

Environmental Audit Committee

Oral evidence: Airport expansion and climate and nature targets, HC 831

Wednesday 14 May 2025

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[Watch the meeting](#)

Members present: Mr Toby Perkins (Chair); Olivia Blake; Julia Buckley; Barry Gardiner; Anna Gelderd; Alison Griffiths; Chris Hinchliff; Martin Rhodes; John Whitby; Sammy Wilson.

Transport Committee Member present: Ruth Cadbury.

Questions 1 - 62

Witnesses

I: Professor Rob Miller, Director, Whittle Laboratory; Celeste Hicks, Policy Manager, Aviation Environment Federation; and Johann Beckford, Senior Policy Advisor, Green Alliance.

II: Dr Lisa Lavia, Managing Director, Noise Abatement Society; Alethea Warrington, Head of Aviation, Energy and Heat, Possible; and Paul Beckford, Policy Director, No 3rd Runway Coalition.

Written evidence from witnesses:

[Possible](#)

[No 3rd Runway Coalition](#)

[Aviation Environment Federation \(AEF\)](#)

[Aviation Impact Accelerator](#)

Examination of witnesses

Witnesses: Professor Rob Miller, Celeste Hicks and Johann Beckford.

Q1 **Chair:** Welcome, everybody, to the latest meeting of the Environmental Audit Committee, and our first meeting looking at airport expansion, and the contribution it will make to the climate and nature goals. I am pleased to be joined by our opening panel. Thank you all for coming to give evidence to us. I invite you to introduce yourselves, the organisation you work for and the role that you play there.

Johann Beckford: Thank you for having me. My name is Johann Beckford. I am a senior policy advisor at Green Alliance. We are a charity and think-tank focusing on ambitious environmental leadership. Our work covers climate mitigation, adaptation, nature restoration, resources and the circular economy.

Celeste Hicks: Hi, I am Celeste Hicks, policy manager at the Aviation Environment Federation. We work on all things aviation environment: noise, climate, air pollution and nature impact. I quickly wanted to say thank you for having this inquiry. We welcome the opportunity to discuss these issues. We do not think that there is an environmental safeguard on airport expansion, given the complexity of the interactions of the policies, so I hope we get the chance to discuss that today.

Professor Miller: I am Professor Rob Miller, director of the Whittle Laboratory at the University of Cambridge. I am one of the co-leads of the Aviation Impact Accelerator, which is a global modelling and convening group that brings together industry, academia and government to accelerate the pathway to net zero flight.

Q2 **Chair:** If I could start with you, Ms Hicks, please, how significant are emissions from aviation in the context of UK emissions as a whole?

Celeste Hicks: They currently represent about 9% of the UK's emissions. We did some number crunching on the most recent DESNZ figures. I have to say this was not including domestic emissions because they have not come out yet but, according to DESNZ, we estimate that domestic emissions are slightly higher than in 2019—so around 37.4 megatonnes at the moment—and we know that international emissions from aviation are higher than they were in 2019. To put that in context, the Climate Change Committee expects that aviation will be the highest emitting sector of all the economy sectors by 2040. We basically want to draw attention to the fact that despite there being this trajectory promised in the jet zero strategy that emissions from aviation would be falling, we can see, in 2024, no evidence of that.

Professor Miller: Could I add to that? Half the climate impact of aviation is non-CO₂ effects, and the biggest non-CO₂ effect is the clouds that are formed by aviation. Those clouds trap heat. One in 20 flights creates a cloud and, in six hours, that cloud warms the earth equivalent to the CO₂



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from all the 20 planes over 100 years. If you add those together, it is about half the effect, but the size of that effect is quite uncertain and so we need to consider both effects today.

Q3 Chair: Coming back to you, Professor Miller, how are these carbon emissions projected to change on current trajectories out to 2050? What impact do you anticipate the growth that we are currently anticipating might become the policy of the Government would have?

Professor Miller: The growth is hard to exactly measure because it is a comparison of the size of aviation emissions with other sectors that are also decarbonising. The Aerospace Technology Institute in its most recent report estimated that to be at 39% of UK emissions in 2050. That then easily becomes the largest fraction of UK emissions.

Q4 Chair: From your perspective, why is the airport and aviation sector so hard to decarbonise?

Professor Miller: Two effects are going on here. One is the weight. Aviation is a weight game and the energy per unit weight of jet fuel is particularly good. Battery electric flight or other solutions do not have that energy density and so that makes it hard technologically. It cannot be electrified in the same way.

The second thing is the timescales involved in the problem. To develop the technology, certify the technology, deploy the technology and then the fact that aircraft are in service for 25 or 30 years means the time constants are large. Putting together this hard technology with this time constant makes it easily the hardest sector to decarbonise.

Q5 Chair: From your perspective, Ms Hicks, do you see this issue improving or do you have confidence that what we are hearing from the sector about the extent to which they are decarbonising is possible?

Celeste Hicks: I mentioned the fact that emissions are at 2019 levels and 2019 was supposed to be the peak year for emissions. We need to consider what has happened during the pandemic, but 2024 now appears to be the peak year. You can take from that what you want about how effective decarbonisation has been so far.

You need to look at where we are now with the delivery of all these technologies. This is not to say that we will not be there in the future. Sustainable aviation fuels, greenhouse gas removals, zero emission flights and all the things that we want to talk about may all deliver in the future. In fact, I quite hope they do.

However, to give you some context, as things stand right now sustainable aviation fuel is about 0.3% of global aviation fuel today. We have just over 9% of the fuel required to meet the UK SAF target by 2030. That is four and a half years away. We need to scale that industry by 10% from today's levels. If you look at greenhouse gas removals—this one always makes my eyes pop out—we have something like half a megatonne of



greenhouse gas removals working in the entire globe at the moment. The gap between that and the jet zero projections for what the UK aviation sector on its own will need by then is quite astounding. It is not that we cannot say that technology will deliver but, if it is going to deliver, it needs to happen much more quickly than it is.

Q6 **Olivia Blake:** To ask a bit more about the carbon budgets that we have coming up—this is to Mr Beckford—should the Government include international aviation emissions within the carbon budgets, and would you be surprised if they did not?

Johann Beckford: Yes. My short answer to that is, yes, they should. There is a clear moral as well as environmental case for them being included. The CCC has set this out in the past. Well over 90% of aviation emission impacts from a CO₂ perspective are international and so, if we were to suddenly ignore international aviation, we would essentially not be telling the truth about the right impact levels that we need to consider. That urgently needs to be incorporated.

The sixth carbon budget already includes international aviation and shipping, and Parliament has signed off on that, which is great, but there is a little bit of a wrinkle here. The Government still need to formally legislate for international aviation and shipping emissions to be included in the Climate Change Act targets. We are in this slightly weird limbo situation where the sixth carbon budget includes it, but we need to officially incorporate it in the targets. That is easily enough done via secondary legislation. We need to assign the parliamentary time. I know there is a lot of pressure on parliamentary time these days.

If you did not legislate for international aviation and shipping emissions to be incorporated into Climate Change Act targets, we would be in a slightly strange position where the sixth carbon budget in the mid-2030s would be overinflated, and you would then have to potentially adjust that target to focus purely on domestic sources of emissions. I am not sure that we are quite in the political space where we want to turn back to drivers potentially, roll out cleaner heating systems more quickly, cut the number of miles driven on our roads or use those other interventions that may have to take place if we continue to give aviation a privileged position where it is not incorporated in our emissions targets. That is crucial.

At Green Alliance, we published a piece of work called “Mind the Gap” at the start of this year. That was based on the pathway towards the sixth carbon budget and how we get on track with that. Previous carbon budgets were set before net zero was agreed upon in 2019. That highlights a 97 million-tonne emissions gap for the transport sector as a whole to close in the years preceding the sixth carbon budget, which is pretty significant but, fortunately, our excellent report has closed it, which you can all find on our website.



It is crucial to highlight here that we incorporate aviation and shipping in these calculations because trying to do it without aviation and shipping is hard, basically. When you start to throw into the mix the idea that 50% of people in the UK do not fly in a given year—and that is overwhelmingly higher among people on the lower end of the income spectrum—there is a justice argument here that we have to incorporate aviation into our emissions projections and we have to incorporate it into our targets. I advocate for doing that.

Q7 Olivia Blake: You have pre-empted my next question but, going back to that report, what would the reduction look like to close that gap and what is your view of trying to achieve the carbon budget in terms of aviation?

Johann Beckford: We can draw on the Climate Change Committee's work here on the sixth carbon budget. It specifically says that if we were to follow a business-as-usual trajectory, emissions would be around 13 million tonnes higher in 2035 than they would otherwise be. We need to put policy in place now to have that gradual transition, for which I absolutely urge everyone to advocate. Annual emissions would be around 30.5 million tonnes of aviation emissions in 2035. To put that in context, that is a 13.8% decrease on 2023 emissions. The figures that Celeste highlighted earlier that AEF has been looking at would be a greater level of reduction if 2024 is actually going up. It seems to suggest that 20 million more passengers travelled in 2024 than 2023. Again, we need to start looking at the policy process as soon as possible.

