Department for Transport

Jet Zero Taskforce 2025 Annual Report

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Foreword by the Minister for Aviation, Maritime and Decarbonisation

Keir Mather MP, Minister for Aviation, Maritime and Decarbonisation

I am proud to present the first annual report of the Jet Zero Taskforce. This marks an important milestone in the Government's mission to deliver a greener future for aviation - one that supports economic growth and strengthens Britain's position as a clean energy superpower.

This Government is committed to the sustainable growth of the aviation sector. Over the last year, our approach has been outcome-driven, combining strategic leadership with practical delivery. We have made real progress to support the sector to decarbonise, including on Sustainable Aviation Fuels (SAF), airspace modernisation, developing new technologies and improving our understanding on aviation's non-CO2 impacts, as well as continuing to lead on the global stage. Some of the highlights of 2025 are summarised throughout this report.

However, Government cannot solve this challenge alone. Industry and Government must work together to accelerate our collective efforts to decarbonise. That's why, in 2024, we established the Jet Zero Taskforce and set clear objectives to ensure it delivers tangible outcomes. Today, the Taskforce brings together Government and leaders from across the aviation and aerospace sectors, academia and NGOs to identify and remove barriers to aviation decarbonisation on the pathway to net zero. At its heart is the Annual Plenary, chaired by the Secretary of State for Transport, supported by an agile Expert Group of sustainability leaders. I co-chair the Expert Group, alongside Holly Boyd-Boland of Virgin Atlantic, where we tackle the most pressing challenges through focused Task and Finish Groups. In 2025, the Expert Group selected four areas of focus - SAF, Hydrogen, Contrail Impact Mitigation, and Greenhouse Gas Removals (GGRs). The findings of these groups, summarised in this report and set out in detail in their independent reports published in parallel on gov.uk, will help inform policy thinking, steer industry action and shape the future focus of the Taskforce.

I want to thank the members of the Plenary, Expert Group, and Task and Finish Groups for their dedication and expertise. Together, they have demonstrated collaboration at its best and we have laid strong foundations. There is much more to do, but I know that we move into 2026 with confidence and ambition.

Aviation Decarbonisation - 2025 in summary

Introduction

The Jet Zero Taskforce was established in November 2024 by the Transport Secretary. It acts to bring together key aviation stakeholders to aid the sector's transition to net zero by 2050 around five key objectives:

1. Support the development, production, commercialisation and use of sustainable aviation fuels in the UK and globally.

2. Facilitate the development and deployment of zero emission aircraft in the UK, including through unlocking regulatory, infrastructure and commercialisation barriers.

3. Explore opportunities to make efficiency gains in reducing carbon emissions across the whole UK aviation system, including through development and deployment of more efficient aircraft, and the potential for greater operational efficiencies.

4. Consider the aviation sector's future demand for energy, feedstocks, hydrogen and greenhouse gas removals.

5. Recognise that aviation has significant non-CO2 impacts on the climate, with further work required to strengthen our scientific understanding and develop approaches to mitigate their impact.

In January 2025, the Expert Group of the Jet Zero Taskforce decided to establish four Task and Finish groups to support the delivery of these objectives. Sustainable aviation fuels (SAF), hydrogen commercialisation, greenhouse gas removals and contrail impact mitigation were chosen as the focus given some of the pressing challenges in these areas.

This report will predominantly focus on the five objectives of the Taskforce, with a summary of the Task and Finish Groups outputs set out in Section 2. It should be noted that these are not the only levers that are important to support the decarbonisation of aviation, with significant progress made in 2025 on issues such as airspace modernisation, carbon markets and international collaboration.

This section of the report highlights just a small selection of achievements through 2025, demonstrating the UK's leadership in advancing the fuels, technologies and operations needed to realise the UK's wider net zero ambitions.

Key Milestones and Achievements

Sustainable Aviation Fuels

Jet Zero Taskforce Objective: Support the development, production, commercialisation and use of sustainable aviation fuels in the UK and globally

1.1 On 1st January 2025, the UK government's Sustainable Aviation Fuel (SAF) Mandate officially came into force. Under the Mandate there is a legal obligation on aviation fuel suppliers in the UK to include a minimum level of SAF into the fuel mix, starting at 2% in 2025. The level of SAF mix required increases annually, growing to 10% by 2030 and 22% by 2040. The ambitious but achievable targets set out in the Mandate will see a 10% SAF obligation in 2030. The SAF Mandate is a key part of the government's work with industry to build demand for SAF and will deliver emission reductions of up to 2.7 MtCO2e in 2030 and up to 6.3 MtCO2e in 2040.[1] It will also create a significant industrial and growth opportunity – with the Sustainable Aviation roadmap predicting a UK SAF market could create 60,000 jobs by 2050.[2]

> *"UK airlines support the SAF Mandate as both a powerful and practical tool for driving down aviation carbon emissions and a clear signal that the industry is fully committed to a net zero future.*
>
> *"Our priority is ensuring airlines have access to the increasing volumes of SAF required to meet the mandate as global demand soars, at the most competitive price possible for consumers."*
>
> *Tim Alderslade, CEO of Airlines UK*

1.2 The government is also helping to derisk SAF projects by legislating to introduce a SAF Revenue Certainty Mechanism (RCM). The SAF RCM Bill was introduced into the House of Commons in May 2025 and once implemented, the SAF RCM will encourage investment into the nascent UK SAF industry. Together, these SAF commitments will support thousands of jobs, bring down UK transport emissions while supporting energy security and making the UK a clean energy superpower.[3]

1.3 In 2024, 330 million litres of SAF were supplied in the UK. For the SAF Mandate's first year, the provisional data release shows that 337 million litres of SAF have currently been reported to Government. Final statistics for 2025 will be published later in 2026. Airports have also been helping to incentivise SAF usage, with Heathrow Airport making a pot of £86m (raised through airport charges) available to airlines to incentivise the use of SAF - targeting 3% of total fuel uplifted.[4]

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[1] https://assets.publishing.service.gov.uk/media/67ea570037baea91c58ca065/saf-govt-response-revenue-certainty-mechanism.pdf
[2] https://www.sustainableaviation.co.uk/wp-content/uploads/2023/04/SA9572_2023CO2RoadMap_Brochure_v4.pdf
[3] https://www.gov.uk/government/speeches/transport-and-growth-update-airport-expansion-and-transition-to-greener-aviation
[4] https://mediacentre.heathrow.com/pressrelease/detail/21674

1.4 Competition for the Advanced Fuels Fund (AFF) remains high and in July, the winners of the third competition window were announced. 17 projects were awarded a share of £63m in grant funding for first-of-a-kind commercial and demonstration-scale projects in the UK, up to construction starting.[5] The 2025 Spending Review confirmed support for the AFF to 2029/30 underlining the importance of continued early phase investment in projects to boost the production of SAF in the UK. The Advanced Fuels Fund is being delivered with the support of Ricardo Energy and Environment and ERM.

