



TARGET NET ZERO

Heathrow's Plan for the
Critical Decade Ahead

Heathrow

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1. Foreword

Climate change is the greatest challenge facing our generation. The Intergovernmental Panel on Climate Change's (IPCC) report on 1.5 degrees showed the clock is ticking and the goal could not be clearer: get the global economy to net zero by 2050, at the latest.

The action we take today and over the next decade will define whether we succeed.

This is Heathrow's plan for a critical decade. To get our own emissions to net zero, help the whole industry achieve a net zero future and use our scale to help the wider economy decarbonise too.

We have already reduced Heathrow's own carbon emissions from our infrastructure by 93% since 1990. At the same time, we have invested in pioneering natural solutions such as restoring UK peatlands to help remove the carbon we emit from the air.

Importantly we haven't acted alone. The aviation sector was the first, over a decade ago, to set global carbon reduction targets. Earlier this year, the UK aviation industry became the first national aviation sector to commit collectively to achieving net zero carbon emissions by 2050. This is a significant commitment that supports the UK's goal to achieve net zero across the whole economy by 2050 and one that sets a template for the global aviation sector to follow.

We've also shown it is possible to decouple passenger growth from carbon growth. Since 2005, while UK passenger numbers have grown by 25%, there has been a 3% reduction in carbon emissions.¹ We are making progress.

But our ambition must be greater and the whole industry can make progress faster with the help of Government.

This plan will see Heathrow achieve net zero-carbon across our airport infrastructure as soon as possible – before the end of this year we will confirm our target date – and

we're working towards zero-carbon by the mid-2030s. We will develop a new approach to landing charges to help incentivise airlines to switch to cleaner fuels and penalise those that don't. Just as Heathrow acts as a cornerstone of the whole UK economy, we will use our scale and influence to help accelerate decarbonisation of industries across the country.

At the same time, airlines at home and abroad are acting to offset their emissions while they support the development of technology including cleaner fuels and electric planes. IAG's pioneering commitment to net zero is just one recent example of these important efforts. And we will keep investing to help grow UK forests, restore UK peatlands and develop new technologies which remove carbon from the atmosphere which can help Heathrow and the whole aviation sector get to net zero.

It is not enough for the UK to act alone. Doing so risks damaging our economy without arresting the climate emergency. Action must be coordinated on a global scale. But the UK is uniquely well placed to lead the climate fight. The COP26 summit in Glasgow later this year creates the opportunity to build a global consensus. This plan lays out how the UK government can do this with the aviation industry.

This work matters because aviation is a critical global sector connecting people and cultures and underpinning world trade. Constraining growth will damage the UK's economy and society.

But we cannot fly at any cost. We need to deliver the benefits of aviation in a world without carbon. This must be a decade of action to tackle the climate challenge so our children can look forward to a better future.

John Holland-Kaye

Chief Executive Officer, Heathrow Airports Ltd

1. Sustainable Aviation, Decarbonisation Road-Map: A Path to Net Zero, February 2020

2. Executive Summary

Climate change is a global challenge that demands decisive action by governments, businesses and individuals. The race to decarbonise our economy is one we must move faster on to achieve the difference required.

In June 2019, the UK took the lead by becoming the first major economy in the world to legislate to become net zero by 2050. Bringing COP26 to Glasgow this November presents another opportunity for the UK to show leadership on the world stage.

The aviation sector is responding too.

Aviation is a force for good in the world. It has helped power economic growth and bring people and cultures together. In the UK, we have a proud aviation history. From piloting the first transatlantic flight to the development of Concorde, we have always been at the heart of innovation. And there is no more important time to draw on this legacy than now, applying our track record of innovation to help reinvent aviation for the twenty first century and accelerate the era of sustainable flight.

Heathrow matters because of our role connecting the whole of the UK to global growth. The airport and its expansion programme are critical as the country reasserts itself on the world stage as an ambitious, outward-looking, global trading nation.

However, these benefits cannot cost the earth. We have to deliver them in a world without carbon. Aviation must get to net zero by 2050.

Our actions over the next decade, alongside airlines, manufacturers, governments and passengers, will dictate whether we succeed. During the 2020s we must take the necessary steps to prepare aviation for a net zero future. This plan sets out the actions we will take.

Because no business or industry can tackle the climate emergency alone, this plan includes a call to action and clear steps Government can take to help the whole industry make progress faster.

Importantly, we aren't acting alone.

EasyJet pledged to offset all flights from November 2019, while IAG have committed to offset all domestic flights and, alongside Virgin, achieve net zero by 2050. In Europe, Air France has pledged to offset domestic flights, and Lufthansa have introduced a business fare to automatically offset emissions for corporate customers flying in Europe. In the UAE, Etihad Airways have committed to a minimum target of net zero carbon emissions by 2050 and halving their 2019 net emission levels by 2035. In the US, JetBlue has become the first major US airline to commit to going carbon neutral on all domestic flights by offsetting its emissions, and fly with sustainable aviation fuels on flights from San Francisco International Airport from mid-2020.

Our goal is clear – help aviation get to net zero carbon emissions by 2050 by getting our own house in order, working with our partners on the ground and working with our partners in the air. In order for this to be achieved, we are working through the following framework:

Finishing the job of getting our own house in order

1. We will keep investing until all our airport infrastructure and vehicles are zero carbon

Working with our Team Heathrow partners and with passengers to eliminate carbon on the ground

2. We will support our business partners to ensure vehicles at Heathrow meet ultra-low emissions standards by 2025 as a step to a fully zero-carbon fleet in future
3. We will make it easier for the 76,000 people who work at Heathrow, our passengers and all those who travel in our local area to reduce their emissions from travel on the ground
4. We will become a world-leader in low-carbon construction, setting a clear baseline and ambitious reduction targets to reduce embodied carbon from expanding the airport. We will offset residual emissions

Working with our industry partners, Government and passengers to decarbonise flight

5. We will work to build a global aviation industry "high ambition coalition" with the aim of agreeing a global net zero emissions target at the International Civil Aviation Organisation (ICAO) general assembly in 2022
6. We will help accelerate the production and use of Sustainable Aviation Fuels (SAFs)
7. We will support the development of technologies which can get aviation to fully zero-carbon flight
8. We will put carbon back in the ground, helping passengers to offset their flights and increasing our own investment in natural and technological solutions

“No business or industry can **tackle the climate emergency** alone”



Our industry is also collaborating to tackle carbon emissions. In June 2019, at the 29th Annual Congress of the Airports Council International Europe (the trade association for European airports), more than 200 members supported an industry-wide ambition of net zero carbon emissions by 2050 and committed to achieve that in their own operations. At the UN Global Climate Action Summit in New York in September 2019, the World Economic Forum and the Energy Transitions Commission also launched their “Mission Possible Platform” to take action and advocate policies to get to net zero, including their “Clean Skies for Tomorrow Coalition”.