I would link that to the need for a broader strategy on policies that we can put in place now, and that is pulling a broader demand management lever. Some of the technologies that we have mentioned already are absolutely vital in the coming years and decades to come, but at this stage, a lot of them are either unproven or not scalable. We certainly need to make progress now so that we can give the breathing room to the rest of the sector to be able to scale those technologies over time.

Q8 Olivia Blake: We will come back to demand management later, but what impact would integration of the emissions into the carbon budget have on the actual likelihood of achieving those budgets?

Johann Beckford: This is an interesting question in that we have adopted the carbon budget as it is with international aviation and shipping in the mix and so, if we were to not legislate for the targets, we have overinflated that, effectively. Instead of letting that slide, we would have to tighten that budget to get the level of decarbonisation needed. The CCC suggests that we should cut a cumulative emissions figure level of 13 megatonnes by 2035. Presumably, the corollary of that is the budget itself would have to be that much tighter by that period of time.

Again, I link this back to, ultimately, the fairness argument of this. Aviation is in a privileged policy position, and we need to level that playing field, if you like, with driving or with the future challenges around



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agriculture, industry or other tough-to-decarbonise sectors. If we leave aviation, we are creating a road for our own back further down the line.

Q9 Olivia Blake: We have already heard on this but, finally, given that only one of the 50 targets have been set for the industry since 2000 has been met, how likely is it that the targets that we are talking about will be met?

Johann Beckford: The track record is not great, it is fair to say. That report is from Possible, who are coming up next, and so a shout-out to them for some great work. The track record is not good. A lot of those targets are self-declared targets, so that highlights the need for a Government-led strategy that takes us on a pathway towards net zero rather than allowing airlines and airports to be able to set their own targets and then, inevitably, unfortunately, miss them.

Q10 Chris Hinchliff: Academics from the University of Manchester have highlighted that airport expansion locks in emissions for decades to come. In the report that you co-authored, Mr Beckford, which you have already referred to today, Green Alliance called for a moratorium on airport expansion. Is that still Green Alliance's position? Do you believe the Government and the Climate Change Committee are getting this wrong?

Johann Beckford: It is still my position. We should call for a moratorium on airport expansion. An interesting part of this debate is whether a moratorium on airport expansion means that people cannot fly in future or there cannot be an increasing number of people flying in future. That is not the case. Airports as they currently exist have plenty of capacity for more people to fly. In fact, if you look at the sixth carbon budget advice from the CCC, it recommends a 25% increase in passenger numbers but with no net expansion of infrastructure. That can perfectly possibly take place.

It is interesting that recent advice from the Climate Change Committee in the seventh carbon budget did not explicitly talk about airport expansion, but if you dig into the numbers, the message is still relatively clear. By 2050, the CCC suggests, around 400 million or so passengers could travel in 2050, which is still a significant increase. It is a 28% increase on today, which is just short of the 300 million mark. If you were to take all the airport expansions that are currently on the table—and these are not my figures, but a shout-out to AEF, which produced these figures—we are likely to see more in the region of 500 million passengers travelling per year. That is a pretty big gap of 100 million people who will be travelling and, ultimately, that speaks for itself. We should place that moratorium to give ourselves the breathing room over time to develop those technologies.

Celeste Hicks: Could I add to that?

Q11 Chris Hinchliff: I will come to you and then I will bring in Professor Miller. Ms Hicks, as has been alluded to there, the CCC is effectively



saying that demand management through price controls can achieve the same outcome as constraining airport capacity growth. However, as we have heard, allowing the expansion plans for the UK airports to go ahead—and apologies for effectively quoting your own figures back to you—would get us to the capacity for 506 million passengers per year when the CCC says that passenger numbers need to be limited to 402 million per year, which, as has been said, fits within existing capacity. The reality is that airports will want to do everything in their power to make full use of the additional capacity. Having invested in it, once again, will corporate motives override environmental imperatives?

Celeste Hicks: I do not run an airport, and I am not in charge of a business but, yes, I imagine it is that. I am fairly sure that no airport would make the decision to go ahead and spend that much money on the infrastructure if they were not sure that they would reach the demand that they think they can potentially achieve. One interesting question is how that plays out across the country because there are interactions between the runways and the south-east such as Luton, Gatwick, Stansted, London City and Heathrow all playing for that south-eastern market. There are interactions between where the demand goes, but each of those businesses will want passengers to go to their airport.

One thing we picked up on the jet zero modelling is that we are not aware that any modelling was done on the assumption that if all those airports got what they asked for, what would happen if all of them filled up to capacity? The business model would dictate that you should fill up to capacity. We are not aware of any modelling that has been done to say what would happen to emissions if all those airports got what they wanted.

Chris Hinchliff: Thank you. Professor Miller, would you like to come in?

Professor Miller: I would like to come in on this. Our modelling based on the DFT shows that, if you go for airport expansion, the increase in emissions is 6.3 million tonnes of CO₂ equivalent, which is a 16% increase. The number from the modelling from the DFT, which we have gone over, and which I think is pretty sound, is 463,000,000 passengers in 2050 if you have airport expansion.

It is important to realise that two thirds of the expansion in passenger numbers happens with or without airport expansion. It is important to say, though, that airport expansion itself is not inherently clean or polluting. It depends on the matter of the aviation that you run through those airports. It depends more on whether we are on track to net zero by 2050 for aviation, not on the expansion.

Q12 **Chris Hinchliff:** Let me press you on that point, Professor Miller. I was recently reading analysis that said, if the Government proceed with the expansions at Luton, Gatwick and Heathrow, for reasons of GDP and for reasons of wanting Bedford Universal Studios to happen, to meet our carbon budgets we will have to plant a forest twice the size of Greater



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London by 2028. That is equivalent to all the trees we have planted this millennium in three years. It is not realistic. We need to face up to the fact that, if we go ahead with all this airport expansion, we will blow our carbon budgets and thinking otherwise is just wishful thinking.

Professor Miller: All numbers in aviation are big. You can quote one number, or another number and you can say that is large. A 16% increase in carbon emissions will be caused, in the best analysis I have seen by the DFT, which we have gone over with a toothed comb. I advise more analysis needs to be done because that analysis focuses on Heathrow and Gatwick expansion, and we had to expand those numbers to the other airports. The Committee could ask for that to be done.

It is a 16% increase on a considerable number. We desperately need to raise ambition. At the moment, the British Government are doing better than any other Government in the world when it comes to driving SAFs and airport modernisation, but we need to be much bolder. If we are bolder, we can get to net zero aviation by 2050.

Chris Hinchliff: Thank you for an excellent recommendation to end on.

Q13 **Ruth Cadbury:** We have been focusing on expansion and taking the rise in demand as read. I would like to probe that. I do not mind which of you answers, but what is causing the rise in demand? Who is flying more? Is it Brits flying abroad? Is it overseas people bringing money and jobs and whatever to the UK? Is it long haul or short haul? What is the growth of the demand?

Johann Beckford: I have one intervention. I am sure my co-panellists have other things to say, but it is interesting that this debate is often framed as very much an economic argument. That was highlighted in the previous question. The economic returns that you would see from airport expansion are diminishing returns over time. The peak in business travel occurred in 2006-07, which is pre-financial crisis times. We have all lived through the last 15 years or so and understand that now you can operate businesses in new ways, and we have all pivoted in that way. It shows that the growth in flights is largely leisure travel. This is absolutely not about going against anyone being on holiday. That is absolutely not what we are talking about.

It is interesting that still, despite that growth in leisure travel, around 50% of the population do not fly in a given year. We have seen from the stats that that is more likely to be the case if you are in a lower income group. Again, we see that wealthier frequent flyers often pick up the slack. In my mind, there is not a particularly compelling reason that suddenly would change with airport expansion. It is likely to still be wealthier groups who are able to pick up the slack.

Q14 **Ruth Cadbury:** Is it Brits flying abroad or overseas people spending money in the UK?



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Johann Beckford: This is an interesting question. From the latest stats I have seen, there has not been a change over time, but in 2023 we were running a £41 billion tourism deficit. Brits were spending more abroad than foreign tourists were spending here. Again, another column that is supposed to hold up the economic argument does not hold water, unfortunately.

Q15 **Sammy Wilson:** The jet zero strategy and also the carbon budget delivery plan did not mention demand management. Why was that the case?

Celeste Hicks: One thing I want to get across today was to lodge in everybody's head what we mean by demand management. It means different things to different people. From reading lots of the court cases around these issues, it can mean something as simple as a cap in passenger numbers, but it can also mean financial levers that are placed on any activity that happens to dampen demand.

Jet zero did mention demand management, if you accept that broader discussion of it. I think 27% of the emissions reductions that we need by 2050 in jet zero come from carbon pricing. That is either the UK emissions trading system or CORSIA, which is the international trading system. That is a quarter of the emissions savings coming from that carbon price dampening demand. It is important to think about what we mean by that.

I want to add that in that scenario where jet zero talks about the 27% demand reduction, the carbon price that they were assuming was £378 a tonne. It is currently about £40 a tonne. Think how big the gap is between what has been put into that modelling, assuming that is a substantial chunk of the demand reduction needed. I encourage everybody to see demand reduction or growth in demand management and unconstrained demand as slightly more subtle than just saying, "We will stop people flying".

