

Written evidence submitted by Sustainable Aviation (AAS0024)

About Sustainable Aviation

Sustainable Aviation (SA) is the coalition of UK airlines, airports, aerospace manufacturers, air navigation service providers plus sustainable fuel producers and other key business partners, committed to cutting aviation's environmental impact and building a world leading aviation sector.



We welcome the opportunity to provide evidence to this inquiry and would be very happy to support with further written or oral evidence as requested.

Executive Summary

- UK aviation remains committed to achieving net zero emissions by 2050. Since 2008, [Sustainable Aviation has set out a vision for tackling carbon emissions from UK aviation](#). In February 2020 UK aviation were the first national aviation group globally to commit to be net zero by 2050. In June [this year, SA announced further interim targets that will act as milestones on our pathway to net zero](#).
- UK aviation fully recognises that failure to decarbonise is not an acceptable option, as set out in the latest UN IPCC report. Action is needed now to cut emissions and enable new technologies to accelerate reductions in emissions for the future.
- In 2017 UK aviation emissions accounted for little over 4% of global aviation emissions – and some 0.1% of global CO₂ emissions in 2019. This ratio is expected to decline as other country's aviation markets expand at faster rates, not least in China and the Asia-Pacific region. That is why it is

investment in the kinds of technological pathways that will reduce carbon emissions from aviation at source – including sustainable aviation fuels, new engine and airframe technologies, hydrogen power, as well as airspace modernisation to allow for more efficient flying – is critical.

- This will not only to provide the means to decarbonise the whole sector at home and abroad, but also here in the UK provide opportunities for thousands of new ‘green’ aviation jobs through exporting these technologies to the world, and through the emergence of new domestic industries. A new UK sustainable aviation fuels industry alone will create new economic opportunities in industrial areas such as Ellesmere Port, Teesside, Humberside, Port Talbot, and Birmingham, which could absorb people and skills lost from other sectors affected by decarbonisation.
- Supporting aviation decarbonisation and growth of our sector is also vital if we are to maintain and build upon the significant societal and economic benefits aviation brings to the UK. Pre-pandemic, the UK aviation industry directly employed some 550,00 people, according to recent research¹. Including tourism and other catalytic effects, the number of jobs supported by UK aviation is well over one million². Aviation jobs are vital to local communities, with one in four Westminster constituencies estimated to have more than 1,000 people directly employed in the sector – for airports, airlines, aerospace companies and their direct supply chains.
- It is easy to forget that aviation is not just about enabling holidays - it is a key economic driver for the UK, not least enabling trade with over 40% of the value of our trade outside the EU being flown³.
- Today, the best option for the UK, both in terms of allowing it to meet its decarbonisation goals, support international aviation towards net zero and to protect and deliver good jobs to the UK economy is to support the growth of UK aviation within a net carbon ceiling determined by the science.
- Progress made in the last 18 months gives confidence that the transition to decarbonisation is possible and announcements by SA members provide further evidence of a major shift in attitude and focus throughout the industry. With the right Government support, industry can decarbonise and continue to provide valuable jobs and services across the country.