In addition, aircraft manufacturers are making strides to decarbonise. The Airbus A350 aircraft now offers a 25% improvement in fuel efficiency compared to the aircraft it is replacing, with its engines powered by new fuel efficient and quieter Rolls Royce engines. Investment is also being ploughed into the development of electric-hybrid aircraft and sustainable aviation fuels; these fuels are already being produced in the US and Europe by companies such as Neste while a plant is being built in Holland and another planned in the UK in a collaboration between Royal Dutch Shell, Altalto Immingham Limited and British Airways.

Already the development and uptake of new technology, particularly that which has been implemented by new aircraft, has meant that growth in aviation has been decoupled from growth in emissions. As UK passenger numbers have grown by 25%, there has been a 3% reduction in carbon emissions since 2005.²

But we must not let up the pace of change.

The 2020s are the critical decade in the fight against climate change. The action we take over the next ten years will determine whether we can reverse the climate emergency.

We will not shy away from this challenge. Action at Heathrow matters not just because we must help the UK achieve net zero by 2050, but because we can use our status as a major global hub airport to accelerate change both here in the UK and around the world.

We will keep reviewing this plan and testing ourselves to go further wherever possible, working with airlines, airports, manufacturers, government and academics to consider what further steps we can take together.

2. *Sustainable Aviation, Decarbonisation Road-Map: A Path to Net Zero, February 2020*

3. Our plan for a critical decade and how Government can help

Our focus	Our action	How Government can help
<p>Finishing the job of getting our own house in order</p> <p>1. We will keep investing until all our airport infrastructure and vehicles are zero carbon</p>	<p>What we've done:</p> <ul style="list-style-type: none"> • Our airport operations have become carbon neutral, following a £100 million investment in our infrastructure to improve energy efficiency and generate renewable energy in the last six years. We have also invested in purchasing renewable energy <p>What we're doing:</p> <ul style="list-style-type: none"> • Working with Airports Council International and independent experts to develop net zero accreditation • Publishing a plan to make our airport infrastructure net zero as soon as possible and by the end of this year publishing a plan with our target date • Achieve zero carbon on our airport infrastructure by the mid-2030s by moving away from gas to heat the airport 	<ul style="list-style-type: none"> • Continue to support the development of new technologies, including hydrogen for use in heat • Develop a clear standard for net zero that companies can apply
<p>Working with our Team Heathrow partners and with passengers to eliminate carbon on the ground</p> <p>2. We will support our business partners to ensure vehicles at Heathrow meet ultra-low emissions standards by 2025 as a step to a fully zero carbon fleet in future</p>	<p>What we've done:</p> <ul style="list-style-type: none"> • Invested around £7 million to build one of the highest density Electric Vehicle (EV) charging networks in Europe • Worked alongside partners to share developments in latest technology <p>What we're doing</p> <ul style="list-style-type: none"> • Our fleet of cars and small vans will be fully electric or plug in hybrid from this year • Further enhancing our electric charging network around the airport • Looking at the price of EV charging to encourage the switch to electric • Introducing an airside Ultra-Low Emissions Zone from 2025 	<ul style="list-style-type: none"> • Support the development of zero-carbon technologies particularly for heavy goods vehicles and construction equipment • Set the right policies and incentives to accelerate the adoption of zero carbon vehicles
<p>3. We will make it easier for the 76,000 people who work at Heathrow, our passengers and all those who travel in our local area to reduce their emissions from travel on the ground</p>	<p>What we've done:</p> <ul style="list-style-type: none"> • Introduced new bus and coach routes such as the X442 and the Guildford Rail-Air link • Set up the largest single site car share scheme in Europe for our colleagues and partners <p>What we're doing:</p> <ul style="list-style-type: none"> • Implementing an Ultra-Low Emissions Zone around the airport from 2022 to encourage cleaner vehicles, transitioning into a full Vehicle Access Charge for passenger cars, taxis and private hire vehicles in 2026 • Working with bus and coach operators, new services will be introduced, linking the airport with new communities and increasing frequencies on existing services with extended operating hours to provide access to Heathrow around the clock • Supporting the development of new rail routes, including the Western Rail Link, Southern Access Link and HS2 • Building an extensive green loop around the airport with expansion to make cycling and walking to the airport easier, to encourage our local colleagues into active travel 	<ul style="list-style-type: none"> • Continue to support the delivery of expansion as soon as possible in order to unlock investment in these changes • Progress at pace the Western Rail Link, Southern Access Link and HS2, with committed new public rail schemes meaning more people better able to access the airport

4. We will become a world-leader in low-carbon construction, setting a clear baseline and ambitious reduction targets to reduce embodied carbon from expanding the airport. We will offset residual emissions

What we're doing:

- Avoiding construction wherever possible through smarter design and greater use of our existing assets
- Utilising cement replacement materials to minimise carbon in construction
- Using our scale to help underpin the development of new technologies and drive innovation across our supply chain, including working with academia and other industry experts to explore a range of low-carbon options
- Creating four logistics hubs across the country to help limit the carbon intensity of the expansion programme by manufacturing, preassembling and consolidating materials offsite

- Support research and development in pioneering technologies such as hydrogen steel

Working with our industry partners, Government and passengers to decarbonise flight

5. We will work to build a global aviation industry "high ambition coalition" with the aim of agreeing a global net zero emissions target at the International Civil Aviation Organisation (ICAO) general assembly in 2022

What we've done:

- A founding member of Sustainable Aviation, remaining a key voice
- A founding member of Airports Council International Europe's Climate Change Taskforce
- Founder member of the World Economic Forum's "Clean Skies for Tomorrow Coalition"

What we're doing:

- Helping develop industry roadmaps to net zero, including with Sustainable Aviation
- Calling on the Government to create a new Net Zero Aviation Board
- Campaigning for ICAO to adopt a 2050 net zero target for aviation at its next Assembly in 2022

- Seize COP26 as the opportunity to accelerate global action towards net zero
- Establish a new Net Zero Aviation Board to develop a roadmap for aviation to get to net zero
- Engage ICAO and fellow member states to agree a 2050 net zero goal for aviation emissions by 2022

6. We will help accelerate the production and use of Sustainable Aviation Fuels (SAFs)

What we've done:

- Actively supported the development of Sustainable Aviation's Decarbonisation Road-Map
- Collaborated with Imperial College London to assess the viability of SAFs and supported a partnership between Virgin Atlantic and LanzaTech to develop SAFs

What we're doing:

- Consulting with airlines on how we can use our landing charges to encourage the take up of SAFs

- Shape Air Passenger Duty (APD) to help close the price gap for SAFs and incentivise uptake
- Back a production mandate at a European level
- Act on the asks in the Sustainable Aviation Decarbonisation Road-Map:
 - Establish an Office for Sustainable Aviation Fuels
 - Incorporate recycled carbon fuels into the Renewable Transport Fuels Obligation (RTFO)
 - Apply a 1.2x multiplier within the RTFO incentive for SAF developmental fuels
 - Fund flagship SAF plants – £500 million over five years

7. We will support the development of technologies which can get aviation to fully zero-carbon flight

What we've done:

- Funded research to understand how electric aircraft will impact future infrastructure needs with the help of the universities of Cranfield, Essex and Reading

What we're doing:

- Establishing a new framework for airport growth with clear environmental performance targets, known as Environmentally Managed Growth
- Offering free landing charges for a year at Heathrow to the first electric-hybrid aircraft, worth £1 million

- Continue to provide support for research and development into new aircraft technologies and set out policies to make the UK a world leader in electric propulsion
- Advance timely delivery of airspace change and modernisation programmes in the UK

8. We will put carbon back in the ground, helping passengers to offset their flights and increasing our own investment in natural and technological solutions

What we've done:

- Invested in peatland restoration in Lancashire and in the west of Wales to help reduce and remove carbon from the atmosphere
- Supported a 'carbon farming' pilot in Scotland, in which regenerative farming techniques are proving more carbon can be locked up in soils
- Piloted the use of an innovative trading platform to illustrate how farmers could be paid to sustain these farming techniques
- Invested in projects in Mexico and Indonesia in order to achieve carbon neutral status for the airport

What we're doing:

- Raising awareness of offsetting among passengers through a new offsetting platform with partner CHOOOSE, giving users the option to invest in offsetting projects in Kenya and Costa Rica
- Introducing our own seed fund for Scottish woodland to be communicated to passengers on CHOOOSE
- Looking at how our landing charges could provide a stronger incentive for airlines to reduce carbon or offset

- Promote voluntary offsetting before then reviewing the case for opt-out offsetting
- Help educate the public about the importance of offsetting schemes and the role they can play
- Enable the market for natural climate solutions to develop beyond woodland and peatland schemes by providing a clear approach for market integration with the policy on "Environmental Land Management Schemes" during its pilot phase from 2021
- Stimulate the development of new carbon removal technologies in the UK through further funding competitions, development of standards and governance, and by setting more ambitious targets

Our eight point plan in detail

Finish the job of getting our own house in order

1. We will keep investing until all our airport infrastructure and vehicles are zero carbon

While 95% of aviation's overall carbon footprint comes from flight, we must still tackle direct emissions from airports.

That is why we have already taken action.

Over the last six years alone, we have invested £100 million in more energy efficient systems and energy supply. Together with our purchase of renewable energy, this means that our emissions from airport infrastructure have now been reduced by 93% since 1990. In 2014, we opened our Heathrow Energy Centre, one of the UK's largest biomass plants, and since 2017, our airport infrastructure has operated on 100% renewable electricity. In 2018, Terminal 2 became our first terminal to run on green gas and from 2020 we will run the whole airport on green gas, helping to stimulate this market.