Q16 **Sammy Wilson:** One reason why demand management has not been to the forefront in these discussions so far is because of the impact on a wide range of people, whether it is those who like to take their holidays abroad, and we should not deny them that, people who fly for business as necessary, or indeed the increasing amount of air traffic taking exports abroad for many of our high-value industries. All those groups would be heavily impacted by those kinds of things. We will discuss the impact that demand management to get to the targets would have in a moment or two, but a whole range of people would be affected by it. Politically, that is difficult.

Celeste Hicks: Yes, I understand that. None of these scenarios that we are talking about suggests that anybody, as the current situation is, flies less. Even the Climate Change Committee said that demand can grow by 25%. Nobody is proposing a using a sledgehammer to crack a walnut.



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Demand management is a subtle term and sometimes it can get politicised when people are telling everybody else what to do.

A definite pricing signal comes in, to go back to aviation as a special case, and a regular reminder that aviation pays no tax on its fuel, which people are always surprised to hear. Motorists pay tax on their fuel, but aviation does not pay tax on its fuel. Aviation is already artificially cheap compared with other sectors.

- Q17 **Sammy Wilson:** The Climate Change Committee has suggested reductions of 15% based on the 2018 peak. That is bound to impact on the number of flights and the number of people who can afford those flights if you are to achieve those targets. Using a pricing mechanism or else a cap or frequent flyer restrictions will have an impact economically on individuals and businesses.

Celeste Hicks: As Johann was saying, we are in favour of that financial burden being passed more fairly across society. The people who do the most polluting would pay the most and the people who do the least polluting would pay the least.

- Q18 **Sammy Wilson:** The figure of 57% of air travel was for leisure and the comment made to reduce that would price out the marginal traveller. The marginal traveller is likely to be the person who is least likely to be able to afford the price increase. While a large percentage of people—50% was the figure given in any given year—do not fly, many of those who do fly are on the margins. Those are the people that the demand management policies will be targeted at to try to reduce that.

Johann Beckford: Can I just jump in on that? This is where good policymaking is crucial. That is where focusing policy on frequent flyers is so crucial. Something like a frequent flyer levy deliberately looks at those who are taking their fifth, sixth or seventh flight of the year. That is the kind of flying where probably they could take two or three fewer flights per year and still enjoy the fruits of international travel. You can design that in a way that the family that wants to go to Spain once a year can still take that without a significant price change.

If we do not start to look at the proper policy mechanisms to make this happen, policy will have to catch up by default over time and that is where you start introducing bad policy. If we think about it now and put those things in place, we can make this a much fairer approach. That is why we cannot just ignore the situation as it is. We can make sure that the distributional impact of this is felt much more fairly.

- Q19 **Sammy Wilson:** I would like to know how quickly that can happen, but I will leave that aside. One of you mentioned that two thirds of the increase that is predicted in air travel could be facilitated within existing airports without having any airport expansion. What impact does that intensification of the existing airports have on noise pollution and so on?



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Johann Beckford: I am not an expert on noise by any stretch of the imagination, so perhaps others may be able to come in. I would say, though, that any increase in passenger numbers has an impact, but expansion within existing facilities will have an impact only to a certain extent. If you are looking to introduce further runways, for example, you have to increase the footprint of the airport and you have to then connect those up, so you expand the area in which people are travelling to the airport. You also expand where planes are literally landing and so you increase the potential for noise to be spread to a wider area. Within existing infrastructure is a much more sensible approach when it comes to noise or to air pollution, as well as emissions.

Professor Miller: The DFT modelling shows that if you do not have expansions of airports, Heathrow and Gatwick will fill and people will travel to airports that are not their first choice and will travel further. The consequences of that we do not understand and more work, again, needs doing on that. It is important to understand that expansion or no expansion involves a different distribution of airports being used and a different distribution of travel.

Q20 **Chair:** Is that with regard to distribution within the UK but also across Europe? You hear about people coming long haul and landing in Paris or Amsterdam and doing the last bit of their journey to the UK. Is that what you are referring to in terms of distribution, not just people choosing to go to Luton to get to London but people stopping off in Paris to get to London?

Professor Miller: In the preparation for this, we have a great team in the Aviation Impact Accelerator, and we discussed this, although we have done no modelling on it. The DFT analysis only shows displacement within the UK, fixing the UK boundaries. The consequence will be displacement to Europe. People will take flights to hubs somewhere else and then fly out of those hubs. No modelling at the moment understands that mechanism, and that would be a natural part of any expanded analysis.

Q21 **Alison Griffiths:** I have a supplementary to the earlier question. I have been listening to the advice coming from all of you that business travel peaked in 2006-07 and that the number of international travellers coming to the UK and bringing their international spend is far lower than in reverse. The Government's ambition around airport expansion is related to a desire for economic growth. If we are going to drive up emissions and possibly not get the growth, are we on the wrong track?

Johann Beckford: I would love to jump in on that. Yes, we are certainly on the wrong track. It is not a growth strategy to expand airports, essentially. That is a much harder and bigger question that needs to look across sectors. We have the tourism spending deficit. There is also a suggestion that while expanding an airport is an infrastructure project on the ground, it is likely that often it displaces economic activity from other regions, particularly if you are looking in London and the south-east. We



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can all agree that economic activity needs to be spread across the country rather than further concentrated in the south-east.

Ultimately, yes, the case for economic growth and airport expansion are not linked as strongly as we may have thought in decades past. We need to look more broadly if that is the solution that we are trying to find.

Celeste Hicks: Can I jump in on that? It is quite useful to go back to the Airports Commission, which was the piece of research that was done between 2013 and 2015 to support the production of the AMPS. That looked at all the economic benefit analysis of the Heathrow third runway. There was lots of discussion about the economic benefits at the time and huge discussions/disagreements about the true impact, but the DFT put forward a central case scenario, which was in the area of about only £1 billion in net present value benefits across 60 years of the Heathrow third runway at that time. In some of the cases, it was a negative value across the whole economy.

The inputs that you put into the economic model are complicated but, even back in 2015 when we were looking at that, the economic case for Heathrow expansion on its own was not convincing, just as a project. There are wider questions of the impact of the infrastructure itself being built and the jobs created by the building of the infrastructure. When you put all that into the mix using these models, it came out with quite an unconvincing figure.

It is worth going back and looking at the Airports Commission because a lot of discussion about this was back then. Now GDP growth is not what we expected in 2015 and so the economic case would probably—and I have not done the modelling myself—look weaker than it did even back then.

Alison Griffiths: I appreciate that input. I will move to the question I am meant to be asking.

Q22 **Ruth Cadbury:** Could I slip in with a quick supplementary on that piece of work. Am I right that that piece of work by the commission or the DFT said that growing Heathrow, as you say, would not bring net economic benefits to the UK but would draw growth away from the UK regions?

Celeste Hicks: I would have to get back to you on that one. I would have to go and read it again. It did definitely model that it would draw growth away from other airports in the south-east such as Gatwick, which is a big puzzle for me. Ten years ago, we said Heathrow is the only one that we need in the south-east and it will draw growth away and, therefore, there will not be a case for Gatwick. Now we have a situation where suddenly there is growth for Gatwick, Luton and Heathrow, as far as we understand it. We can get back to you with that.

Q23 **Alison Griffiths:** This question is specifically for Professor Miller, and it is a combined question. I note your optimism and your desire for boldness



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around reducing emissions, and I imagine that technology and technological innovation will be a central part of that. When do you expect that to come through and what impacts do you expect to see?

Professor Miller: That is a good question. You can think about aviation as potentially approaching what I call a Tesla moment. In about 2010, in automotives, everybody was saying we should focus on biofuels. "Let's get biofuels over the line." Nobody knew that electrification of cars was going to come in the Tesla moment.

In aviation, similarly, we should absolutely focus on delivering SAFs and the Government are doing that. However, we have to maximise the chance of a Tesla moment. A number of technologies could cause those Tesla moments. One you may have heard of is liquid hydrogen as a fuel. Another one is liquid methane as a fuel. Another one is hybrid electric propulsion. Another one is synthetic biology, engineering the DNA to create creatures that can make fuels more efficiently. I am sure there are others.

If we are going to have those technologies delivering by 2050, because of the timescale involved in the development, deployment and change I talked about earlier, we need to move much faster. We need to act on a number of moonshot programmes and demonstrators need to deliver those moonshot programmes by 2030 to give us confidence. This is positive for the UK because this is like a Whittle moment. This is a chance to build new industries for the UK and the cost of those demonstrated programmes is relatively low.

I will give you two examples of things that the Government should do. First, we need to have large airspace-wide scale trials of contrail avoidance. By changing aircraft slightly in altitude, you can remove this cloud formation, which is about half the climate effect of aviation. If we started those trials immediately, we could start to launch a system by 2030. That has the potential to remove about 80% of that half, the non-CO₂ effect, by 2050. That is a substantial number. In fact, globally, that is equivalent to about a quarter of our carbon budget to 1.5 degrees. That is an amazing amount. We could do that immediately. We should as a country. The Government should do that.

The second is these moonshot demonstrator programmes. To give you an idea, if we started doing that with hydrogen and we launched a successful programme by 2030, we could get a 15% to 30% reduction in aviation emissions by 2050, scaling—in our report—to 30% to 70% by 2060. It is incredibly dependent on action early. This is a critical five years for us to act.