CASE STUDY: Project Speedbird

LanzaJet partnered with Sembcorp Utilities (UK) Limited, a wholly-owned entity of Sembcorp Industries Ltd, to develop an ethanol-to-SAF facility at Wilton International in Teesside, UK. Through a collaboration with British Airways, Project Speedbird will produce over 90,000 tonnes (30 million gallons) of SAF and renewable diesel annually.

Project Speedbird, a recipient of £10m grant funding in the Advanced Fuels Fund (AFF), is expected to generate significant regional benefits and create around 30 highly skilled, long-term roles within LanzaJet's operations. All of the SAF produced is destined for British Airways, where it will help reduce carbon emissions by 230,000 tonnes per year - equivalent to 26,000 domestic flights.

"We're proud that Project Speedbird, developed in partnership with British Airways, has been recognised by the Department for Transport as part of its continued commitment to advancing SAF in the UK.

"This support demonstrates confidence in LanzaJet's technology and the critical role ethanol-to-SAF can play in delivering economic growth, creating jobs and decarbonising air travel."

- Jimmy Samartzis, CEO of LanzaJet

1.5 Elsewhere in Teeside, Alfanar's Lighthouse Green Fuels (LGF) project has co-located to a site that will enable full-cycle SAF production at commercial scale. The UK's largest second-generation SAF project will convert sawmill, forestry and agricultural residues using torrefaction, gasification and Fischer–Tropsch technology. With built-in CO2 sequestration and access to CCS, LGF can produce carbon-negative jet fuel. The project's Front End Engineering Design (FEED) completion is

[5] https://www.gov.uk/government/news/63-million-lift-off-for-clean-aviation-fuels

expected in Q1 2026, supported by an £8 million grant from the Advanced Fuels Fund, which will also contribute to additional feasibility studies.

1.6 Progress has also been made in collaboration with other government departments. In May, the Ministry of Defence (MOD) approved a new standard for co-processing Sustainable Aviation Fuel (SAF). This Defence Standard (Def Stan 91-091) allows up to 30% renewable Hydroprocessed Esters and Fatty Acids (HEFA) feedstock concentration to be co-processed in the production of JetA1, a 25% increase on the previous limit. This was achieved by an industry consortium led by bp which included OEMs, the International Air Transport Association (IATA), fuel producers and airline companies. The approval allows fuel producers to accelerate SAF production at higher concentrations using existing refinery process units, and continues to build on the work done by MOD to reduce the carbon footprint of defence by increasing the availability of SAF.[6]

Zero Emission Aircraft

Jet Zero Taskforce Objective: Facilitate the development and deployment of zero emission aircraft in the UK, including through unlocking regulatory, infrastructure and commercialisation barriers

1.7 In February 2025, the UK Civil Aviation Authority (CAA) launched a second round of the Hydrogen Challenge, expanding from three to thirteen projects and extending the duration of trials from one year to three years. Supported by Department for Transport funding, the Hydrogen Challenge is a sandbox safe trial activity for hydrogen propulsion to help inform the regulatory framework for the technology and to encourage investment. Through the Hydrogen Challenge, the CAA is working with leading UK companies, academia and government to better understand how hydrogen could be used safely within the UK's aviation system. By developing the technology and infrastructure of the future, the programme is aiming to unlock widespread hydrogen fuel use in aviation

"These trials keep the UK on course to be a world leader in hydrogen propulsion.

"We are working with some of the most innovative companies and minds to better understand this technology and how it might be introduced safely in the aerospace sector.

"In doing so, it offers the potential to enable a more sustainable aerospace system and support UK economic growth."

Tim Johnson, Director of Communications, Strategy and Policy at the UK Civil Aviation Authority[7]

1.8 The Aerospace Technology Institute (ATI) Programme awarded c.£240m of joint government-industry funding to innovative technology development projects between Oct 2024 and Sept 2025.[8] The funding is supporting projects advancing the ultra-efficient, zero-carbon and cross-cutting technologies, powering growth and

[6] SAF has been used for routine operations from RAF Lossiemouth since 2024.
[7] https://www.caa.co.uk/newsroom/news/uk-on-course-to-lead-world-in-hydrogen-fuel-as-aviation-regulator-expands-hydrogen-challenge/
[8] Reflections on 2025 | Aerospace Technology Institute

innovating towards Net Zero 2050. A total of 25 innovative SMEs received ATI funding, including the first projects to be announced under the SME Programme. From Manchester to Nottingham, and Belfast to Southampton, the first 19 projects to receive funding through the SME Programme are now underway spanning modelling, cryogenics, systems, composites and more.[9]

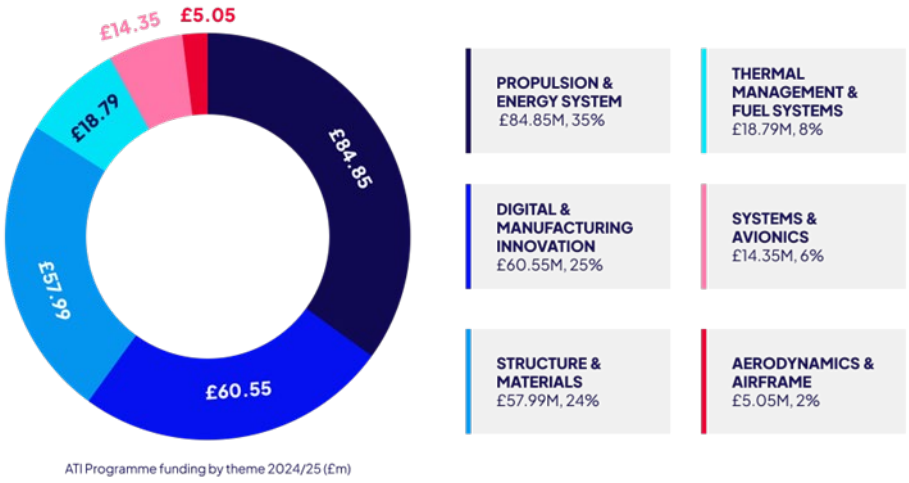


Figure 1: ATI Programme funding by theme 2024/2025 (£m)

[9] Aerospace innovation boosted by first SME Programme projects | Aerospace Technology Institute

CASE STUDY: ZeroAvia Receives Design Organisation Approval from UK CAA

In November 2025, ZeroAvia was awarded design organisation approval (DOA) by the UK CAA. A global first for a hydrogen-electric aviation propulsion developer, DOA is a critical milestone on ZeroAvia's path to certifying a hydrogen-electric engine intended for Part 23 aircraft. The accreditation confirms that the CAA is satisfied that ZeroAvia has the technical expertise, facilities and capabilities to design safe and reliable products, and is prepared to comply with stringent requirements for certification.