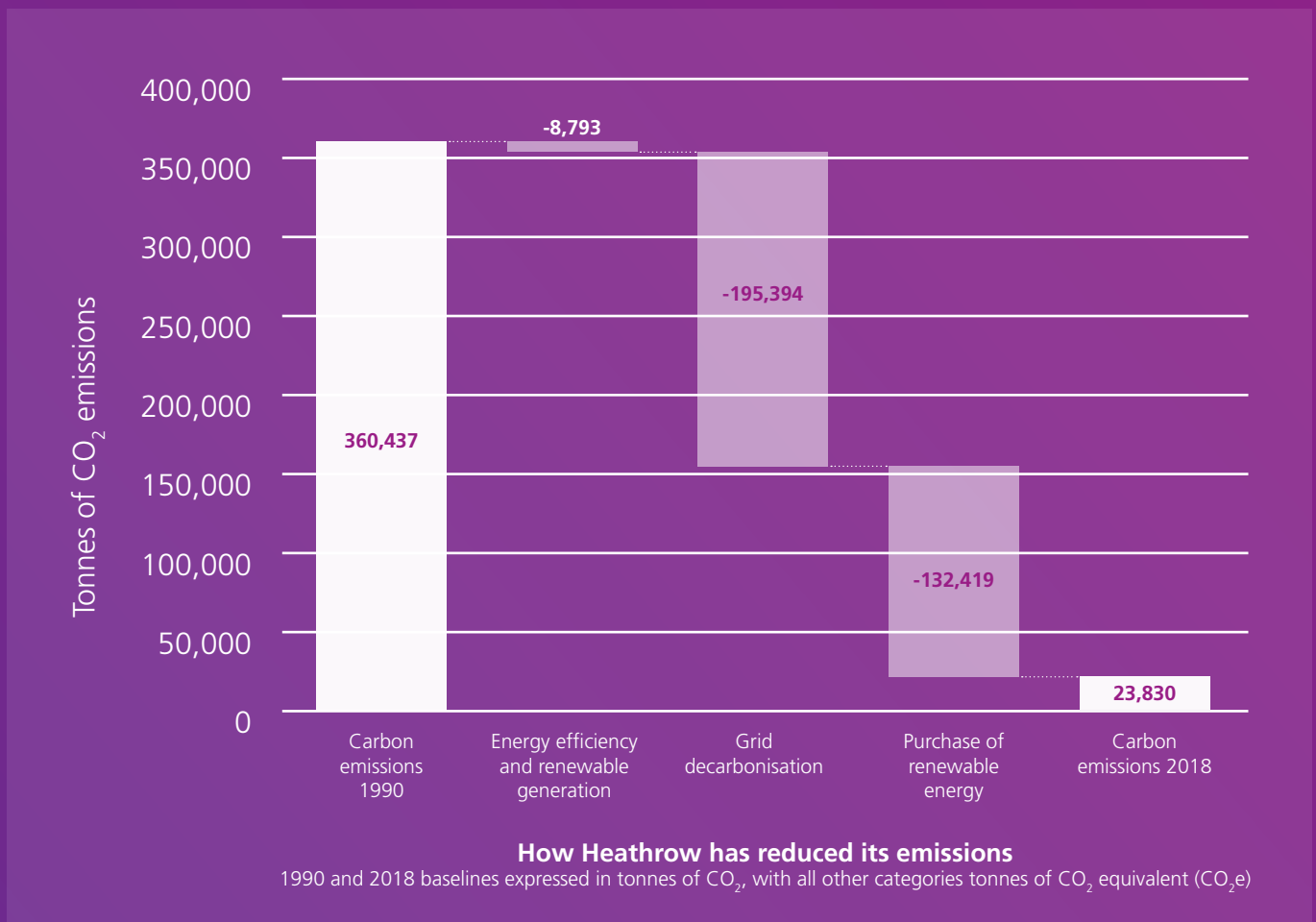
In addition to these steps to cut emissions, we have also offset any remaining emissions from gas use and vehicles at the airport so that we are now carbon neutral.

But we must go further. Our focus in the short-term is to get all our airport infrastructure to net zero and we will be publishing a plan for this to happen as soon as possible.

Separately, we are working with and supporting the Airports Council International (ACI) to develop accreditation which will set official standards for airports to become net zero and encourage them to do so.

To get to zero carbon, we have plans to transition away from using gas to heat the airport. This final step will see us switch off our boilers and go carbon free. We are planning to do that by the mid-2030s with a heat exchange scheme included in our plans – but we will go faster if we can.

Change in carbon emissions from buildings and fixed infrastructure 1990 vs. 2018



Heathrow decarbonised its on-airport infrastructure by 93% between 1990 and 2018 through a combination of energy efficiency and renewable generation, grid decarbonisation and the purchase of renewable energy



By the end of 2020, all of Heathrow's cars and small vans will be electric or plug in hybrid

Working with our Team Heathrow partners and with passengers to eliminate carbon on the ground

2. We will support our business partners to ensure vehicles at Heathrow meet ultra-low emissions standards by 2025 as a step to a fully zero-carbon fleet in future

At Heathrow, we have long understood the importance of getting our fleet of vehicles to zero carbon. Close to two decades ago, we set up the Clean Vehicles Partnership to reduce emissions from Heathrow companies' fleet operation and by the end of 2019 over 100 of Heathrow cars and small vans had been converted to electric or plug in hybrid. In 2020 we will convert the remaining nine cars and small vans in our fleet.

Across the airport, we have invested around £7 million to build one of the highest density Electric Vehicle (EV) charging networks in Europe. There are now 129 charge points installed for EVs across the airport – 31 airside and a further 98 landside.

We are also incentivising business partners to 'green' their delivery fleets with initiatives such as our airside Ultra-Low Emission Zone which will come into effect from 2025. Alongside this, we support fleets to take action to deliver our sustainability objectives, sharing the latest developments in technology, policy and sustainability solutions.

3. We will make it easier for the 76,000 people who work at Heathrow, our passengers and all those who travel in our local area to reduce their emissions from travel on the ground

Beyond our own operations we must work to help reduce the carbon impacts of journeys to and from the airport, and across our local communities.

While our passenger numbers have risen by almost 80% in the last 20 years, airport related traffic has remained broadly static. With expansion, we have pledged that there will be no more airport related traffic on the roads relative to today's levels.

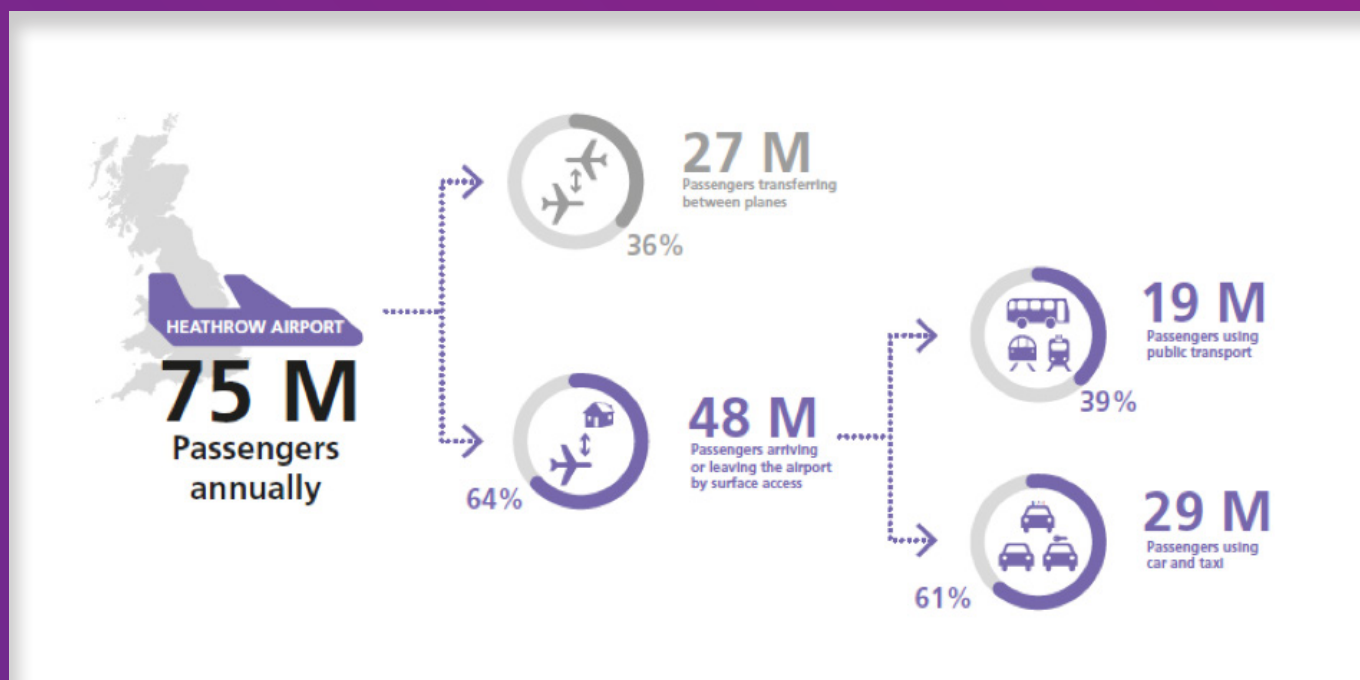
To deliver on this commitment, we have already announced initiatives to reduce reliance on cars to access the airport. These include the implementation of an Ultra-Low Emissions Zone around the airport, which proposes to target older, more polluting passenger cars and private hire vehicles from 2022. These charges will fund new measures to improve sustainable transport modes and public transport access when we expand. A full Vehicle Access Charge for all passenger cars, taxis and private hire vehicles will also follow in 2026.