Johann Beckford: I want to build quickly on that and link it back to the to the overarching question here. Sometimes we put technology and demand-side measures at loggerheads, and think that the two are automatically opposed, but one very much can support the other.



If we are going to be able to scale some of the technologies in the coming decades, the amount that we are flying, the amount of fuel that we are using and the number of aircraft that we have will fundamentally dictate the proportion with which those technologies are rolled out. Trying to fly 500 million passengers around and we have to scale SAF to a percentage level—which is what the Government SAF mandate does—is all the more difficult because of a higher demand for fuel. You can give technologies the breathing room to be able to scale and give yourselves the breathing room within the carbon budget as well, as we talked about earlier, if you take a sensible approach to aviation growth, which is why those two are fundamentally linked.

Q24 Anna Gelderd: We have covered some of what I was going to ask, which is great. There are some interesting technological advancements there and several suggestions of what the Government should be doing. This could be a simple yes or no answer and I suspect I know what it will be, but is the Government doing enough to support some of what you are suggesting there? If not, do you want to add anything to your asks of interesting options that the Government could take forward?

Professor Miller: The UK Government are definitely being proactive on this and, on SAF and airspace modernisation, they are doing well. They are focusing and leading.

I mentioned the moonshot programmes that I would go after and the large airspace-wide trials that I would go after. It is critically important—this is the one thing I want to add—that we do this in an agile way. My own advice would be that these should be run through the UK Advanced Research and Innovation Agency or ARIA. These are relatively small sums of money, and we could go after these new industries. If by 2030 they do not happen, that is it, cut the programmes. But we have to make decisions, and we have to do it in an agile way.

Celeste Hicks: I was going to chip in on greenhouse gas removals as well. If you go back to the jet zero strategy, a huge chunk of the abatement needed by 2050 is coming from removals, about 37%. As I said before, at the moment it is something like 0.5 megatonnes of capacity in the whole world.

Some work needs to be done by the Government to think about how to stimulate the industry in greenhouse gas removals as well. We are talking here about direct air capture being the most permanent form of removals, which is literally sucking the CO₂ out and burying it underground. A lot of policy work is to be done there. If you look at the jet zero strategy, the new technologies need incentives and policy, but also the greenhouse gas removals.

To come back to the original question about the whole point as I understood it for the inquiry, we feel that it would be much more sensible to give the technology time to take off before making decisions about moving forward with expansion. If you go ahead with the expansion and



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increase the demand, you have to work even harder if it does not work out. I was looking at all these questions and it suddenly dawned on me how much easier it will be in five years' time to answer this if we have had time to see whether the technologies are working or not. That is the fundamental question for me.

Johann Beckford: Briefly, there is an opportunity potentially on technology and the economic benefits around it. Green Alliance will soon be releasing some more research on the potential for zero emission aviation and zero emission flight.

There is an interesting position here in the UK's aerospace industry and our level of understanding, our research and development expertise and our universities, essentially. This is something that the UK is really good at. Potentially, if we are at the heart of the future technologies and how we travel around the world, there is a big opportunity there. The Aerospace Technology Institute suggests something in the region of £36 billion gross value added potentially if we are the leader here. If we have those early mover benefits, it is a real opportunity. We could also see some of those future jobs moving abroad if we are left behind.

Again, it is about putting a strategy in place so that we know what we are looking for. It is important, as Professor Miller said, to catalyse the commercial demonstration of these technologies, and we need to be looking at that urgently.

Anna Gelderd: They were helpful recommendations. Thank you.

Q25 **Sammy Wilson:** Professor Miller, you have described a lot of the technologies and the investment that is required in them. Is it easier to get that investment if it is known there will be a market for the technologies in the future and, therefore, airport expansion and the potential then that that gives for more passengers could make it easier to get people to invest in the technologies you are talking about?

Professor Miller: It is an interesting point. Expanding airports gives us an opportunity to show the world a model of an airport that facilitates a transition. A lot of these technologies require fuel changes. They require operations changes. If I were agreeing to these expansions, I would make sure these airports functioned as demonstrators to the world because most of the large airports that will be built in the future are across Asia and Africa, where the major expansion in flight happens. Us demonstrating how to do that process is important.

Q26 **John Whitby:** I have a question for Professor Miller. How much of an impact will SAF have on reducing our emissions given its level of usage right now? Will we get to 6.3 megatonnes of carbon savings by 2040?

Professor Miller: It is a good question, but it is a hard question to answer. The SAF mandates are aiming at about a 22% reduction by 2040, and they do not go past that. However, it is important to understand that meeting these mandates is a necessary but not sufficient



solution for net zero by 2050. It will not solve the whole problem. It is part of the problem.

Scaling SAFs also has a major environmental challenge and that is the magnitude of waste biomass that is required. This is because waste biomass is a key component of making the SAFs. We estimate in our recent report that the total global waste biomass that is available in 2050 is somewhere between 50 EJ and 160 EJ and the amount that all sectors will need in 2050 is between 80 EJ and 190 EJ. The demand from all sectors—and aviation is a big one of those—will be larger than the amount we have. This is the limbo bar we have to get under, and that limbo bar is likely to move over time.

A recommendation for the Government is that we need to lead internationally in making sure sourcing of biomass is of the highest quality standard. The key to take away here is that SAF is a good thing and we have to do it, and the Government are going in the right direction, but it is a transitional measure, and it does not completely solve the problem long term because of the size of the biomass challenge.

Celeste Hicks: Could I add on there about power to liquid fuels, which are essentially synthetic fuels? Again, we have a huge challenge with the amount of renewable energy that we generate in this country and, again, questions about where that renewable electricity capacity should be directed. Should it be directed to producing synthetic fuels or should it go to home heating or wherever? The more that we need, the more we have to build out, which would challenge our attempts to reach the renewable targets for 2030.

I want to point out as well that the SAF mandate says 22% by 2040 but, when the Climate Change Committee recently produced its CB7 recommendations, it was expecting about 17% of fuel to be SAF by 2040. It is less optimistic about the delivery of SAF than the mandate.

Professor Miller: This is an important point that has just been made: as you start to scale the use of green electricity across sectors and biomass, you have to take a cross-sector approach. The Government should push more on understanding how they control, or incentivise, the right cross-sector approach. Paul Monks, chief scientific adviser at DESNZ, and Sarah Sharples, chief scientific adviser at the Department for Transport, are hot on this and have funded us to do work at the Aviation Impact Accelerator.

We need to understand this because, if you take resource away from a sector that could use it better, you can cause more damage than you are benefiting the sector you are in. An example of that would be 1 unit of green electricity in a heat pump is 3 units of heat, and 1 unit of green electricity making fuels is one third of a unit of fuel. The difference in that use is a factor of about nine. You have to be careful about how you use resources across sectors.



- Q27 **John Whitby:** Another question for you, Professor Miller. Does SAF bring any secondary benefits other than reducing carbon emissions? Will it help with air quality or anything else?

Professor Miller: That is a good question. Some evidence shows that SAF may reduce the effect of the cloud formation, the contrails, and that may be the case for health and particulates, but I am not an expert on that.

However, if we are talking about contrails particularly in terms of non-CO₂ effects and the cloud formation, a much quicker way of doing it is contrail avoidance by moving aircraft at altitude. Some areas of airspace form clouds. The white line behind a plane does not do any damage but, if it happens to go through one of these pancaked areas of space that is about to form clouds, it can grow a cloud. Because these are pancake-shaped, changing altitudes slightly can stop this happening.

This is a real opportunity for the UK to lead and become the first blue skies country by launching these trials. That is exciting.

- Q28 **John Whitby:** I have a similar question for Mr Beckford: will the level of SAF production as well as its usage be enough to achieve what the Government are trying to achieve?

Johann Beckford: That is a good question and is, unfortunately, difficult. This is the slightly more pessimistic side of this discussion. It is pretty likely that we will not reach the desired levels on the current policy track that we have. The jet zero strategy, for example, suggests that we will have under construction five dedicated SAF plants in 2025 and, unfortunately, none are on their way. Phillips 66 has some small-scale byproduct of SAF in in one plant.

The CCC highlights this in its seventh carbon budget advice. It says that unfortunately 17% of fuel in 2040 will be made up of SAF when the Government target is 22%. That is quite a big gap. The Government will have to work out how it wants to bridge that. Will it try to go further and faster or will it have to amend the mandate itself?

Fundamentally, SAF has some big challenges. The economics of SAF are pretty uncertain. The CCC suggests that engineered removals may be more cost-effective in that 2040 time period, so that is a challenge. Ultimately, supply constraint is a big challenge. As Professor Miller highlighted, we are currently on a pretty low level of SAF. It is less than 1% globally at the moment, but the level of scaling will be a challenge. The majority of airlines right now are not putting off putting agreements in place for new producers. Banks are not giving final investment decisions on plants.

A whole bunch of challenges need to be squared away. Even the Government's revenue certainty mechanism, for example, does not solve where we are getting the feedstock from and where we are getting those



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biomass sources. Even in that situation, a real uncertainty surrounds SAF.