Earlier in 2025, ZeroAvia announced plans to build a major manufacturing facility for production of its hydrogen-electric powertrains at the Advanced Manufacturing Innovation District Scotland, close to Glasgow Airport in Renfrewshire. The Hydrogen Centre of Excellence will support the company in a range of manufacturing operations relating to powertrain production and testing.

Since 2019, ZeroAvia and consortium partners have co-invested a total of £18.5 million in R&D funding through the ATI Programme to develop their fuel cell and powertrain technology.

Scottish Enterprise has awarded ZeroAvia a £9m Regional Selective Assistance grant to help realise the Hydrogen Centre of Excellence alongside company investment, with 350 jobs planned before the end of the decade.

Reducing carbon emissions across the whole UK aviation system (aircraft and operations)

JZTF Objective: Explore opportunities to make efficiency gains in reducing carbon emissions across the whole UK aviation system, including through development and deployment of more efficient aircraft, and the potential for greater operational efficiencies

1.9 Published in June 2025, the Government's Modern Industrial Strategy identified aerospace as one of the UK's frontier industries and included a 10-year funding commitment to the Aerospace Technology Institute (ATI) Programme worth up to £2.3bn to 2035. These long-term cycles make it easier for researchers and businesses to form partnerships, develop talent and collaborate internationally. Through the ATI Programme, the government continues to co-invest, with industry, in aerospace R&D projects to deliver on the ultra-efficient, zero-carbon and cross cutting technologies needed to achieve sector growth and sustainability.

1.10 Also in June 2025, the government confirmed the establishment of the UK Airspace Design Service (UKADS), a new initiative to coordinate and sponsor future airspace changes under the Airspace Modernisation Strategy. UKADS will act as a single guiding mind, ensuring a holistic and modernised approach to UK airspace design. The UKADS is mobilising and is run by NATS (En Route) plc (NERL). The initial

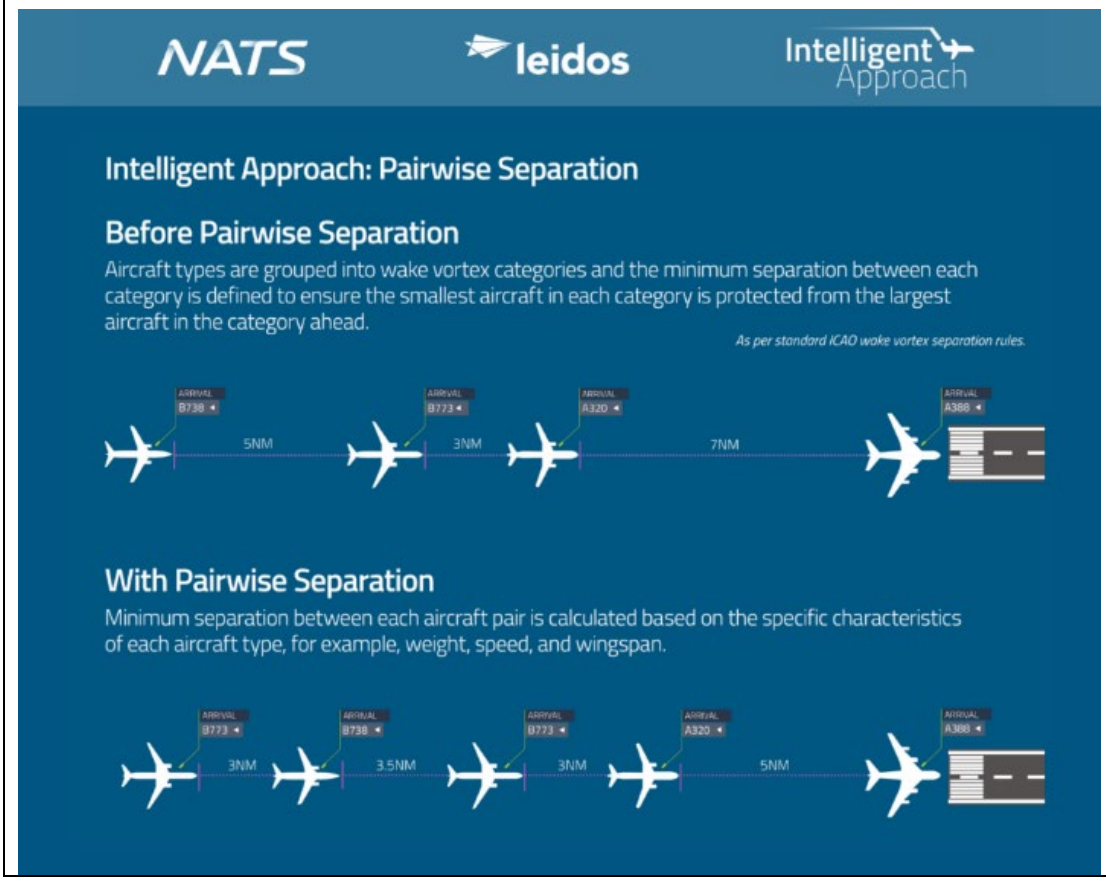
focus is on modernising complex airspace around London, including changes required for any future Heathrow expansion. A new UK Airspace Design Support Fund will help cover costs of modernisation across other UK regions. In Autumn 2025, DfT and CAA began consulting on changes to NERL's licence, and the airspace change process to support UKADS implementation. This marks a significant step forward in delivering coordinated, efficient and environmentally conscious airspace design across the UK.

CASE STUDY: Pairwise Separation – A NATS World First

With technology partners Leidos UK and Think Research, the project has increased landing rates, reduced airborne holding and made significant carbon savings. The key results were:
1. Estimated CO_2 savings: Up to 57,000 tonnes annually

Analysis of the first six months of operation of Pairwise has revealed benefits when comparing the same period in 2024. The percentage of arrivals with no delay has improved by more than six percentage points, average arrival delay has fallen by almost 20% and overall CO2 emissions are down by 18,600 tonnes.[10]

Brendan Kelly, Head of Queue and Capacity Management Solutions at NATS said: "Pairwise was another world first deployment for NATS and while there are lots of factors that can influence operational performance, these interim benefits paint a very positive picture of the value it is delivering for Heathrow and our airline customers."