To build on this commitment, we are developing plans to increase the availability of public transport, setting out

proposals that would put Heathrow at the heart of the UK rail network.

To help passengers from across the country we are also supporting the delivery of a Western Rail Link and Southern Access Link to the airport. We want to build on the improvements that will be created once the Elizabeth Line opens and access to the airport will also be made easier with the opening of a new station on the HS2 line at Old Oak Common and the upgrading of the Piccadilly Line on the Tube network.

We are also making it easier for our colleagues to access the airport. In addition to providing the UK's largest free travel zone for colleagues, we operate the largest single site car-share scheme in Europe with almost 8,000 colleagues now signed up. New local bus and coach routes such as the X442 from Staines Railway Station to Terminal 5 and the RailAir coach service from Guildford Railway Station to Heathrow Central Bus Station have been introduced and a 12 mile "green loop" will be built around the expanded airport to encourage walking and cycling from the airport. Combined, these actions have helped to reduce the costs of travel, the number of vehicles on the road, and the ease of getting to and from the airport for colleagues.



29 million passengers arrived at Heathrow by car or taxi in 2016, while 19 million used public transport (Source: Heathrow, Our Approach to Developing a Surface Access Strategy, January 2018)

4. We will become a world-leader in low-carbon construction, setting a clear baseline and ambitious reduction targets to reduce embodied carbon from expanding the airport. We will offset residual emissions

As we work to expand the UK's hub airport we have a great opportunity to use our scale and influence to help accelerate change, not just in our own sector but across the economy.

Expansion gives us a unique opportunity to take a cross-sector lead on low carbon construction. We will avoid construction wherever possible through smarter design and greater use of our existing assets. We also want to use our scale to help underpin the development of new technologies and drive innovation across our supply chain. One example of this will be using cement replacement materials to minimise carbon in construction. We are working with academia and other industry experts to explore a range of low-carbon options.

Heathrow expansion is also expected to require around one million tonnes of steel – including some 750,000 tonnes of non-structural steel. As well as finding innovative ways to use less steel, or re-use outgoing materials, we have also pledged our commitment to the UK steel industry through the signing of the UK Steel Charter in July 2019, which includes

a commitment to unlocking the environmental benefits of shortened and localised supply chains. We are now exploring whether we can use our buying strength to help underpin and support the development of lower-carbon clean steel sector in the UK.

Low carbon construction is challenging and the entire supply chain must be considered. Indeed, the decarbonisation challenge will only be met with industry, government and academia working together to develop innovative solutions. The steel industry is already taking its first steps towards decarbonisation, and we look forward to working with our UK Steel Charter partners, including Heathrow, to realise the opportunities of net zero technologies.

Gareth Stace,
Director General, UK Steel



Off-site construction will be revolutionised through Heathrow's creation of four Logistics Hubs across the country



CELSA Steel UK is used to construct Pen Y Cymoedd Wind Farm (Source: CELSA Steel UK)

This cutting-edge technology is one of many innovations which will help decarbonise the whole economy and put the UK at the forefront of the global fight against climate change.

Britain's largest steel maker, Tata Steel, is already investing heavily in a ground breaking low-carbon steel making process in the Netherlands, and the likes of CELSA Steel UK in Cardiff are already among the lowest-carbon producers in Europe (see case study). In August 2019, the UK Government pledged £390 million into researching low carbon technology (including a £250 million Clean Steel Fund). The Government's Industrial Energy Transformation Fund also launches later this year with one of its aims to reduce emissions by decarbonising industrial processes. We aim to use our buying power to help create a future market for such innovative technology and we will work with the Government to help it consider the steps it could take to support these efforts.

Expansion will also see the creation of four Logistics Hubs across the country. As well as spreading the benefits of expansion with new jobs and economic benefits, off site construction will help to make the project more sustainable by transporting assembled components in larger consolidated loads, helping reduce traffic flows to and from the construction site. Recent research based on case studies has suggested that projects using off-site construction can deliver a reduction of between 20% and 60% in metric tons of CO₂ associated with project transport.³ This initiative will also help revolutionise offsite manufacturing, generating a legacy which will last well beyond the building of an expanded Heathrow.

CASE STUDY: CELSA Steel UK

Around half of the estimated one million tonnes of steel required for Heathrow expansion will be made up of reinforcing bar. The leading UK producer of reinforcing bar, CELSA Steel UK, already has a low carbon footprint through its use of steel scrap as its main raw material. Based in Cardiff, CELSA uses this end-of-life resource as 98% of its feedstock, all of which is sourced from within the UK. CELSA processes the scrap in an Electric Arc Furnace, using an ever increasing proportion of renewable energy. They also have a growing cross-sector collaboration with local companies to deliver restorative economic, sustainable and zero carbon solutions.