While it will play a transitional role, the impact that SAF can have is really important in this debate. Hopefully, the recommendations from this Committee can highlight this. Too often SAF is talked about as guilt-free flying or eco-flying. That unfortunately is not the case. The figures bandied about of a 70% or 80% reduction in greenhouse gas emissions from SAF all too often would make you think if you are sitting on that plane that 80% fewer emissions are coming out of the back. That is not the case. Those emissions are life cycles and so that is from the production and the processing of those fuels. They burn almost exactly the same as kerosene does. You make synthetic fuel in exactly the same way because they are chemically the same.

We need to be a bit clearer on what SAF is. It is a transitional technology that will have a role to play, but we need to look beyond SAF as well to some of the technologies we have already mentioned. It comes back to the scale. The biggest lever that we have to pull right now is that demand management lever, as well as some of the important things around airspace modernisation and contrail avoidance. But we cannot just say SAF will take care of the problem. We need to think about it now and pull the levers that we have that we know will work.

Q29 John Whitby: I have a final question on SAF. Sorry to persist with it. Should our SAF production be from the UK and, if it is from the UK, will that make it more expensive?

Professor Miller: It is important to recognise in answering the question about the UK that the question has two parts. The first is whether the biomass should come from the UK. As I have already told you, the amount of waste biomass that is needed is on the same order of magnitude, if not greater, than the total global amount, and we are not a great country for waste biomass. The waste biomass should not be coming from the UK, or the vast majority of it should not, and we have to control that carefully.

The second question is whether the SAF plants production be put in the UK. I say probably yes. We have a traditional oil, gas, and petrochemicals industry in the north of England. We have access to renewables. We are well placed to put in place carbon capture and storage. It would also help us lead in setting international standards of how biomass was sourced if we were doing it.

The Government need to be careful, though, about the type of plants they invest in. They probably should invest in plants with significant technology and good jobs, not the cheaper, less environmental SAF. You have to say the SAF plants that produce the biggest technological advantage in jobs and the SAF plants that have a true systems net benefit to the environment. These are synthetic fuels and also carbon capture. They are the two areas I would go for.



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Celeste Hicks: I want to add about the feedstock question. At the moment, the SAF mandate permits up to 100% of HEFA, which is basically used cooking oil, and that goes down to 71% in 2030. Other countries are putting in place SAF mandates as we speak as well. You are correct that we have led quite quickly on this. We have our SAF mandate up and running and that is why things are happening. Other countries, including China, will have SAF mandates quite soon. The competition for those renewable feedstocks will go elsewhere in the world. Supply and demand economics means that that will lead to price rises.

Yes, if we are going to do it in the UK, it cannot be used cooking oil and it needs to create jobs. If you look at what happened recently with Grangemouth and Project Willow, there are some great ideas in there, but it needs a lot of analysis to work out the best use of existing facilities and which generate the most jobs and which are the most cost-effective.

Q30 **Barry Gardiner:** Very briefly, and my apologies for running late. If you have covered it, say so. I have two quick questions. The European report said that the growth in aviation would account for the SAF that is now to be included and, therefore, the emissions level would still be the same. That is first question, if you could comment on that. The second is the impact on land use and land use change as a result of going down this path.

Celeste Hicks: I know which report you are thinking of, but I do not have it to hand. I remember the discussion, but do you know which one it was?

Professor Miller: I do not have the report but, in general, I can answer your question. If you are thinking globally, aviation will more than double through a rise in the middle class in Asia, Africa and South America taking their first flight. They have their right to take their first flight. If you look at the rate at which we are predicting to scale SAF, even in this country, most of that rise is not being covered by the increase in SAF. That is important to understand.

Land use is very important, because of the scale, and because aviation is one of the biggest users potentially of waste biomass. It is very important. Aviation has an opportunity to lead in setting the standards for other sectors to use. The Government are well placed in the UK as it is ahead of the curve with the launch of SAFs and the SAF mandate to set those standards and try to get them taken on internationally. It is critically important that we make sure land use does not change, and we use the right sort of waste biomass that can be policed.

Chair: Thank you very much. Mr Beckford, Ms Hicks and Professor Miller, we appreciate you coming and giving evidence today.

Examination of witnesses

Witnesses: Dr Lisa Lavia, Alethea Warrington and Paul Beckford.

Q31 Chair: I am pleased to welcome our second panel. We are joined by Dr Lisa Lavia from the Noise Abatement Society, alongside Ms Warrington and Mr Beckford. I invite you to introduce yourselves, your organisation, and your interest in the subject that we are discussing today.

Dr Lavia: My name is Lisa Lavia, and I am managing director of the Noise Abatement Society. We are a UK charity. Our primary interest in this topic is in our name. Our remit is to find solutions to noise pollution problems for the public benefit—a very wide remit—and we tend to focus on some key areas where we feel that we can make a difference or add some alternative views. Thank you very much for the opportunity to be here.

Alethea Warrington: Hi, I am Alethea Warrington, and I am head of aviation, energy and heat at climate charity Possible, which works on solutions that cut emissions while also improving people's lives. Our work on aviation focuses on the limits to what can be achieved by technological solutions and the need to reduce demand fairly by targeting the most excessive consumption of aviation.

Paul Beckford: I am Paul Beckford, the policy director at the No 3rd Runway Coalition. We are a coalition of community groups, local authorities and residents who are opposed to the expansion of Heathrow.

Ruth Cadbury: Sorry, Chair, I need to declare an interest.

Chair: My apologies—I should have invited you to do so before we began. We will do it right now.

Ruth Cadbury: I know Paul Beckford because, when I was deputy leader of Hounslow council from 2010 to 2012, the council employed Paul as a consultant on Heathrow issues.

Q32 Chair: Thank you very much for that clarification. Starting with you, Ms Warrington, do you accept the need for an increase in passenger capacity in the interests of the country? We will get on to the best ways of achieving that, but it would be useful to understand from all three of you whether you accept there is a need for increased passenger capacity.

Alethea Warrington: The Government are assuming that we have to allow airports to expand as a pathway to achieving economic growth, but the case for that does not stack up. The Government certainly have not convincingly made that case.

We heard in the previous session that the UK already has an absolutely gigantic tourism spend deficit. That is about £40 billion more leaving the UK as outbound leisure travel to be spent in other countries than comes into the UK. Business travel has remained static for decades. The amount of freight being exported from the UK by weight has also remained static. All the evidence is that an increase in airport capacity does not expand



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access to aviation. All it does is allow the small group of people who already take most of the flights to take even more flights and even more of an increase in that outward spend to other countries.

Having said that, if the Government do want to increase capacity, there are certainly cleaner ways to do it and lower-carbon, more cost-effective ways to do it than expanding airports. The case that expanding airports delivers the economic benefit, the growth and the jobs that the Government want to see has not been made. There are strong economic arguments for why that simply will not work.

Q33 Chair: I am sure that we will get on to some of those in the rest of this session. Mr Beckford, from your perspective, do you accept the need for the nation to increase its passenger capacity?

Paul Beckford: If we look around, as we heard during the previous panel, airports have plenty of capacity. We are lacking a truly nationally integrated aviation strategy for how we make sure that demand is met equally around the country. If we are trying to achieve other policy goals for what used to be called levelling up or spreading growth around the country, we could look to do that in other ways. The Secretary of State has the powers to control that as well.

It is interesting. Making best use of existing runways is official Government policy. It is a 2017 document. It probably could do with an update to understand what is going on with the expected expansions at all airports. We need to look at the entire system to understand where the demand is and how we can best meet it going forward.

Q34 Chair: Dr Lavia, do you accept the need for increasing passenger capacity?

Dr Lavia: Our view as an organisation is we are policy neutral on this particular question. However, our main concern is the growth in noise impacts on the community, the existing impacts they are already suffering and those that they will suffer should there be an increase. We do not believe that these impacts are inevitable and nor has enough been done to reduce the ones that communities are already experiencing.

If there is no noise effect on communities, ultimately that is our remit. That is our main concern. How to achieve that is a subject for much debate, and I can go into more detail as we go along.

Q35 Chair: Ms Warrington, you referred to alternative ways of achieving passenger capacity instead of airport expansion. What would you advise the Government to prioritise if they decide that passenger capacity is their priority instead of airport expansion? What things should they consider?

Alethea Warrington: There is enormous potential to make better use of our existing international low-carbon transport infrastructure. The channel tunnel is currently underused compared with the amount of



capacity and the number of passengers who could be travelling through it. We know that a lot of the journeys from UK airports are to European destinations. These are journeys that could and should be done by train and there is potential for a significant increase in capacity along the channel tunnel. We have a report coming out within the next few months that is looking at how to increase it by around five times. That is a sizable increase.

We think that pretty much negates the argument for any airport capacity, even if you do want an increase in in passengers. Of course, these are journeys that are low carbon, and they do not have the air pollution impacts and noise pollution impacts that are of so much concern at airports. It is also a lot quicker and cheaper to make the changes that are needed to increase capacity along that existing infrastructure of the channel tunnel than it is to build new airport infrastructure, particularly new runways, which will easily take 50 years or so.

If the Government do think that increasing international travel from the UK is a pathway to economic growth, there are much better ways to do that that do not cause all these environmental harms. We urge the Government to look at that in a lot more detail before green-lighting all these airport expansions.