[10] https://www.nats.aero/news/nats-delivers-on-time-boost-and-carbon-cuts-with-world-first-at-heathrow/

CASE STUDY: Hydrogen powered aircraft turns

Meanwhile, on the ground, TUI Airline participated in the UK's first demonstration of a commercial aircraft turnaround using hydrogen-powered ground support equipment at Exeter Airport in April.

The trial, in partnership with Cranfield University and Boeing, involved a TUI Airways Boeing 737 and showcased the potential of hydrogen to decarbonise airport ground operations. The study highlighted the potential to eliminate over 78,000 litres of diesel and nearly 200 tonnes of CO_2e annually at this airport.[11]

Demand for energy, feedstocks, hydrogen and greenhouse gas removals.

JZTF Objective: Consider the aviation sectors future demand for energy, feedstocks, hydrogen and greenhouse gas removals

1.11 The Department for Energy Security and Net Zero (DESNZ) have continued their work with greenhouse gas removals (GGRs). This includes an update on the proposed commercial frameworks for the GGR business model and related policy, which was published in August 2025. This is designed to incentivise private investment in GGR technologies by providing revenue support to bridge the gap between market revenues and technology costs. In addition, the Secretary of State commissioned an independent review of GGRs, to consider how options for GGRs, including large-scale power bioenergy with carbon capture and storage (BECCS) and direct air carbon capture and storage (DACCS), can assist the UK in meeting our net zero targets. The review was Chaired by Dr Alan Whitehead CBE. On 23 October 2025 the findings of the Independent Review were published. The government

[11] https://exeter-airport.co.uk/uks-first-hydrogen-powered-live-aircraft-turnaround-takes-place-at-exeter-airport/

welcomes this report and will consider the recommendations and respond in due course.

1.12 Progress has also been made across the devolved nations. In July, a joint response of the UK Government, the Scottish Government, the Welsh Government and the Department of Agriculture, Environment and Rural Affairs for Northern Ireland set out a balanced approach to integrating GGRs in the UK Emissions Trading Scheme (ETS) alongside the ambitious emissions reduction that are essential to meeting legally binding carbon budgets. This follows the UK ETS Authority's 2024 consultation on the inclusion of engineered and nature-based GGRs.

CASE STUDY: Bristol Airport and Equilibrion Partnership

A study by Bristol Airport and Equilibrion found that Small Modular Reactors (SMRs), located in the South West of England could produce 130,000 tonnes of SAF per year or 95,000 tonnes of hydrogen by 2035. This is more than double Bristol Airport's fuel requirements in 2035, with surplus capacity available for supply to other UK airports. Equilibrion's Eq.flight system would combine SMR baseload power with direct air capture of CO2, combining this with hydrogen produced by electrolysis to make synthetic aviation fuel. This system would offer a 95% reduction in lifecycle CO2 emissions compared to fossil jet fuel.

1.13 Commissioned by the government, the British Standards Institution (BSI) published interim quantification methodologies for Direct Air Carbon Capture and Storage (DACCS) and Bioenergy with Carbon Capture and Storage (BECCS). These methodologies will be used to support negotiations with prospective HyNet projects ahead of the development of the full GGR Standard. The GGR Business Model will also require GGR credits issued that are compliant with the government's GGR Standard.[12]

CASE STUDY: CUR8 and British Airways Partnership

British Airways has signed a 6-year agreement to purchase more than £9 million worth of innovative carbon removals credits in the UK and overseas as part of a deal with CUR8, a UK-based company specialising in sourcing high quality carbon removal credits, and direct air capture firms 1PointFive and Climeworks. Early voluntary purchases are crucial in stimulating the carbon removals market.

British Airways' portfolio includes a ground-breaking scheme in Scotland that will see CO2 emissions captured from whisky distilleries and repurposed into building materials. Another will use an enhanced rock weathering technique to lock away carbon for thousands of years. The airline also purchased credits from companies specialising in high-durability reforestation projects in Scotland and Wales.

While small in comparison to the sector's total emissions, early purchases like these are crucial in stimulating the carbon removals market. Combined with previous removals purchases made by the airline, the CUR8 deal makes British Airways the largest carbon removals purchaser in the UK and the largest purchasing airline of carbon removals.

[12] https://assets.publishing.service.gov.uk/media/68ad77c2969253904d1557ff/greenhouse-gas-removal-business-model-summary-august-2025.pdf

Non-CO2 climate impacts

JZTF Objective: Recognise that aviation has significant non-CO2 impacts on the climate, with further work required to strengthen our scientific understanding and develop approaches to mitigate their impact

1.14 In October 2023, DfT, alongside the Natural Environment Research Council, and Department for Business and Trade in partnership with the Aerospace Technology Institute (ATI) launched a four-year research and development programme worth up to £29m to better understand and address aviation's non-CO2 impacts and to identify and develop potential mitigation options. The programme supports both academic and industry led research. So far it has awarded funding to ten academic projects and three industry projects, worth up to £20m. The academic projects cover a wide range of themes, including the impact of nitrogen oxides (NOx) emissions on the climate, the impact of SAF on contrails, evaluating metrics for non-CO2 emissions and the impact of hydrogen combustion on non-CO2 emissions. The first three industry projects, led by Airbus, Rolls-Royce, and OXCCU, focus on modelling contrails, targeted use of SAF to avoid contrail formation and how a new SAF pathway reduces soot and particulate emissions. There will be further calls for both academic and industry-led projects during the programme's lifetime.

1.15 DfT also funded two specific other non-CO2 projects which were published this year which includes:

(i) A literature review of existing research and an evaluation of methodologies for measuring aviation's non-CO2 impacts. This work was led by KPMG and the report was published on GOV.UK in June 2025.

The review summarises the main non-CO2 impacts of aviation and outlines the different mitigation options for addressing these impacts, recommending a multifaceted approach. The report also evaluated the different methods of measuring and monitoring aviation's non-CO2 impacts and concluded that a single metric cannot be used to quantify aviation's non-CO2 impacts, and therefore, recommended the development of a suite of metrics based on policy and industry needs. The report also identified some research gaps and recommended the development of high accuracy climate models, better understanding climate impact of contrails, better understanding the overall impact of NOx emissions, and better understanding aerosol-radiation and aerosol-cloud interactions.

(ii) An investigation into the impact of reducing the aromatic content of kerosene on contrail formation. This was delivered by the University of Sheffield and was published in March 2025.