Our intention is to complete the journey to deliver zero carbon steels for the construction industry in the next few years. We are producing steel with the lowest carbon technology available. Our route to carbon neutrality is through using renewable energy sources and making further strides in energy efficiency. We see a clear path which is not dependent on the development of completely revolutionary technologies.

Luis Sanz,
CEO and Managing Director, CELSA Steel UK

3. WPI Economics, *The value of off-site construction to UK productivity and growth*, February 2018

Working with our industry partners, Government and passengers to decarbonise flight

5. We will work to build a global aviation industry “high ambition coalition” with the aim of agreeing a global net zero emissions target at the International Civil Aviation Organisation (ICAO) general assembly in 2022

We cannot tackle the climate crisis alone. Collaboration across industry is essential if we are to achieve net zero. That’s why we have helped build a strong coalition here in the UK, across Europe and around the world.

In the UK, we have been a member of the Sustainable Aviation (SA) coalition since it was launched in 2005; SA is a long-term strategy which has helped to set out the collective approach of UK aviation to tackling the challenge of ensuring a cleaner, quieter, smarter future for the industry and is regarded as world leading. We continue to play a part; for instance, by recently influencing the development of the recently published SA Decarbonisation Road-Map to show the feasibility of the aviation industry achieving net zero emissions by 2050.

We are also calling on the new Government to form a ‘Net Zero Aviation Board’, under which the Secretary of State would convene key industry CEOs to implement a net zero plan.

That Board should build strong consensus on the action needed to rapidly scale up Sustainable Aviation Fuels (SAFs) and broker Government commitment to the policies required to support industry.

In Europe, we are a member of Airports Council International (ACI) Europe and in June 2019 we were one of more than 200 members to commit to achieving net zero carbon emissions by 2050. Globally, we are also a part of the World Economic Forum’s Mission Possible Platform through the “Cleaner Skies for Tomorrow Coalition”. This coalition is a crucial mechanism for key industry leaders, across and beyond the aviation industry, to align on a transition to SAFs.

Through these groups and others we will continue to build a coalition of the willing both to take action and to advocate the policies needed. This includes advocacy at the COP26 climate negotiations in Glasgow in November 2020. We are also calling on ICAO to agree a 2050 goal for net zero at the next general assembly in 2022.

CASE STUDY: CLEAN SKIES FOR TOMORROW COALITION

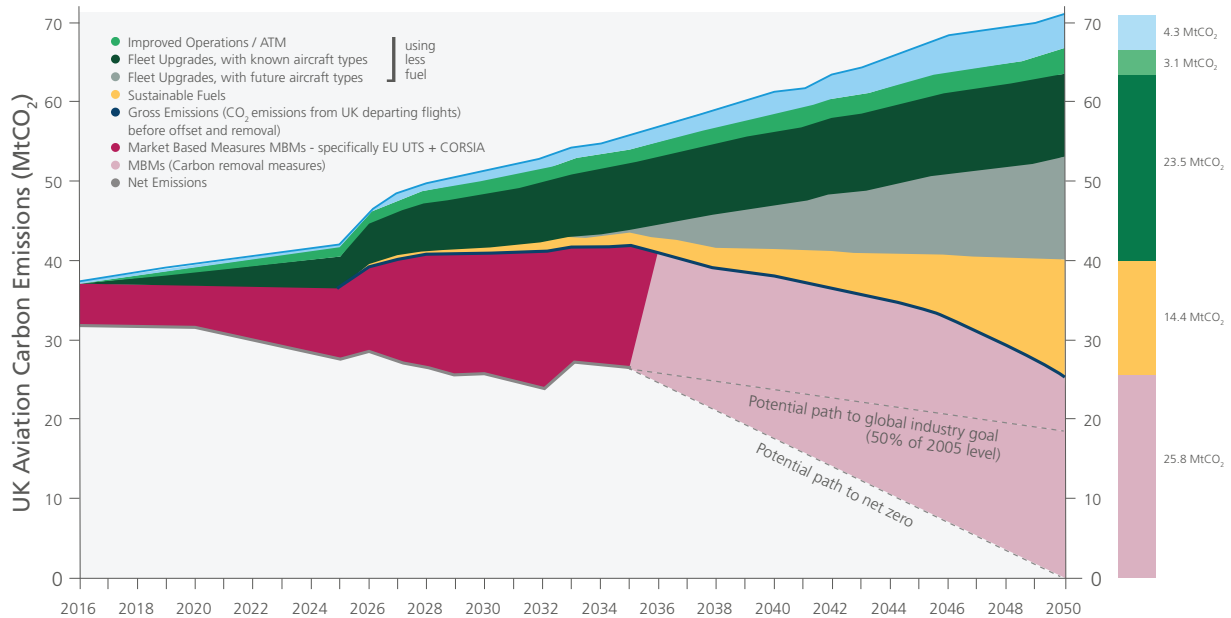
With air travel predicted to double by 2035, the aviation sector could represent a significantly higher share of greenhouse gas emissions by 2050 compared to its 2-3% share today. The Clean Skies for Tomorrow Coalition provides a crucial mechanism for top executives and public leaders, across and beyond the aviation value-chain, to align on a transition to Sustainable Aviation Fuels (SAFs) as part of a meaningful and proactive pathway for the industry to achieve carbon-neutral flying.

Stakeholders will work together to address the “chicken and egg” scenario whereby producers and consumers are both either unwilling or unable to carry the initial cost burden of investing in new technologies to reach a scale where they are competitive with existing fossil fuel-derived options.

The rapid acceleration of SAFs production and use is critical to achieving carbon net zero in aviation by 2050. Unlocking the SAF market will require an orchestrated sequence of actions from policy-makers, industry stakeholders across the aviation fuel ecosystem, as well as consumers that rely on aviation for business and prosperity. The Clean Skies for Tomorrow coalition relies on the bold and committed leadership of champions like Heathrow to rally support, and partnerships to align on an achievable pathway together.