Q36 Chair: Let me be specific. Within that envelope of airline passenger capacity, what alternative ways might the Government be able to achieve that? I understand what you are saying about rail and the channel tunnel, but if they were determined that they wanted to increase airline capacity, what alternatives to airport expansion would be wise for them to consider?

Alethea Warrington: We have already heard that capacity is not a block for the airports that currently exist, but they have underutilised capacity. At the moment, they are all trying to get in there and get permission to go ahead, but the UK does not suffer from a shortage of aviation capacity. Looking for ways to increase flights from the UK is the wrong question. We should be asking how severe is the environmental harm that this is causing and will it bring any economic benefits that could counterbalance that? That case has not been made or properly considered by the Government.

Q37 Chair: Turning to the position that the Government have asserted that airport expansion is important for economic growth, take me through why you disagree with that analysis.

Alethea Warrington: We have already covered a lot of the key points, but one key factor is the UK's huge leisure tourism spend deficit. That is about £41 billion more leaving the UK than coming in. If you look at the history of airport expansions and where that capacity has gone, it is not creating jobs. It is not increasing exports. It is allowing the small group of wealthy frequent flyers to take even more frequent holidays abroad and exporting even more tourists and spend. During the pandemic we



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saw a boost in the UK's domestic tourism industry because demand was shifting from overseas leisure travel to the UK.

There is just no convincing argument at all that expanding airports will lead to economic growth. As we have discussed, the cost to the climate and, as we will come on to, the noise pollution, the air pollution, the health impacts, and the costs to the NHS from that are potentially sizable. The costs and benefits do not stack up.

- Q38 **Chair:** When you refer to the tourism deficit, people fly out of the UK and also fly into the UK. It is part of tourism strategy as well as people moving overseas. Do you have evidence that suggests that the increased airport capacity would add to our tourism deficit rather than improve it?

Alethea Warrington: Yes, absolutely. The ratio of outbound to inbound travel for the for the UK is about three to one. The history of adding additional capacity to airports over the past 20 years if anything has made that that ratio worse.

- Q39 **Chair:** Mr Beckford, your coalition refers specifically to Heathrow. How much of the case you make is primarily about Heathrow specifically and how much of it will be relevant to all other airport expansion at Gatwick, Leeds, Bradford, Doncaster, Sheffield or any other?

Paul Beckford: If you look at the issues associated with any airport expansion, Heathrow is the largest airport in the country and, therefore, it covers all those issues, and the same issues will arise with noise and air pollution at other airports.

Collectively as a coalition, we have never sought to export the problems that arise from the threat of expansion to other places, but at Heathrow you have to understand that the size of the airport means that 28% of all people across Europe who are impacted by aircraft noise, for example, live around the Heathrow communities. That is more than Madrid, Schiphol, Frankfurt and Charles de Gaulle added together. It is more than any other airport. The number of people impacted by the operations is seven times more than in Manchester and about 50 times more than at Gatwick.

The sheer scale of the proposed expansion at Heathrow makes it so much more impactful and devastating to loads of communities. That is before you start talking about the complete destruction of the villages around Heathrow, the loss of homes and also the blight. People have been living with this persistent threat for two or three decades, and the health and mental health impacts of that as well are devastating for local communities.

- Q40 **Chair:** People think that Heathrow is a huge provider of jobs. Without expansion, those people who are working there will still have their jobs. With expansion, lots of people who are currently unemployed might start getting jobs. Who advocates for those people who might get the jobs in the future?



Paul Beckford: Hopefully, their elected representatives. We represent some of those as well. Members of our coalition work at the airport and do not want to see it get any bigger. They would rather see it improve how it operates as a piece of infrastructure. We have also seen as well specifically on Heathrow that while there were promises of lots of jobs, for example, when terminal 5 opened and a pledge of 15,000 by the airport, we have never seen the actual figures of the numbers of jobs created. We always have to take these figures with a pinch of salt.

The Government's own analysis around the airports national policy statement, which was not a national policy statement at all but only ever addressed Heathrow, said that there would be a big displacement of jobs. People who might have been working on HS2 or other engineering infrastructure projects would come down and work there. Those, under Treasury Green Book guidelines, should not be counted in the economic benefit case because they are temporary jobs that will transition and disappear. They are not long-term jobs.

The other issue we have always had is the quality of some of the jobs that we created. Yes, there may be lots of jobs in retail and everybody has the right to a job, but if we are talking about upskilling the workforce and improving their opportunities for better work going forward, it is not clear that expanding shopping malls at Heathrow is the best way to do it. That is a big driver of the economic case that the airport has always put forward.

Chair: We were referring there to who will advocate for these people and we are fortunate to have Ruth Cadbury, MP for Brentford and Isleworth, here. Do you want to come in on that point?

Q41 **Ruth Cadbury:** I am here because I am Chair of the Transport Committee rather than a representative of people who work at Heathrow. Your point, Chair, is that anybody who has a job already at Heathrow would not be threatened by expansion not going ahead, which, according to *The Telegraph*, Heathrow appeared to suggest it cannot afford anyway.

Have we been assuming that expansion means more runways? At Heathrow, expansion could also happen because Heathrow is running at full capacity. At some of these airports, expansion can mean an increase in flights if the caps were released and more flights were permitted to fly from those airports. Other airports have a passenger cap. In fact, Heathrow has a passenger cap. Are the impacts of carbon emissions, noise and pollution also an issue without runway expansion but with more flights and more passengers going through those airports?

Alethea Warrington: Absolutely. We should remember that these things are already a problem with the current size of aviation, even before we have an expansion in any capacity or an increased passenger cap or any new runways. It is already causing serious environmental harms in terms of the greenhouse gas emissions, the local impacts, the air pollution, the air quality, and the impacts that has on people's health. London is a city



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that has six airports. It is the city that has the worst air pollution from particles emitted by aviation of any city in the world.

The question we should be asking is less about how much expansion we should have and more about whether the current amount is safe for the climate, safe for people living in the area, safe for people living in the quite wide radius of impacted communities nearby. Is this the most cost-effective, low-carbon way to have international transport?

Paul Beckford: To pick up specifically on the noise, we know that people in communities around Heathrow are four times more likely to develop cardiovascular problems. That is the academic evidence from—

Q42 **Ruth Cadbury:** We are coming on to noise specifically. I want to ask about the environmental impact of expansion on existing runways because you particularly mentioned that, Ms Warrington. You talked about the environmental effect of the construction of another runway, but would putting more flights and increasing passengers on existing runways still have significant environmental impacts?

Alethea Warrington: Absolutely, yes. The new runways get so much attention and so much concern because those are locking in a huge increase. You are completely right that even expansions that do not involve the construction of new runways, even increasing the use of existing runways, are still worrying and harmful and should not go ahead.

Paul Beckford: Specifically to your point, it is a big concern among communities around Heathrow that if the third runway does not happen for whatever reason—cost and climate impact—going forward, Heathrow will want some form of expansion.

I understand that with the two runways, they could probably get another 70,000 movements, but that would involve the introduction of mixed mode, where you take off and land on both runways at the same time. That would see a greater intensification of use of the current flight paths, which would mean more noise for people under those flight paths. It would also potentially change the way it operates as well.

At the moment, mixed mode operation happens between 6 am and 7 am. It would happen all day and so we would then lose what people value, which is the respite and that break from noise when they switch the runways halfway through the day. That is a real concern. Is that a consolation prize that Heathrow is trying to get? We are worried about it as well.

Chair: Dr Lavia wanted to come in. We certainly have not forgotten you. We will have plenty for you in a bit. Let me bring you in on that and then I will come to Alison Griffiths.

Dr Lavia: I have a brief comment on the economic analysis, and I can cover more of the detail in later comments. As we are on the topic of it, we generally do not take issue with the Government's economic analysis



as it has been. We are calling for that economic analysis to be reviewed in the light of recent evidence on health, wellbeing and the mental health effects of noise. Several studies under way—funded by the DFT and also the CAA—have yet to report. Our main issue with the current economic analysis is what that looks like in the light of the current evidence from the research community, let alone what the Government are funding at the moment.

- Q43 **Chair:** Sorry, to clarify what you are saying there, you accept the economic analysis that the Government have said, but because of the health and other wellbeing impacts, should the Government alter their policy or their economic analysis to consider these negative health and wellbeing impacts?

Dr Lavia: Yes. This was not a question we were ever given, but while we may have considered the previous economic or let us say the current economic analysis at its face value, we no longer can because we believe that economic analysis needs to be revised in the light of current evidence.

- Q44 **Alison Griffiths:** I want to address the issue of the fairness of the distribution of flights across the UK population. If it is not fair, what could be done to remedy this? I do not know who feels best qualified to answer this.

Paul Beckford: I can start. I have already mentioned the number of people impacted by noise around the Heathrow community. Some 28% of people across Europe impacted by aircraft noise live around Heathrow. The south-east of England is already one of the most congested pieces of airspace in the world. The six airports make it highly complex. It has a high volume of traffic and a dense population that overflies it. That makes it difficult to manage.