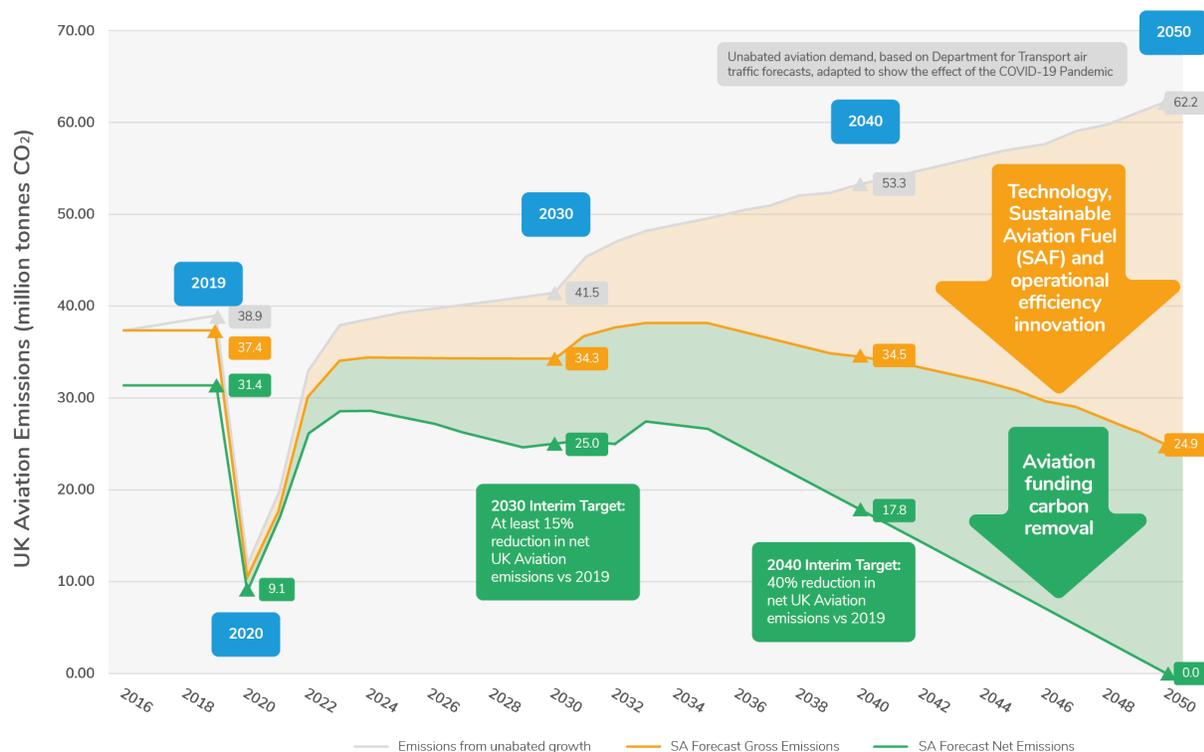
¹ <https://airlinesuk.org/aviation-jobs-in-great-britain/>

² <https://www.iata.org/en/iata-repository/publications/economic-reports/united-kingdom--value-of-aviation/>

³ <https://airlinesuk.org/uk-depends-air-freight-services-eu-competitors/>

Our commitment and priorities

UK aviation is targeting at least an overall 15% reduction in net emissions relative to 2019 by 2030, and a 40% net reduction by 2040, with the pace of decarbonisation ramping up as game-changing sustainable aviation fuels (SAF), permanent carbon removals, and new low and zero-carbon technologies – such as electric and hydrogen-powered aircraft – become mainstream in the 2030s. See below:



SA has also committed to update the sector's Decarbonisation Road Map in 2022 to identify the potential for the latest technological advances in aerospace, sustainable aviation fuels and carbon removal to increase the pace of decarbonisation.

Decarbonising aviation is a huge challenge, with significant technology and policy barriers that need to be overcome this decade. The industry is committed to minimising emissions from flights as a priority but recognises that there will be some residual emissions remaining that will need to be addressed through

investing in robust carbon reduction solutions outside the industry. With the right support, it can and will be achieved, maintaining the major economic and social benefits of the UK’s air links to the world, and generating new opportunities for tomorrow’s engineers through highly skilled green aviation jobs. However, the UK risks falling behind as other countries led by the United States who have put in place enhanced policies to support innovation and new fuel technologies.

The Government can enable the development of low carbon technologies if it commits to supporting smart policies with urgency. SA members are committed to working with the Government to support this. SA views on the [key milestones for this work were published in June](#);

Target date	Milestone
2020	Restarting UK airspace modernisation
Nov 2021	Commitment to a SAF policy implementation process that unlocks funding for first of a kind SAF plants in the UK
End 2021	Secure Government commitment to increase and extend funding for the Aerospace Technology Institute beyond 2026
2022	A hydrogen strategy published by the UK Government
2024	With the right support hydrogen-electric subregional aircraft enter service
2025	First full-scale SAF production facility opens
2030	UK SAF production sufficient for all domestic flights
2030	Aiming to see a UK domestic commuter zero emission aircraft in service

2033	Completion of UK airspace modernisation
2035	Aiming for zero emission short/medium haul aircraft entering into service
2035	Government policies to support 5 – 15 UK SAF plants producing up to 1m tonnes of SAF per year
2050	Achieving net zero emissions for UK aviation

Partnerships are vital

Achieving net zero emissions for UK aviation by 2050 will require ever stronger partnerships between the UK Government, the aviation industry and key low carbon innovation partners. Clear policy and leadership decisions are required today, to ensure that today’s breakthroughs in aerospace technology, sustainable aviation fuels and carbon removal are maximised.