The report found that the complete removal of di-aromatics (double ring aromatic structures) from jet fuel could reduce soot by up to a factor of ten, which plays an important role in contrails and could potentially reduce contrail formation. This was supported by primary testing that confirmed using conventional jet fuels with lower aromatic content could be a viable approach to mitigate aviation soot emissions. However, the report also concluded that although reducing the aromatic content of fuel can reduce soot, there are significant risks and costs associated with doing this. These include increased energy demands and CO2 production from more

processing of the fuel, cost implications for the refinery and supply chain, and potential impacts on engine performance, maintenance and longevity.

CASE STUDY: Virgin Atlantic – Advancing UK Aviation's Climate Strategy with Contrail Forecasting

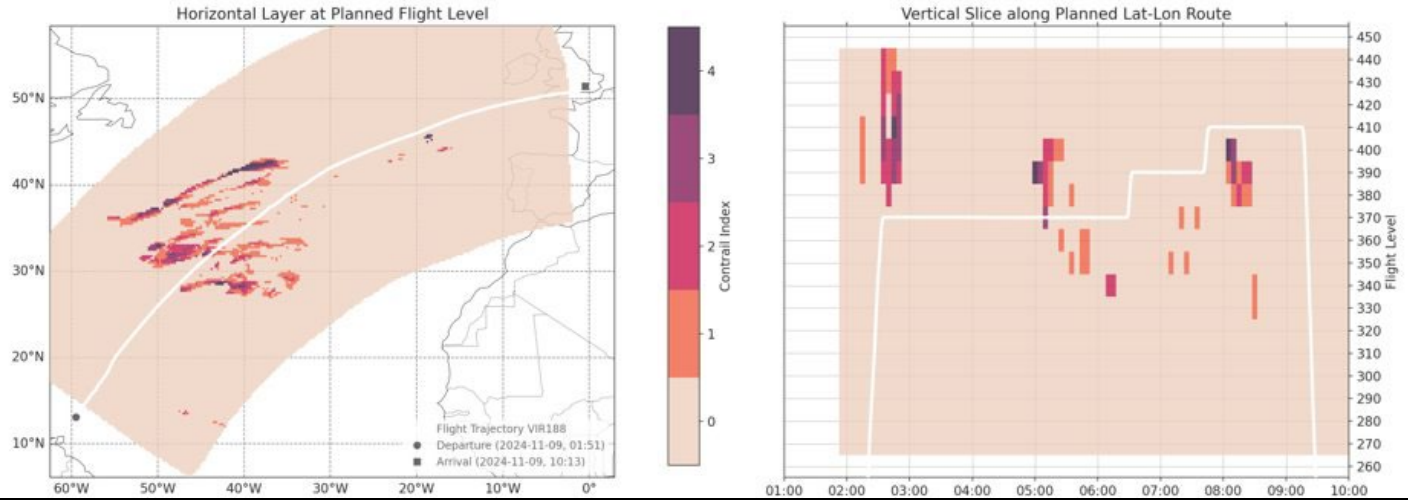
In partnership with Imperial College London, training leaders CAE, and Breakthrough Energy, Virgin Atlantic piloted the integration of contrail forecasting into its flight planning. At the heart of the initiative is a data-driven model that predicts contrail-prone conditions by analysing real-time meteorological data, in-flight feedback, and pilot observations.

Integrated into CAE's flight planning tools, the model enables:
1. dispatchers and pilots to make informed decisions that reduce the likelihood of contrail formation—without compromising fuel efficiency or safety
2. dynamic adjustments, that balance environmental impact with operational feasibility (instead of enforcing rigid re-routing)
3. pilots to play an active role by submitting post-flight e-forms that capture atmospheric conditions, creating a continuous feedback loop that sharpens the model's predictive accuracy.

This approach not only supports real-time decision-making but also contributes to long-term industry learning. By refining the model with real-world operational data, Virgin Atlantic is developing a scalable, replicable tool that complements traditional emissions-reduction strategies and reinforces the airline's broader commitment to holistic climate action. So far in the pilot, 78 flights on Virgin Atlantic's Barbados to Heathrow route have been analysed, with 14 of the 16 flights where contrails were forecasted successful in avoiding contrail formation.

The initiative is reflective of the research needed to drive our understanding of contrails while highlighting the power of cross-sector collaboration in delivering practical, scalable solutions — bridging operational efficiency with leading-edge climate science.

This contrail forecasting complements Virgin Atlantic's acceleration of efforts towards net zero through a comprehensive strategy spanning fleet renewal, sustainable fuel adoption, carbon removals, and policy engagement.



1.16 Looking ahead, a new non-CO2 project titled Quantifying Reduction in Thermal Contrails by Optimising SAF (QRITOS) was announced in 2025, with British Airways, Rolls-Royce, BP International, Heathrow Airport and Imperial College London working to find smarter ways of using SAF to increase its effectiveness and role in reducing non-CO2 emissions. The SAF will be purchased by BA and operated on BA flights from 2026. This proposed contrail management strategy is based on the hypothesis that the combustion of SAF creates fewer soot particles than combustion

of fossil jet fuel, and thus results in contrails with a smaller climate impact. This could be an effective solution to increase the value delivered from SAF and have no impact on flights.

Conclusion

2025 has been a landmark year for the Jet Zero Taskforce, backed by a renewed commitment from government to support the sector's decarbonisation journey through a combination of financial support and clear policy leadership.

From ZeroAvia's new manufacturing hub in Renfrewshire and Virgin Atlantic's Contrail forecasting, to world firsts for NATS at Heathrow, 2025 has also been a year of exciting industry progress.

The breadth of this year's achievements demonstrate the momentum that can be built in supporting the decarbonisation of aviation when government, industry, academia and the wider sector work collaboratively together.

Continuing this drive in the second half of the decade will be key to achieving ambitious climate commitments, and unlocking the growth potential of greener fuels and technologies. Despite this, there are some key challenges to address which the Jet Zero Taskforce will focus on through future years.

Task and Finish Group Outputs

Introduction by the Expert Group Industry Chair

Holly Boyd-Boland, Expert Group Industry Chair, and Senior Vice President, Corporate Development and Legal Affairs, Virgin Atlantic

In what proved to be a significant year for UK aviation's decarbonisation efforts, it was an honour to be asked by the Secretary of State to serve as Industry Chair of the Jet Zero Taskforce.

The Sustainable Aviation Fuel (SAF) Mandate is now in force, the Bill to introduce a Revenue Certainty Mechanism is progressing at pace through Parliament, and a new Airspace Design Service is set to accelerate the delivery of an ambitious, and much needed, airspace modernisation programme. The industry asked, and this Government is acting.

Yet 2025 has also been a challenging year for industry. We still have no UK First of a Kind SAF plants at Final Investment Decision and airlines have faced materially higher costs to purchase SAF under a Mandate, compared to 2024's voluntary market.