Separate to all the expansions that are going on, we are in the process of redesigning the entirety of our airspace as well, to throw an extra spanner in the works. That process is not looking at whether we can move the flights and make it more equitable because we purport that there are economic benefits from aviation activity. I do not deny that, but there are also huge harms. Are we sharing the those benefits and harms equally around the country? Probably not, at the moment. Some of that will be down to airport economics and other reasons, such as hub airports and all the rest of it, but the harms being done are not shared equally and we do not understand what that means for health costs in the wider analysis.

- Q45 **Alison Griffiths:** That has been excluded from the economic analysis that the Government have done, presumably?

Paul Beckford: I am not sure what economic analysis the Government have done there. We seem to be quoting figures produced by the aviation industry, which is always difficult to take as read. We would welcome the economic, health and environmental cost-benefit analysis being redone.



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The national policy statement had an appraisal of sustainability. It looked at some of these issues and it tried to put monetary costs on of them but, as Dr Lavia has pointed out, that was seven or eight years ago. The research has moved on significantly.

To the DFT's credit, I know it is looking at how to improve the monetisation costs and health costs of noise. Those should be factored into the decision-making process before any final decisions are taken on expansions because then at least we have the full information available and are not just taking one side of the argument or the other. We have a more comprehensive understanding of the problems.

Alethea Warrington: To come in as well on who benefits from aviation, it is incredibly unequal. It was mentioned in the first panel that half of people do not fly at all in any given year. Most people fly rarely even if they do fly at all. A lot of the harm from aviation is caused by a small group of people with the most excessive consumption—the most frequent flyers, the private jet users.

If you look at the distributional impacts on local communities, as Paul mentioned, you have a situation, for example, in London with London City airport is in a relatively poor borough. It has high air pollution. The people living in that borough will not be going to London City airport and taking a private jet. Yet the expansion policy is encouraging more luxury flights and private jets to come into London City airport, which will cause serious harm, noise pollution and air pollution to the to the local area.

The costs and benefits of aviation expansion will increase inequality. They will increase the harms that are experienced by populations that are already at higher risk, whereas the benefits will go to people who are already high consumers of aviation.

Q46 **Alison Griffiths:** Turning to our online guest, is there anything you want to add to that about the distribution of flights across the country and also the points that the other panellists are making about the distribution of both benefits and adverse impacts of aviation?

Dr Lavia: Yes. Our primary concern is to consider any questions in relation to existing aviation capacity or indeed growth from the perspective of how the impacts are measured and assessed in relation to noise and the health, mental health and wellbeing affects. I can speak a bit more now about our views or save that for another question, whatever you prefer.

Alison Griffiths: It is probably for another one, but I appreciate that. Thank you.

Sammy Wilson: Can I ask one question of Ms Warrington, please?

Chair: We do need to move on, but a quick one from Sammy Wilson.

Q47 **Sammy Wilson:** The emphasis of your evidence so far has been that this



is all about rich people benefiting from flights, but 57% of those who use flights are going on holiday. It is a choice that they make to go abroad. Many of them are from low-income families. They save up to go abroad. You have also said that expansion made it more possible for those people because it brought the cost down. Are you suggesting that people who want to get away on holiday after a year's work should be denied the opportunity to do so?

Alethea Warrington: Nobody is suggesting that. If you look at the policies that we have designed to try to reduce demand for aviation, they are explicitly designed to avoid doing that. That is why we talk about a frequent flyer levy, and we talk about there being no tax or reduced tax levied on somebody's first return flight in a year compared with the current situation. Occasional access to aviation has the potential to be cheaper.

We are talking about constraining the excessive end of aviation and the people who are taking four, six, eight or 10 return flights in a year. Those people are the wealthiest in our society. They are the most responsible for pollution. They certainly could afford to take a holiday by rail rather than by plane. Because access to aviation is so unequal, you could certainly avoid the need for airport expansions, but you could also reduce total demand for air travel by targeting a reduction in quite a small proportion of people, the most frequent flights.

It is important to add as well that the current situation is not supporting access to occasional air travel. The measures that the earlier panel discussed like alternative aviation fuels will add costs. The larger the aviation industry tries to go, the greater those costs will be. It is certainly possible that expansion could increase the cost of a family's annual summer holiday somewhere warm because of the increased overall cost.

However, it is also definitely the case that it is important to have policy design that is as progressive as possible and does not have these regressive impacts and does not price the poorest out of the skies while leaving the wealthiest few to continue flying. Certainly, no one is talking about telling people they cannot have an annual holiday. That is absolutely not what we are calling for.

Q48 **Martin Rhodes:** Ms Warrington, I want to look at issues around air quality. To what extent would the current proposals around expansion impact air quality for local communities?

Alethea Warrington: They would have a negative impact. It is important to remember that they are already having a negative impact. There are already measurably worse health impacts in communities living close to airport expansions. I struggle to see any justification for making that situation worse. It will pile costs onto the NHS, for which of course all of us have to pay.

Q49 **Martin Rhodes:** Is the cause of air quality issues and the impact



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presumably primarily the flights? Is it also the construction work? Is it also the travel to and from, if you have more people using the airport? What are the rough proportions of that?

Alethea Warrington: If you are in the vicinity of an airport close to the airport boundary, for nitrogen oxides the split is roughly 50:50 between those that drive from the airport and from flights and from road transport. The breakdown for the airport itself is roughly 30% from planes and 20% from ground operations. As you go further away from the airport, the proportion from road transport increases.

In terms of the broader policy picture, a lot of good work is happening to try to reduce those harmful emissions from road transport. The ULEZ is having a positive impact by making London's air less dangerous. From every possible angle, it seems counterproductive to be doing all that good work by encouraging people not to drive the most polluting vehicles into the centre of London and at the same time expanding airports, expanding frequent flying, and expanding private jet use to London City airport. That is so intensely polluting. It seems like counterproductive policy making.

Q50 **Martin Rhodes:** How key is this as an element to meeting our overall air quality targets? We have had evidence as a Committee from the Office for Environmental Protection, which essentially suggests that we were making good progress overall in terms of air quality in recent years, but that progress has slowed. How big an impact will airport expansion have on those overall air quality figures?

Alethea Warrington: The improvements that have been happening in recent decades have been largely because of reductions in emissions from road transport, the dirtiest vehicles getting off the roads, things like the ULEZ and electric vehicles. Airport expansions would impact on that, and that impact would be the greatest around airport communities.

As well, it is worth flagging that the UK's legal limits are lower than those recommended by the World Health Organisation. Harm to people's health is still being caused even within the legal limits. For ultra fine particles that are emitted by aircraft, we do not have any kind of legal limit or recommendation. We do not know what a safe level of exposure is. We might already have breached that limit just with airports' current operations without even allowing any expansion. Responsible policymaking would determine whether the current level of exposure is safe or dangerous before thinking about adding even more air pollution to inflict on airport communities.

Q51 **Martin Rhodes:** Mr Beckford, how could we mitigate the environmental health impacts of air pollution on our local communities?

Paul Beckford: The best thing would be to invest in public transport. A huge cost is associated with that, particularly if you want to expand an airport. Some of the aspirations around Heathrow for getting numbers of people out of cars on to rail and buses mean that they need to invest



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beyond the tube upgrades or Crossrail or other rail schemes that they do not currently have any budgets for.

TfL did some analysis that showed that any expansion would result in between 100,000 and 200,000 increased trips, both on public transport and on roads, as a result of that expansion. That will increase the congestion times in local road networks and increase pollution through increased engine idling. That is also a problem even if we are all driving around in electric vehicles because particulates from brakes and tyres have not been resolved.

The best mitigation is not to make the problem we have already worse. If you are going to try to address it, the other way is to heavily incentivise those public transport investments. That has a cost associated with it that will not only be met by the airport. We need to be honest with ourselves about it. There will be a huge taxpayer contribution to that and that means money that cannot be spent by London or other councils on other improvements to the network, which is a challenge for them.

Q52 Ruth Cadbury: I have a geographical question. The Government have focused on airport expansion mainly in and around London, which has six airports. As London is the city most impacted by aviation pollution in the world, does this concern you?

Alethea Warrington: Yes, it is worrying. We are all already breathing dirty air. This is worse for people around airport communities, particularly Heathrow because of the combination of the airport and the motorways. This has a real impact on people's lives and on excess mortality. One study found that Heathrow's operations are currently responsible for 50 deaths a year but, if it is allowed to expand, that will be 150. That is a huge cost to people's lives and to our NHS for benefits that do not seem to be there. The case that that will bring benefits has not been convincingly made.

Q53 Ruth Cadbury: Paul Beckford, the GLA has environmental aims and presumably some targets, and we have expansion plans or approvals for Heathrow, Gatwick and Luton. What impact would all those expansion plans going ahead have on the GLA's targets?

Paul Beckford: It will make everything that the GLA is trying to achieve, particularly in terms of air pollution, a lot harder because it is planning to deliver things that are within its control and airport expansion is beyond its planning authority. That means it then has to try to make those investments to support those network expansions. Rail links to Gatwick, for example, would require big investments to deliver, and similar for Heathrow. A western rail access and a southern rail access have long been mooted, which would go through an existing train pass, but they need the money to make those things happen. Nothing in Network Rail's budgets currently that I am aware of will help to deliver that. That puts an extra onus on the GLA in terms of what it can do.