Lauren Uppink,
Head of Aviation, Travel and Tourism Industries,
World Economic Forum

Decarbonisation Road-Map for UK Aviation



Sustainable Aviation's 'Decarbonisation Road-Map for UK Aviation', highlighting aviation's potential path to net zero by 2050 (Sustainable Aviation, Decarbonisation Road-Map: A Path to Net Zero, February 2020)

6. We will help accelerate the production and use of Sustainable Aviation Fuels (SAFs)

New aircraft, engine technology and operational improvements have made flying much more efficient and that will continue as the industry continues to innovate. We believe zero-carbon flying is possible, in the medium-term through electric technology for short-haul and in the longer-term through synthetic fuels or hydrogen for longer haul journeys.

In the next 10-20 years, SAFs represent the main way for aviation to accelerate cuts in gross carbon emissions. SAFs from second generation biofuels have been technically proven using existing aircraft, and can deliver up to 80% carbon reductions for each litre of fuel used instead of traditional jet-fuel, and there is sufficient feedstock available.

The challenge we face is the classic "chicken-and-egg" of limited, high-cost production and hence limited demand. SAFs for aviation are currently at least twice the cost of kerosene. We are consulting with airlines on how we can use Heathrow landing charges to help close this gap and stimulate demand and production. The landing charge regime at Heathrow has

already delivered real change – the Airbus A380 operated out of Heathrow by Singapore Airlines and Emirates was designed with our landing charges in mind, with the aircraft manufacturer reducing noise in line with our standards while still continuing to support passenger demand.

Government support is also needed. We have stopped campaigning for the removal of Air Passenger Duty (APD) and are instead calling for a review into how the tax can be reformed to encourage environmental action and change. By reforming APD, the Government could further stimulate the production of SAFs, by providing discounts to airlines using targeted levels of SAFs – this could be achieved on a revenue neutral basis by increasing APD for non-SAF users. This simple move would help narrow the cost gap between fossil fuels and SAFs, supporting their demand and investment and driving a reduction in carbon emissions.

As part of Sustainable Aviation, we are also calling for the establishment of an Office for Sustainable Aviation Fuels and the prioritisation of SAFs in the Renewable Transport Fuels Obligation.

In addition, aircraft manufacturers are making strides to decarbonise. The Airbus A350 aircraft now offers a 25% improvement in fuel efficiency compared to the aircraft it is replacing, with its engines powered by new fuel efficient and quieter Rolls Royce engines. Investment is also being ploughed into the development of electric-hybrid aircraft and SAFs; these fuels are already being produced in the US and Europe by companies such as Neste while a plant is being built in Holland and planned in the UK in a collaboration between Royal Dutch Shell, Altalto Immingham Limited and British Airways (see case study).

Sustainable fuels can be a game changer for aviation which will help power our aircraft for years to come. This development is an important step in the reduction of our carbon emissions. It also brings the UK another step closer to becoming a global leader in sustainable aviation fuels.

Alex Cruz,
Chairman and CEO, British Airways

CASE STUDY: SUSTAINABLE AVIATION FUEL PLANT IN THE UK

In 2019, British Airways announced a partnership with Royal Dutch Shell and renewable fuel company Velocys to submit a proposal to build Europe's first commercial waste to jet fuel plant. The facility would be in Immingham, North East Lincolnshire, close to the Humber Estuary.

It would be built by Velocys through its subsidiary Altalto Immingham Limited, and would be capable of taking half a million tonnes of non-recyclable household and commercial solid waste per year and turning it into "sustainable aviation jet fuel."

The group said it would reduce greenhouse gas emissions by 70% for every tonne of conventional fossil fuel it replaces.



Picture source: 'British Airways one step closer to powering future flights by turning waste into jet fuel' press release, August 2019



Israeli firm Eviation launched their electric aircraft – named Alice – at the Paris Airshow in 2019. They say the craft will carry nine passengers for up to 650 miles at 10,000ft at 276mph. It is expected to be launched in 2022 (Picture Source: Eviation media kit)

7. We will support the development of technologies which can get aviation to fully zero-carbon flight

In the long-term, the goal is flying without producing any carbon. While not likely to be commercially viable in the next decade, one of the best solutions to this is electric flight.

Manufacturers and start-ups are already investing in electric flight and small battery prototypes, such as the Eviation Alice, have already been trialled. Other manufacturers, including Airbus, are aiming to make the technology available to fly a 100-passenger aircraft based on electric and hybrid-electric technology within the 2030s timeframe.

Electric flight on short haul routes could therefore be used from the 2030s. At Heathrow, we will need the right electric charging network for these planes.

To support the development of electric planes we have brought together the universities of Cranfield, Essex and Reading to help understand how electric aircraft will affect our future infrastructure needs. In addition, we have launched our own prize to encourage the development of this technology. In a world first, we announced in 2018 that the first electric-hybrid aircraft will not have to pay Heathrow's landing charges for an entire year (worth up to £1 million) when it is put into regular service at Heathrow.

We have a great opportunity to change the way growth at Heathrow is managed. We are exploring how we can create a direct link between growth and environmental performance improvement to encourage a step change. The concept known as 'Environmentally Managed Growth' is intended to create a framework with clear environmental performance targets.

A further way to maximise the benefits of developing technologies would be for the Government to prioritise implementing airspace modernisation. This will help ensure capacity will meet future demand. It will also benefit both the environment and passengers, with major changes to flight paths increasing efficiency and cutting carbon emissions.

“We need to start moving people and goods as easily as technology allows us to.”