The Jet Zero Taskforce remains an invaluable – and world leading – forum that brings together Government, industry, producers, suppliers and academics in the collective endeavour of unlocking opportunities for the UK. This extends beyond ensuring the continued competitiveness of our aviation sector to leverage the UK's global leadership position, and the industrial opportunity for the UK economy.

Across the decarbonisation levers we have, the Taskforce's four Task and Finish Groups have focused on SAF, Greenhouse Gas Removals (GGRs), hydrogen technology and contrail mitigation. The Industry Chairs appointed to lead these groups have shown exceptional leadership and commitment, building consensus across the aviation ecosystem and value chain, from airlines and airports to fuel producers and manufacturers. Their work this year demonstrates the progress we can make as a collective, with industry and Government coming together in pursuit of challenging, but common, goals.

In 2025, the Task and Finish Groups identified the barriers that stand between us and Net Zero, and began to answer some of the most pressing questions: How do we build a carbon removals market capable of supporting aviation's needs? Can we meet our 2030 Mandate targets without straining non-HEFA supply? How do we coordinate large-scale contrail mitigation trials globally?

Since taking office, this Government has championed the important contribution of aviation across the UK economy: creating jobs, developing skills, enabling trade and inward investment. A sustainable, competitive aviation industry is critical for economic growth. As we move into 2026 there is clear alignment that we must, together, move to action and leverage the opportunity to decarbonise the sector, drive innovation and secure further investment in UK industry.

I look forward to continuing our collective work through the Jet Zero Taskforce in 2026, as we strive to build a sustainable and competitive aviation sector that delivers for passengers, businesses, and the planet.

Sustainable Aviation Fuels

Objectives

1.1 The SAF Task and Finish Group aimed to assess how to support UK aviation growth while meeting decarbonisation targets, identifying sustainable aviation fuel (SAF) as the principal means to achieve the 2050 goals. The Group noted that UK aviation is globally competitive but faces higher SAF costs (at least twice fossil jet fuel). It recognised the UK's strong policy environment, including the Advanced Fuels Fund, the SAF Mandate, and the forthcoming Revenue Certainty Mechanism (RCM) which together make the UK an attractive destination for producers, foster intellectual property development, and support economic growth and energy security.

Although the Group's remit excluded assessing the design SAF Mandate or the RCM (to preserve investor confidence and respect the Department for Transport's parliamentary and policy processes), it emphasised that the RCM must be in force by the end of 2026. The Group focused on two core questions: how the mandate is operating and how any problems can be addressed, and what short-term steps can be taken to mobilise project finance for UK SAF plants.

Methodology

1.2 The Groups work was split into three workstreams: Workstream 1 examined how the mandate is operating and how problems can be addressed. Workstream 2 examined impediments to project finance. Workstream 3 examined opportunities to support the deployment of project finance. The aim of the workstreams was to provide actionable recommendations. These recommendations were informed by the collective experience of the Group and the feedback that was received during the outreach that each Workstream undertook. The workstreams have also highlighted areas that next year's Task and Finish Group may wish to focus on.

Findings and Next Steps

Table 1: Findings and next steps from Workstream 1

	Theme	Recommendation
1	Improving Market transparency	The Government, together with obligated fuel suppliers and airlines, should explore practical options for improving transparency in pricing (initially on a voluntary basis), aiming to deliver a clearer link between costs charged to airlines for mandated SAF, and the characteristics of the SAF to which these charges relate. Given competition law and commercial factors, suppliers and their customers are clear the process will require Government assistance and expertise, alongside industry proposals for practical measures. [see also recommendation 6]
2	Improving Market transparency	Best practice guidance should be developed for fuel procurement to help to bridge the gap between airline expectations and delivery from suppliers. It is recommended that the Government lead the development of this guide, working with airline and fuel supplier associations due to competition law considerations. This would necessarily need to consider how and if costs can be translated through the supply chain and draw upon both existing DfT requirements in sustainability and SAF mandate

		reporting (i.e. around SAF quantities supplied / GHG emission savings which are published regularly by the DfT on a pan-UK basis). [see also recommendation 6]
3	Improving Market transparency	Given the early nature of the SAF market the Jet Zero Taskforce should commit to reviewing and monitoring the issue of compliance fees as part of its ongoing SAF work programme, to provide assurance to the industry that these are fair, sufficiently transparent and accountable as the market develops and mandated volumes increase.
4	Improving Market transparency	To support further competition, the DFT should conduct a study to understand what barriers to access exist for producers and how they could be addressed to promote competition, noting that producers have highlighted barriers to access that limit their ability to directly supply airlines both in the UK and EU markets.
5	Interaction of the mandate with ETS	Immediate steps should be taken to diagnose the problem that is preventing some airlines from gaining the SAF certification that is required to claim reductions in their UK ETS obligations and implement urgently an appropriate and robust method of transferring SAF related certification across the value chain. Clarity could be supported by a government-backed centralised Digital SAF Registry to track SAF volumes, sustainability credentials, and chain of custody, towards the goal of automating issuance of documentation for UK ETS and CORSIA compliance (also dependant on timely approval of SAF carbon and sustainability data by the Department for Transport) This could potentially include independent 3rd party solutions such an expansion of the Zemo renewable fuels assurance scheme, or an update to the international sustainability and carbon certification scheme. Government departments responsible for the UK ETS should review the option to allow airlines to utilise the book & claim method for making an ETS claim without physically receiving the SAF from suppliers. Transitional arrangements should be considered for documentary evidence requirements for evidencing 2025 SAF claims, to ensure airlines do not miss out on reductions in ETS liabilities for SAF received this year
6	Improving Market transparency and Interaction of the mandate with ETS	DfT should convene a working group (potentially under the auspices of the JZTF), including airline and fuel supplier associations, affected business and relevant government departments and agencies (including the UK ETS authority, Environment Agency, Defra) to deliver recommendation 5, whose remit might also cover exploring practical options for improving transparency in pricing (Rec 1) and the development of best practice guidance for fuel procurement (Rec 2), given the interplay between these issues and so as not to duplicate effort.
7	Future work	Looking to 2026, the Group felt that the relative competitiveness of the UK SAF market should be an area of future work for the Jet Zero Taskforce. It was recommended that in 2026, the SAF T&FG should assess the relative competitiveness of the UK SAF market and steps that can be taken to mitigate and minimise absolute and relative costs compared to our key competitors (particularly the EU market based on their SAF Mandate design and trajectory), as well as how the risk of supplier buy-out can be avoided by ensuring access to sufficient volumes of SAF, both domestically produced and imported. This should address factors including: a. Feedstock availability and diversity, including for advanced biofuels and Power to Liquid ('3G') SAF (i.e. green hydrogen, renewable energy, captured carbon and carbon dioxide), the National Farmers Union should be encouraged to participate. b. Incentives to close the price gap between Avtur and SAF, and alignment opportunities for incentives under the UK ETS following the commitment to create a functioning link between UK and EU carbon markets

		c. Availability of both HEFA (Hydroprocessed Esters and Fatty Acids) and advanced feedstock SAF imports d. The impact of Greenhouse Gas Removals on SAF market development, SAF competitiveness and its overall role within aviation's net zero pathway A key lesson learned from this year is that representatives from Defra and the Environment Agency should be invited to join existing government colleagues within the SAF Working Group as it takes its work forwards, so that the full range of policy area expertise and responsibilities are represented.