To make sure UK aviation continues to lead the world in aviation decarbonisation, further support is needed in six areas critical to realising net-zero flight:

- **Deliver key SAF mandate and price certainty policies** to create a UK SAF industry and commercialise SAF by the end of 2022. This is to commercialise and ensure the delivery of a UK SAF industry, with up to 14 UK plants initially generating sustainable fuel from household and industrial waste by the middle 2030s and evolving into plants producing synthetic Power to Liquid (PtL) fuels using captured carbon and green hydrogen. This will support at least a 32% reduction in emissions from UK aviation by 2050.
- A positive, long-term signal for **investment in aerospace technology** and the development of hybrid, electric and hydrogen-powered aircraft through increased and extended funding for the Aerospace Technology Institute. The Government should reiterate its support for the ATI in the upcoming spending review by **committing an investment of £3.8 billion through to 2030**.

- The **completion of vital airspace modernisation** generating significant carbon savings through more efficient flying and shorter journey times by 2033.
- Policies that **incentivise the commercialisation of carbon removal technologies** that enable carbon neutral or carbon negative aviation fuel and direct carbon removal and storage, allowing the aviation industry to address any remaining residual emissions.
- **Integrating national energy and jet zero ground infrastructure:** It will be critical to support development and delivery of additional infrastructure on the ground to enable zero emission flight. This includes integrating national energy policies with Jet Zero policies to ensure there is sufficient electrical and hydrogen generation and supply to, and around the airports to support increased demand.
- UK Government to seek a more **robust international commitment for aviation carbon reduction** at the ICAO General Assembly in 2022, ensuring emissions are reduced across the globe and match the UK's ambition. A global solution for a Global industry.

Answers to questions

The aviation sector's progress on reducing emissions to support the Government's aim to achieve net zero greenhouse gas emissions by 2050

Decarbonising UK aviation will be a long process, but over the last year we have already seen:

- The first SAF facility in the UK secure planning permission. Planning permission granted for Altalto Immingham, the UK's first waste-SAF facility in North East Lincolnshire;
- The process of modernising our airspace, which will enable more efficient operations, has begun at network and airport levels;
- Manufacturers have developed concepts of hydrogen and electric aircraft;
- Responding to calls by industry and the APPG for Sustainable Aviation, the Government announced the creation of the Jet Zero Council which brings together Government and industry in a forum to accelerate aviation decarbonisation;

- “Jet Zero” was one of the ten green priorities in the Ten Point Plan for a Green Industrial Revolution, which included confirmation of a £15 million competition to support Sustainable Aviation Fuel (SAF) production, funding for SAF clearing house, a consultation on a SAF mandate, and R&D investment for infrastructure upgrades supporting electric and hydrogen aircraft
- New industry research published highlighting the economic benefits of establishing 14 SAF facilities across seven UK industrial clusters, which would create over 20,000 jobs and almost £3 billion in GVA by the mid 2030s;
- A number of UK aviation companies made new commitments on net zero, including: new zero emission concept aircraft from Airbus, a commitment from Heathrow to reach net zero by mid-2030s, a net zero pledge from Rolls-Royce, a net zero competition from MAG, and a pledge from Boeing to deliver commercial airplanes ready to fly on 100% SAF;
- On 19 March 2021 Government announced up to £5.5 million is to be made available to aid industry hit by the pandemic as it develops and evaluates new flight routes to modernise UK airspace. Creating more efficient and streamlined airspace benefits airports and airlines but also the passengers and communities surrounding them, through reduced emissions.
- In June 2020, the Government announced up to £100 million of new research and development funding to help develop direct air capture technologies in the UK. As part of this, an innovation competition seeks to support the development of Greenhouse Gas Removals (GGR) technologies to help them achieve commercialisation. In May 2021, the Projects selected for Phase 1 were revealed

Many SA members are also actively involved in international initiatives to reduce aviation emissions. These include:

- Working towards ICAO’s long term carbon targets.
- CORSIA implementation and development.
- World Economic Forum (WEF) Clean Skies partnership.
- Transatlantic flight path work to cut emissions through more efficient flight paths.

- Development of European and Global aviation industry carbon roadmaps and commitments.
- EU mandate RefuelEU proposals published in July 2021 which would set mandated volumes of SAF, including specific synthetic fuels targets, from 2025 onwards.
- US Sustainable Skies Act which would establish a Blender's Tax Credit (BTC) for SAF. The Biden Administration has also endorsed a BTC as part of its Made in America Tax Plan. The US (specifically California and other states that have implemented a Low Carbon Fuel Standard) already offers the most attractive incentives for low carbon fuels.
- Members of Airports Council International (ACI) Europe committed to net zero by 2050, later joined by global airports through ACI World who have also published a detailed study on the goal.
- The Air Transport Action Group has adopted a long-term climate goal of net-zero carbon emissions by 2050, confirming the commitment of the world's airlines, airports, air traffic management and the makers of aircraft and engines to reduce CO2 emissions in support of the Paris Agreement 1.5°C goal.

