc]
§14 Committee on Climate Change [detail tbc, p.156)
§18 *International Panel on Climate Change, '30 years informing global climate action'*
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§21 *Friends of the Earth (April 2019. 'A net zero carbon budget for the whole transport sector'*
https://policy.friendsoftheearth.uk/print/pdf/node/123
§22 *https://leehamnews.com/2017/09/21/bjorns-corner-electric-aircraft-part-13/*
§23 *https://arstechnica.com/cars/2017/10/airline-plans-to-use-electric-airplanes-in-10-years-is-that-possible/*
§24 Sandra Laville, 'UK's "creative carbon accounting" breaches climate deal', *The Guardian*. https://www.theguardian.com/environment/2019/apr/25/uks-creative-carbon-accounting-breaches-climate-deal-say-critics?fbclid=IwAR2tKfWt-42kzu62kUwJ5Mu3KyyIWeeKXF8IHsZfn3l6a0_NE2GO16Fg7fw

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