



Movement Matters is a series of inspirational thought leadership events exploring new ideas about places, people and economies. Drawing on experience from leaders from around the globe, these sessions provide a burst of fresh thinking. To attend any of our events register at: www.steergroup.com/events

Event summary

MM Movement Matters events

**NET ZERO BY 2030
FACT OR FICTION?**

SESSION 3: AVIATION DELIVERING NET ZERO

The clock is ticking on the Paris Agreement stretch target to limit global warming to 1.5°C, yet on the eve of COP26, the UN Secretary General declared that current shipping and aviation commitments “are more consistent with warming way above 3 degrees.”

Heathrow airport is one of the world’s first major aviation hubs to become carbon neutral for its infrastructure, and the first to target zero carbon by mid-2030. As what’s most needed now are planes powered by alternatives and airport operations underpinned by new lower/zero carbon energy sources, we look forward to hearing from Matt Gorman on their future plans.

Speaker’s presentation

Matt Gorman, Carbon Strategy Director, Heathrow Airport

Clémence Routaboul, Associate Director at Steer chaired the session, introducing the seminar as the third in a series of five of the Movement Matters events, with a focus on decarbonisation. Clémence states that today’s session shines the spotlight on the aviation industry. She welcomes the guest speaker **Matt Gorman, the Carbon Strategy Director at Heathrow Airport**, describing some of his key achievements, including having a key role in developing the approach to Heathrow’s expansion, representing Heathrow in the Prince of Wales Corporate Leaders’ group on climate change and being a member of the Heathrow Community fund.

Matt took the floor, outlining the format of the presentation. The first part is an overview of the aviation sector and its plans for decarbonisation, and the second part is specifically about what Heathrow is planning in this space. He states:

“Aviation is a force for good in this world, economically connecting businesses and local communities, and also connecting cultures. But we will only protect those benefits for this century if we decarbonise. We need to be net zero by 2050.”

and

“We describe climate change as an existential risk for aviation.”

Matt begins by highlighting the threat carbon emissions have to the aviation industry. He says that unless aviation has a clear path to net zero, the ability to grow and thrive as a sector will be challenged. They may face more difficulty in borrowing money from lenders, as well as attracting investment. Key holiday destinations that people travel to, such as exotic islands, could be under immediate threat due to rising sea levels caused by climate change.

Matt then suggests that carbon can be taken out of flying, even as the industry grows. There is work being done by the UK aviation sector that looks out to 2050. Firstly, they are aiming to use less fuel by increasing operational efficiency, as well as improving conventional aircraft. Also, other ways they can reduce carbon emissions are to ‘change the plane’, or ‘change the fuel’.

He continues to state that ‘changing the plane’ is an extremely exciting prospect. The industry is looking to move to a hydrogen aircraft for longer journeys that could be operational in 10-15 years. This could solve around 30% of aviation carbon by 2050. However, there will be timing issues to roll out these new planes, and the main current focus for Heathrow is to continue research on the implications for the airport.

Sustainable Aviation Fuels (SAFs) are proposed to be used when ‘changing the fuel’ as this is a proven technology, which can reduce carbon by up to 70%. Currently the use of this fuel is around 400,000 flights around the world. Matt states a huge benefit of this type of fuel is that it can be dropped into current aircraft and pipelines. However, a key challenge is the price. The cost of these fuels are 2-4 times more than kerosene. As a result, airlines are reluctant to sign off for a fuel that is this much more expensive. Matt alludes to the fact that governments need to play a key role here such that they both stimulate supply, as well as stimulate demand.

He continues with a focus on the UK, stating that the UK is at risk of falling behind Europe and the US in this space, as Europe has around 25 announced plants, whereas the UK only has 3. As the UK consumes about 20% of all jet fuel in Europe, the supply is not matching demand with investment in plants.

To highlight the current use of SAFs, Matt stated the fact that British Airways put sustainable fuel up to 35% blend during the recent COP26 process. This is a strong signal that the technology exists and just needs to be scaled up.

He continues by saying that there is an ultimate need to decarbonise aviation globally; if the UK fully decarbonised alone, there would still be a carbon problem on a global scale.

“I’ve worked in the aviation sector for around 20 years, and the sense of momentum that I’ve seen in the industry in the last couple of years is palpably different to what we’ve seen before.”

The entire global sector, together, has committed to net zero by 2050, and industry bodies have outlined how to scale up to net zero.

Matt then brings his presentation to a focus on Heathrow. He starts by saying that Heathrow cannot solve this carbon crisis alone. Emissions from aircraft are the vast majority of carbon emissions (around 95%), and a smaller percentage of carbon comes from on the ground procurement, surface access and airport buildings. He emphasises the need for a plan that covers the whole of that footprint and says that a new plan for going net zero is being published in the new year. He then goes into detailed solutions to carbon, both in the air and on the ground.

He then looks at the relative contribution of both air and ground, and the viability of the solutions being available this decade. They are currently finalising the exact targets. Improving conventional aircraft and changing to SAFs are the main reducers of carbon in the air. The delivery phase is firmly underway, and it is now about delivering as quickly as possible.

Matt concludes his presentation with a quote he enjoys from **Chris Stark, the CEO of the Climate Change Committee**, which says ***“The journey to zero carbon is a permanent one. Let’s celebrate being the generation that will get the job done.”***

Q&A

The session was then opened to questions by the chair. These questions cut to the heart of the debate and explored issues such as:

- how air travel will become more sustainable in the future
- how new technology is going to be game changer for the industry
- the opportunities and challenges of Sustainable Aviation Fuels
- what is being done to ensure electricity will be in sufficient supply at Heathrow Airport in future?