Table 2: Findings and next steps from Workstreams 2 and 3

	Recommendations	Description	Key objectives/ responsibilities
1	Execute 1-2 "Pathfinder projects"	The UK Government should prioritise the rapid delivery of one to two first-of-a-kind (FOAK) Sustainable Aviation Fuel (SAF) plants as "pathfinder projects", treated as strategic national demonstrators, and bring them to Final Investment Decision (FID) without delay.	Objectives
2	Form a SAF Delivery Council	Building on the process of supporting these "pathfinder projects" to FID, a SAF Delivery Council should be established. This proposed cross-sector body would bring together government, industry (airlines, fuel suppliers, developers), finance, and insurers to move FOAK SAF projects to FID.	Key Responsibilities Development of a capability guide and Technical Help Desks; Clear account management; Facilitation of Government finance and offtake; Enable Power-to-Liquid pathways
3	Development of a SAF value-chain action plan	To support the business case for first-of-a-kind (FOAK) SAF plants, the UK must ensure that sufficient sustainable feedstocks are available at predictable cost and quality. A dedicated UK SAF Feedstock Action Plan should be developed to provide clarity, reduce risk, and create confidence for investors and developers	Objectives Secure long-term domestic feedstock supply; Integrate SAF into existing fuel supply chains; Improve market transparency and trade policy;
4	Future work		Objectives Further assessing challenges and opportunities to enable PtL development and uptake in the UK. An examination of book and claim and its relationship with ETS, particularly unintended impacts on the SAF mandate, domestic production, and overall SAF uptake in the UK. Potential design and opportunities of offtake aggregation schemes.

Hydrogen

Objectives

1.1 The Hydrogen Task and Finish group set three objectives:

1. Assess a possible UK hydrogen route network
2. To create a roadmap to initial UK hydrogen operations and future scaling up of the network
3. To evaluate the aviation demand for hydrogen in the UK.

Methodology

1.2 For the first objective, the Aerospace Technology Institute (ATI) commissioned a study with University College London to look at the possible route networks for hydrogen aviation and to assess where it may be competitive. The group also received input from the LH2GT project, which examined the scaling up of hydrogen operations across Europe.

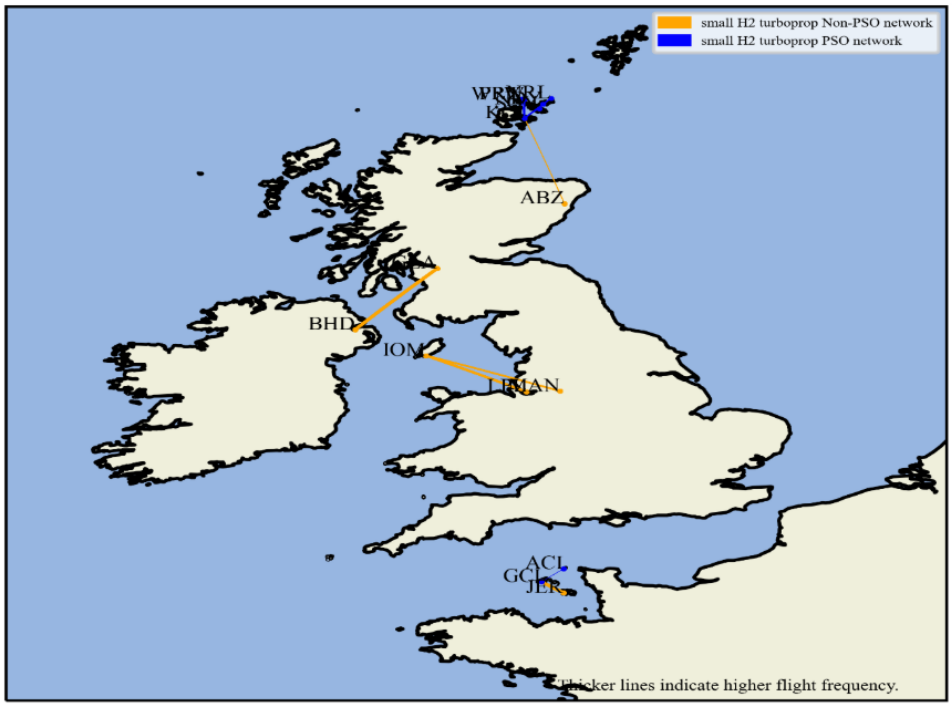


Figure 2: Possible route network in the UK for a 7-seat gaseous hydrogen aircraft.

1.3 The second objective was delivered by compiling expert input from the group members across all key capability areas to enable commercial hydrogen operations. Evolution points were defined to provide a framework for the growth of hydrogen in aviation from ground equipment trials to a full-scale adoption for fleet operations at hub airports. Further information on this can be found in the full report.

1.4 The hydrogen demand was assessed against a market scenario developed by the T&F group, using ATI tools. It was also generated by a Hydrogen in Aviation (HIA) study. The study participants kindly agreed to share the data. Both datasets show that the majority of hydrogen demand from aviation to 2070 is for SAF production, with direct demand for aviation usage a relatively small proportion. Based on current DESNZ projections, the UK will produce sufficient hydrogen before 2050 to meet aviaton's demand, though there is a risk that other sectors increase hydrogen demand in this period.

Findings and Next Steps

1.5 Some of the key group findings were:

- Infrastructure is Critical: Airport readiness is the longest lead-time item; early funding is essential.
- Scaling is Essential: Significant benefits only materialise when hydrogen penetrates narrowbody and widebody markets (100-seat by 2042, single-aisle by 2050, widebody by 2063).
- Liquid Hydrogen (LH_2) is Key: Enables larger aircraft and longer routes but demands cryogenic storage and advanced refuelling systems.
- National Coordination Needed: Current efforts are fragmented; a central programme is required to integrate OEMs, airports, fuel suppliers, and regulators.