Maintaining a competitive UK aviation sector while ensuring the UK can achieve net zero greenhouse gas emissions by 2050

In order to maintain a competitive UK aviation sector while ensuring the UK can achieve net zero greenhouse gas emission by 2050, we believe priority action is required by Government. Action now can further secure the UK's place in the world as a Jet Zero champion. There are six elements to achieving this:

- **Airspace modernisation:** With the Government's recent funding support, airspace modernisation can help deliver better environmental performance ahead of those more radical innovations. Government sponsorship of airspace modernisation is also now helping to focus attention clearly on the benefits this can deliver, which accounts for 5% of the SA commitment to 2050 but more than 20% of the 'in sector' emission savings projected for this decade. Airspace is critical national infrastructure that has not been fundamentally upgraded since the 1950s. Modernising and redesigning it will lead to less airborne holding, fewer miles flown per aircraft and less fuel burn. Together with tools and technologies which are already helping to optimise flight routes and operations, this demonstrates the UK

industry's commitment to leading the way on decarbonisation. The Government need to work with industry to complete this by 2033.

- Sustainable Aviation Fuels: The industry needs the Government to deliver key SAF mandate and price certainty policies to create a UK SAF industry and commercialise SAF by the end of 2022. The lack of clear, long term Government policies to support SAF production in the UK has pushed back SAF production and use. We are now starting to fall behind countries like the USA ([Fulcrum Bioenergy waste-to-SAF project in Nevada](#) now in commissioning and the [Red Rock Biofuels biomass-to-SAF](#) project in Oregon now under construction) plus the Netherlands ([SynKero project](#)). With the right Government support the UK can build a world leading sustainable aviation fuel (SAF) industry, with up to 14 UK-based SAF plants by 2035 bringing tens of thousands of jobs and £billions in GVA to former industrial regions of the country in seven clusters.

Decisions by investors on which countries to invest in are being taken now and so we are urging the Government to set out a comprehensive policy framework for commercialising sustainable aviation fuels, alongside finance mechanisms that will be critical to delivering first-of-a-kind UK SAF plants. Specifically, the SAF mandate needs to be implemented along with a price stability policy, such as contracts for difference, by the end of 2022 (with a clear signal of the expected framework in 2021). This is to ensure the UK realises the full potential from SAF.

Policy also needs to enable synthetic fuels, using atmospheric carbon as a feedstock can start to deploy such that the technology is available at scale when decarbonisation targets increase. SAF will play a major role particularly in decarbonising long-haul flight, for which there are no viable alternative technological pathways.

- Technology innovation: Increased investment in the Aerospace Technology Institute is needed, to enable the technological innovations that will make net zero flight a reality. Hydrogen power has the potential to make huge strides towards decarbonising regional and medium-range commercial flights, but the UK needs a robust hydrogen policy and strategy that enables the production of green hydrogen in the volumes required by the industry. Significant progress is also being made in battery technology, which initially will be best applied to short range aircraft. Maturing these technologies will

allow industry to scale up to longer ranges. The current endpoint of the ATI programme is March 2026, and budgetary commitments are already being made out to then. The Government should reiterate its support for the ATI in the upcoming spending review by committing an investment of £3.8 billion through to 2030.

- Enabling infrastructure: It will be critical to support development and delivery of additional infrastructure on the ground to enable zero emission flight. This includes integrating national energy policies with Jet Zero policies to ensure there is sufficient electrical and hydrogen generation and supply to, and around, the airports to support increased demand.
- Carbon removal: To scale-up greenhouse gas removals (GGR), and particularly direct air carbon capture (DACS) solutions Sustainable Aviation encourage the UK government to:
 - Publish a coherent GGR strategy ahead of COP26: set specific science-based targets for GGR in addition to reductions, which will serve to increase investor confidence in first plants
 - Accelerate GGR business models: GGR policy development needs to run in parallel rather than lag behind carbon capture and storage (CCS) policy development, so we call for a coherent GGR strategy setting out policy incentive proposals to commercialise the technology before the COP26 Conference in November
- International agreement: SA fully supports the proposals set out by the UK Government in their international leadership section. Decarbonising aviation requires international cooperation and solutions, and UK leadership is vital. We need UK leadership in pursuit of a clear, long term CO2 target for global aviation, to be agreed at the 2022 ICAO Aviation General Assembly, and compatible with meeting the temperature goals of Paris Agreement.

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