“We hear a lot of voices against aviation, what do you say to those that say we should forget about aviation altogether and use other modes of transport?”

I would like to come back to my starting point, that I do think the world would be a poorer place (socially, economically, and culturally) without aviation. The only way we can protect this is by getting to net zero carbon. We have set out a pathway, and now we need to deliver it. We will be introducing electric and hydrogen aircrafts as soon as we can, as well as investing in carbon removal.

I have always said that travel should be the right mode for the right journey. In Europe there are some high-speed trains which are more efficient than planes, and similarly for inter-city trains in the UK.

“With regards to surface access, what do you think the wins are, what potential is there and where do you see it going?”

A: With regards to wins, firstly, Crossrail is a big win for us at Heathrow, going through and under the city of London and increasing connectivity. In the next decade, alongside rail we will be extending and supporting the coach network at Heathrow, as well as supporting local connectivity. We will be supporting active travel, for example there are many people that work at Heathrow that live within a close proximity to it, so we are looking at introducing a cycling scheme. Also, we will be investing in electric vehicle and charging infrastructure.

“By using Sustainable Aviation Fuels, we can start cutting carbon from aviation today, it doesn’t seem right that you are just burning these fuels. What do you have to say about this?”

In waste, the equation would be that some of that municipal waste can be better used to make SAF and then burn it. It is extremely important that we are using the most robust government guidance from around the world. The most exciting prospective fuels are fully synthetic fuels. These are hydrocarbons, produced by a mixture of hydrogen, and carbon from the air, and emits when it is burnt. This fuel is carbon neutral and could even be carbon negative. The technology exists for this fuel, but it is very expensive. Airlines are looking at the possibility of using this fuel in the 2030s. Another advantage of SAFs is that they burn cleaner than current fuels. It is another benefit on non-CO2.

“What is your plan for Heathrow to get enough volume of SAFs?”

A: The majority of plants being invested in are in HEFA. Certainly, the 3 plants that are planning to invest in the UK are all waste-based fuels. They are then transitioning to new fuel. There are mandates and sub-mandates for synthetic fuels. Also, there will be capital support for more emerging technology to help those first of a kind plants open. These need to conform to sustainability standards, with no land use or biodiversity concerns in the future.

“To produce SAFs and later on synthetic fuels requires sustainable electricity. Should we expect Heathrow to become an electricity provider in the future?”

Yes, we see the transition being a greater need for more electricity. So, the question is, how do we provide more electricity? We have been just looking into the possibility of producing hydrogen at Heathrow. So, in the future there could be a scenario where there is a need to liquify imported gas at Heathrow, as well as needing more electricity for both heating buildings and energising vehicles. So yes, there is going to be a major increase in demand for electricity at Heathrow.

“As the size of investment is significant, why would airlines buy more expensive fuel? How do you address this important investment risk?”

We will need to invest in some of our infrastructure. We at Heathrow are economically regulated, and there is a plan to invest in the next 5 years up to £180m to decarbonise Heathrow. We are making a strong case that it is the right thing to do for both consumers and the environment. In terms of the demand risk, we know that people are generally willing to pay a bit more for travel because of the benefits they get from it. The costs outlined can be accommodated without a fundamental impact on demand for the airport. It has become core to the business to understand future impacts on demand. Our goal is to provide a valuable service to society, and we will only be able to deliver this service if we can get to net zero carbon.

“In Europe, the direction is to impose a SAF mandate – do you see the UK taking the same direction?”

Yes, Europe is moving towards a mandate of 5% by 2030 and increasing beyond that. In the UK a mandate alone won't scale up SAF usage unless there is an incentive as well imposed by the government. We need government action quickly, otherwise there is a risk that global capital will flow away from the UK.

“Is there a ‘first-mover’ risk that Heathrow becomes a leader in this space, a space in which we don’t really know what it looks like. And if so, how do you mitigate this risk?”

Personally, I am struggling with the idea of being the ‘first-mover’. We are looking to move as a group on this issue – all other major airports are setting out similar plans globally. There may be risks if we weren't moving collectively, for example with hydrogen, there would be risks there if we invest a lot in hydrogen aircraft that become obsolete or cannot be fuelled at other airports. Overall, we are looking to take a lead, but not to the extent significant risk in the way described.

“What are the implications of hydrogen powered aircraft, and what is the timescale of these aircraft?”

We are currently trying to get the best sense of likely timescales and expect these aircraft to be ready for commercial use by 2035. They will be ready for shorter flights of around 500 nautical miles by the second half of this decade. This timescale includes looking at the relevant safety implications of hydrogen, and from the early work done I haven't heard of anything insurmountable.

“Can you tell us a bit more about the scope of airspace modernisation, does this include things such as flying in a bird formation?”

Most aircraft are designed in most cases around 50-70 years ago. They are perfectly safe, but not very efficient. Figures vary around the world, but it is predicted that airspace modernisation could bring about a 5-10% efficiency improvement. However, airspace modernisation is a slow process and can be politically challenging as it is usually a change to the norms. For example, a more continuous ascent/descent could be a more efficient but have other payoffs.

“What is the view of Heathrow airport on frequent flyer levies?”

We at Heathrow fully support the ‘polluter pays’ principal. Generally, this states that the more you fly, the more you pay. However, we believe that people should pay carbon costs, but these costs should directly help drive towards decarbonisation. Air passenger duty is one of the highest taxes on aviation. It was originally introduced as an environmental tax, and since introduction there has been no noticeable impact on demand. Clearly, people value flying and are willing to pay, so let’s use this knowledge to drive decarbonisation.

Clémence closed the session by thanking Matt Gorman for an insightful presentation and wishing him the best in the essential mission to decarbonise the aviation industry.