Omer Bar-Yohay,
CEO, Eviation

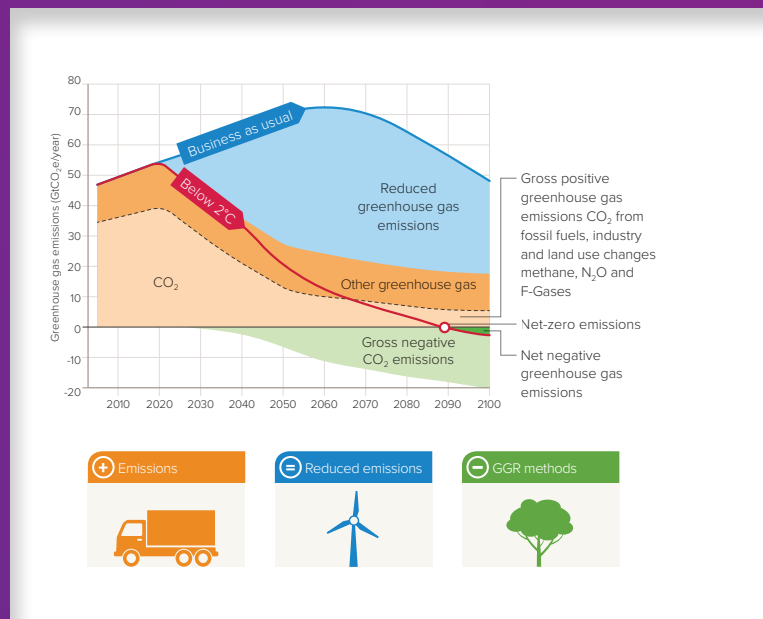
8. We will put carbon back in the ground, helping passengers to offset their flights and increasing our own investment in natural and technological solutions

Solutions to remove carbon from the atmosphere are an important part of aviation's transition to net zero.

At Heathrow, we have been investing in and developing schemes to do just this, helping offset our own emissions while also demonstrating a model for others in the industry to follow.

In 2018, working alongside the Lancashire Wildlife Trust, the British Airways Carbon Fund and the Department for Environment, Food & Rural Affairs (DEFRA), we began restoring the peatlands at Little Woolden Moss, just west of Manchester. This site had been subject to commercial peat extraction for over 15 years and our three-year restoration project will see the return of rich habitat and wildlife – including species like the common lizard, Black Darter Dragonfly and Brown Hare. In 2019, we supported another peatland project in the west of Wales with Montgomeryshire Wildlife Trust.

To go further, at the start of this year we increased our investment in natural solutions to climate change, investing in a large woodland project under the Woodland Carbon Code,



Future emissions and removals of greenhouse gases. To meet the 2°C goals of the Paris Agreement requires rapid and dramatic decreases (in blue), but also active removal of greenhouse gases from the atmosphere (in green), commencing in the next decade (Source: The Royal Society, Greenhouse Gas Removal, September 2018)



Members of the Heathrow team enjoy a tour of the peatlands at Little Woolden Moss



a native Caledonian forest planting in the west of Scotland. The Peatland Code and Woodland Carbon Code could now apply to participate in the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), ICAO's emission mitigation approach for the global airline industry. We have also piloted carbon farming through improved land management and we have invested in projects in Mexico and Indonesia in order to achieve carbon neutral status for the airport under an ACI scheme.

Our continued involvement in peatland restoration and reforestation in the UK is helping to support these initiatives to scale-up and thereby play a vital role in the achievement of a net zero economy through the provision of high-quality carbon removals.

Airlines have also been taking steps to do the same. In the UK, easyJet are now offsetting all their flights and IAG have committed to offsetting their domestic flights, which Air France are also doing. In the US, JetBlue has also become the

first major US airline to commit to going carbon neutral on all domestic flights through offsetting. We are encouraging other airlines to do the same, consulting on whether our landing charges could provide a further incentive for airlines to decarbonise.

While more than 8 in 10 Heathrow passengers would consider offsetting, less than 1% of global passengers currently use existing voluntary schemes. We are promoting voluntary offsetting before reviewing the case for opt-out offsetting. That is why we are raising awareness through a new campaign to engage passengers on climate change and have launched a carbon offsetting platform in partnership with Norwegian-based climate action subscription service CHOOOSE, so that every Heathrow passenger has the opportunity to easily offset their flight.

We will invest the funds raised from this initiative in globally recognised carbon offsetting projects involving reforestation in Uganda and Costa Rica.

5. Glossary

Carbon neutral	<p>Though sometimes used interchangeably with “net zero”, carbon neutral typically differs slightly in terms of implied timescales and relationships with offsetting. Carbon neutral more commonly refers to outcomes over the near and medium term where emissions have been reduced but not to the same degree that is technologically or economically feasible over a longer term (i.e. 2040 or 2050). Remaining emissions are then offset through buying carbon offsets which generally fund others to reduce their carbon emissions. Importantly, unlike the term “net zero”, achieving carbon neutral does not require that offset credits purchased come from carbon removal projects.</p>
Net zero	<p>This means that the maximum feasible emission reductions of carbon have been made and any residual emissions are counterbalanced by an equal volume of carbon removals.</p> <p>Globally, the Intergovernmental Panel on Climate Change (IPCC) has warned that the world economy will need to reach net zero carbon emissions by ~2050 to limit global warming to 1.5°C. Therefore, the term ‘net zero’ is also sometimes used to describe whether planned reductions and removals from an activity or sector are considered compliant with the trajectory of emissions that a sector of economy needs to meet in order to achieve net zero emissions by the middle of this century.</p>
Offsetting	<p>Paying for activity in other sectors that reduces carbon emissions elsewhere, e.g. paying to stop coal burning plants or paying to recover peatland to reduce emissions and remove carbon from the atmosphere.</p>
Sustainable Aviation Fuels (SAFs)	<p>SAFs includes any alternative aviation fuels that provide net carbon lifecycle savings (>60%) when compared with fossil equivalent and also meet stringent sustainability criteria. SAFs can be derived from non-food based biomass including municipal waste and organic content (biofuels) but can also be derived from other sustainable sources including direct carbon capture (synfuels).</p>
Zero Carbon	<p>‘Zero Carbon’ means the end of the fossil fuel energy era, with all onsite combustion energy being replaced 100% by non-polluting renewable energy. Zero carbon refers to zero carbon dioxide emissions, and can be applied to CO₂ equivalent emissions, that takes in the other greenhouse gas emissions. In Heathrow’s context this means operating zero carbon airport infrastructure – generating no carbon from the energy used to run Heathrow, including all our buildings and fixed assets.</p>

Acronyms

ACI	Airports Council International
COP	Conference of the Parties
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
EV	Electric Vehicles
IAG	International Airlines Group
ICAO	International Civil Aviation Organisation
RTFO	Renewable Transport Fuel Obligation
SAFs	Sustainable Aviation Fuels

Heathrow