It is also worth flagging that when the Heathrow expansion was previously discussed in Parliament, some of the analysis around that showed that we are in danger of eroding some of the improvements that have been delivered by Transport for London over the last 20 years by pursuing expansion at airports like Heathrow. You are undoing the good work that has already been done in terms of improving the public transport network.

- Q54 Ruth Cadbury:** Would you include the impact that the ULEZ already seems to be having? Is that success also in jeopardy should particularly the London City airport and Heathrow expansion go ahead?

Paul Beckford: I think so but, being cynical, perhaps it helps to drive some much-needed revenue towards the Mayor of London to use as well. When the ANPS was discussed in Parliament, it looked at the size of the expansions that were required on public transport networks to achieve those modal share shifts that Heathrow had promised as part of that process to deliver. It would need almost a ULEZ around Heathrow itself and it was about £40 for anybody entering it. That would be the way to drive that behavioural shift to get people on to public transport. It is a challenge for policymakers. How do you deliver that? I appreciate that might not be politically palatable to some as well. It is a difficult solution.

Ruth Cadbury: And for Heathrow airport, in terms of getting people who work there in and out.

- Q55 Barry Gardiner:** Dr Lavia, can you outline for us the health impacts of living with excess noise?

Dr Lavia: I can speak about them in general terms. I am not a health expert, but I can point to existing research and follow up with information after the session in addition to my comments.

I will set out the context for how I can comment on this. Broadly speaking, the health effects of noise are both psychological and biological. In relation to those pathways, the indicator of noise annoyance affects people both psychologically and biologically. We have two pathways to health effects. There are others, but our main concern in relation to noise annoyance is that it is the most prevalent community response to noise from aviation.

To drill down into that in a bit more detail, the objective noise levels at source of a plane or any ground operations at an airport and the health effects on communities are our primary concern, along with the subjective and perceptual effects of noise that also contribute to the effects on mental health and quality of life. These effects can also be combined. Both the objective and subjective reactions and the physiological as well as the psychological reactions to noise can also combine to affect health, mental health and quality of life.

There is a growing amount of research on this, especially in the last two decades. There has been considerable research on the biological effects



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of noise and there is a growing number of researchers on the subjective effects of noise because the annoyance indicator—how we respond to noise with annoyance—is related to our human fight or flight response. It is a stressor to the body. That is a pathway there for the health effects.

- Q56 Barry Gardiner:** The written evidence that we have received speaks of the impacts of noise pollution causing noise-induced hearing loss, high blood pressure, heart disease, sleep disturbances and stress, as well as what you have termed the annoyance element, the cognitive impairment, the sleep disturbance and the cardiovascular disease that comes from that. What evidence has there been that in areas around airports such as Heathrow that there are spikes of noise-induced hearing loss and all these other clinical factors?

Dr Lavia: I am not an expert on noise-induced hearing loss, and I cannot speak to that evidence. The work that I have been involved in has been with researchers working in the areas of other biological effects related to the stress response, cardiovascular disease, dementia, diabetes and those sorts of responses, for which there is strong evidence to the biological effects of noise.

In relation to the subjective effects, those can be classified under the banner of a dimension called non-acoustic factors, which most generally can be understood as factors that affect the human response to sound in context, either positively or negatively, other than the objective measurable acoustic elements, as in noise level.

- Q57 Barry Gardiner:** I understand that, but that was not the question that I asked. If you cannot provide the evidence now, perhaps you could write to us. It would be helpful if you could set out for the Committee, perhaps in writing, any studies that have looked specifically at the impact on airport communities versus a control group where there is clear evidence that increased physical and mental health has been impaired in the airport community vis-à-vis the control community. We are looking specifically here at the impact around an airport community and, therefore, we need that evidence, not generalised evidence that says, “We know noise pollution causes these things.” Okay?

Dr Lavia: Yes, absolutely. There are many studies on the relationship between aviation noise and health, and I can send some comments.

- Q58 Barry Gardiner:** That is what we need. Thank you. Can you talk us through perhaps the regulations around noise pollution for airports? Are they strong enough? Could they play an additional role in any future airport expansion?

Dr Lavia: Our general view is that the regulations in terms of their intent are about right because all the regulations governing airport expansion, whether it is the DCO process or whether it is smaller airports not subject to DCO but other planning regulations, in the main have as an overall goal—and I am paraphrasing—to improve the health and wellbeing of



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residents and to support expansion or growth not at the expense of environmental and health impacts.

The detail around how schemes are assessed based on the significance of impacts is where we take issue with not the present regulations but how schemes are assessed. That goes back to the earlier comment that I made, which Paul also referred to, that the assessment of current plans and schemes needs to be understood within the context of the best available current evidence on health, mental health and community wellbeing effects. We do not feel that that is being considered well enough at this time.

Q59 Barry Gardiner: If we look at the other mitigations that perhaps could be made rather than those installed on planes and the limits on numbers and times of flights, what else could be done to reduce noise pollution at airports and for those communities?

Dr Lavia: Again, going back to the categories of non-acoustic factors or non-acoustic measures, I will note—I can send information on this—we have recently been involved with the publishing of an international standard on categories of non-acoustic factors that take into account decades of evidence and studies on these.

There are, broadly, four areas to consider, one of which is the tangible or physical characteristics of the environment. From that perspective, many potential design solutions can help to mitigate the effects of noise and improve the quality of the sound environment and thereby mitigate the effects of the impacts on communities, but that has to be done based on a good-quality, effective assessment of the range of factors affecting communities, both acoustic and non-acoustic.

Physical measures that could be taken range from the types of building materials that are used in the built environment, the quality of insulation and the building quality of homes to vegetation, water and natural features. Many rain design options improve the acoustic environment for communities, but they can be expensive and arguably in some cases unfeasible to put in place after the fact, which is a huge problem, of course. Also, what is meaningful for communities needs to be done, again, in relation to what will be salient and relevant to them, and that needs to be assessed locally and case by case.

Q60 Barry Gardiner: Is it possible that technology such as hybrid or battery-powered planes could play a role in reducing noise pollution?

Dr Lavia: They can in the sense of reducing noise at source. However, only about a third of the human response to sound is related to the noise at source and acoustic features of noise. The other third of the human response is related to, again, this area of non-acoustic factors. Other factors affect annoyance with aircraft regardless of their noise source, whether they are electric or otherwise, whether they are new modes or otherwise. Other factors will affect community wellbeing and annoyance,



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not just the noise level. Those things also need to be considered with the introduction of any new technologies.

Q61 **Barry Gardiner:** What are you talking about specifically there?

Dr Lavia: For instance, much publicised in the case of, for instance, eVTOLs or drones, they may not cause an audible noise effect, but they may look unsightly or may have safety concerns. Will they drop out of the sky? What are they being used for? Those would go into a classification of non-acoustic factors around personal and social factors. A whole category of non-acoustic factors addresses the context and how we interact with communities and what is happening to us in our communities.

Q62 **Barry Gardiner:** Can I turn to our other two witnesses and ask if they have anything that they would like to add on the topic of noise pollution? To what extent can communities be supported and compensated for the impacts that noise pollution is having on them? Does that compensation in any way mitigate the impact on those communities? Would more compensation do that? What are your views?

Alethea Warrington: More compensation is better, but there is a limit to what can be done if your problem is that large planes are constantly roaring over your head, particularly if the airport is pushing for less respite, longer hours of flying and more night flights. Some of the measures that exist are things like better insulation on houses, but that means people cannot open their windows and they cannot enjoy their gardens. It is certainly not a complete solution.

Technology will not make a significant impact on noise. Planes flying on alternative fuels will be just as noisy as planes flying on kerosene, particularly if they are larger planes. Airports like to claim that new planes are next generation and are high tech and are much quieter, but that does not stack up. The decreases in noise levels are marginal and they are certainly more than counterbalanced by the increase in plane size and frequency of planes flying. It is not necessarily the case that even electric planes—which are far off commercial roll-out—will be quieter. They might be, but they certainly will not be silent.

Paul Beckford: In terms of the mitigation, Heathrow will admit that it is not even sure of the most effective interventions that it delivers. Its noise insulation scheme gives double glazing and insulation to people, but we do not know if that is the best thing to be doing. As Alethea has alluded to, if it is hot and sunny and you want to open your window, that mitigation does not do anything for you to reduce the noise. We need to make improvements there.

You are right that more money would help. I am sure that whenever the opportunity to expand comes along, they offer more money for these sorts of things because it is in their interest to do so, but they could deliver some of those things now.



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We know local authorities, for example, have to have a higher cost of building public buildings. They have to build them to a higher standard. That has an impact as well. There is also a whole range of issues around land use planning. Even as aircraft notionally get slightly quieter, the number and frequency of those noise events causes the disturbance. We are seeing, even though they say noise contours are shrinking over time, more people live within those boundaries and the health harms are being done to more people and, therefore, the solution will cost more to deliver as well. It is a never-ending cycle.

The best thing we have seen at Heathrow for limiting and mitigating the noise impact has been the air traffic movement cap that was put in place as part of terminal 5, because that gave people certainty.

Chair: Thank you very much indeed, Ms Warrington, Dr Lavia and Mr Beckford. We very much appreciate the evidence that you have provided to us today.