The group also made a number of recommendations, including:

- Launch a National Zero-Emission Flight Programme to coordinate aircraft development, infrastructure, regulation, and training.
- Accelerate Airport Infrastructure with capital grants or green infrastructure funds to enable early hydrogen hubs.
- Increase Regulatory Capacity: Fund CAA and HSE to develop certification standards and safety frameworks.
- Create Policy Incentives: Use PSO mechanisms, tax credits, and emission-based charges to de-risk early operations.
- Invest in LH_2 Technology: Support R&D for cryogenic storage, refuelling systems, and hydrant networks.

Greenhouse Gas Removals

Objectives

1.1 The Greenhouse Gas Removals (GGR) Task and Finish group set three objectives:

1. **Quantify and communicate the 'size of the prize'**: aviation's GGR demand, economic value, jobs and climate benefit, building on existing analysis and initiatives

2. Establish industry steps to scale supply and demand for GGRs, for example an aviation Advanced Market Signal

3. Identify potential recommendations for Government levers to catalyse aviation use of GGRs and establish industry, NGO & academic consensus on these

Methodology

1.2 1. The Size of the Prize

For the first objective, the Group assessed existing literature and research to understand the current and future demand for GGRs in aviation to reach net zero, and the state of supply to meet this demand. A variety of reports were assessed and compiled with a focus on highlighting the challenges faced by the industry to achieve the forecast demand but also the economic opportunity available in doing so.

Table 3: Key findings of Objective 1

	2035	2050
CO2 benefit from airline purchases of GGRs for flights departing the UK	1 MtCO2 by 2030, 3 MtCO2 by 2035[13]	23 MtCO2[14]
GGR Job potential for the UK	From 5,000 direct[15] to 135,000 total[16]	60,000 direct[17]
Economic Opportunity for the UK	£2 billion additional annual investment and £1 billion additional tax revenue	£18 billion additional tax revenue[18]

2. Shaping an Aviation Advanced Market Signal

For the second objective, the Group worked closely with representatives from Sustainable Aviation (SA) to understand and realise the opportunity for early industry action to support the supply and demand of GGRs in the UK. Several members of the Group and SA are committed to proceed with a "proof-of-concept" Advanced Market Signal (AMS) in the first half of 2026 to purchase future-dated, high integrity removals credits aligned with UK/EU/ICAO standards. The overall portfolio will be guided by a set of core principles which will ensure alignment to the prevailing view of best practice in the voluntary carbon market, based on the ICVCM Core Carbon Principles. Organisations committed to the AMS will either directly procure or join group procurement vehicles and the lessons learned from the activities will be shared with the wider industry.

3. Potential policy ideas to support GGRs

Thirdly, the Group worked closely with wider industry stakeholders and HMG representatives to identify a number of potential policy ideas that could specifically boost the short-term demand of GGRs and support further uptake of "pre-

[13] SA Net Zero Carbon Roadmap Link
[14] Committee on Climate Change 7th Carbon Budget (2025) Link
[15] UK Carbon Budget Delivery and Growth Plan (2025) Link
[16] BeZero. From risk to reward: Making the UK the carbon markets capital of the world (May 2025) Link
[1717] Carbon Gap. Growth through removals: Making Greenhouse Gas Removals a vibrant part of the UK economy (June 2025) Link
[18] CNE. The Growth Potential of the UK Greenhouse Gas Removals Industry Link

compliance" procurement and initiatives such as the AMS. The Group presents five transitional policy ideas to incentivise the uptake of early aviation sector investment in GGRs:

1. Allowing inclusion of **purchased GGRs credits in a future UK ETS** would de-risk early offtake.

2. Integration of **GGRs within the UK SAF Mandate** could support compliance during SAF bottlenecks whilst boosting UK SAF investment and encouraging GGR investment from other aviation stakeholders beyond airlines.

3. Passenger-facing GGRs sales by airlines can support incremental demand if rigorously and transparently deployed.

4. Direct **Government procurement** can help endorse GGRs, further boost supply and improve economies of scale for buyers.

5. HMG and UK aviation industry to work together in **exploring the critical role of durable GGRs** in the international aviation sector's path to net zero and **strengthening of CORSIA**.

The Group notes the Independent GGR review has discussed incorporating GGRs into the SAF mandate. The Group recognises that both GGR and SAF are important elements in the aviation sector's decarbonisation pathway and believes it is important to explore synergies and potentially further integration of the policy frameworks. The Group also acknowledges the criticality of maintaining investor confidence in SAF. It is recommended that next year's JZTF could support Government by analysing what options may exist to support GGR demand through closer integration with the SAF mandate. Any options must not delay immediate SAF investment decisions or adversely impact longer term SAF investor confidence. This could comprise a broad group spanning finance, aviation, SAF and GGR representation.

Findings and Next Steps

1.3 Proposed next steps for the group include:

- Further detailed review and analysis is recommended on the potential impacts of GGRs incorporation on the SAF Mandate, Revenue Certainty Mechanism (RCM) and investments in 2G and 3G SAF plants. The Group recommends that the concept is taken forward by a task finish group in 2026, populated by representatives from the Aviation, GGRs and SAF communities.

- A detailed cost benefit analysis of each of the policy proposals setting out the cost split between treasury, industry and the benefits to industry and society should be incorporated into the next task finish Terms of Reference. Economic analytical competence should be included in the group to ensure this can be performed.

- Deliver and review a GGRs AMS "Proof of Concept" identifying learnings and assess potential to scale.

- Exploring opportunities for advancing support for GGRs and harmonising policy approaches with the EU as part of ETS linkage negotiations.
- Review existing and recent work on information made available to customers at point of sale, including by the CAA and EU, to drive consistency for UK airlines and find opportunities for passenger engagement.
- Explore additional supply-side support policy ideas with relevant government departments and industry stakeholders.
- Explore cross-sector links and coalition efforts to accelerate the scaling of UK GGRs.

Contrail Mitigation

Objectives

1.1 The Contrail Impact Mitigation (CIM) Task and Finish Group addressed a critical component of aviation's climate impact. While the sector has made progress on CO2, non-CO2 effects, specifically persistent contrails, could potentially contribute significantly to aviation's total warming impact. The Jet Zero Taskforce issued a clear mandate: assess the feasibility of contrail mitigation as a potential mitigating option for addressing aviation's non-CO2 impacts and design a strategic roadmap for the future. The Group aimed to move the conversation beyond scientific theory and small-scale experiments. The primary objective involved determining practical steps for the UK aviation sector, from airlines and manufacturers to regulators, to transition from isolated research projects to standard operational procedures that actively reduce climate warming.

Methodology

1.2 To address this challenge, the Group treated contrail mitigation as a "whole system" operational challenge rather than solely a scientific one. Recognising that the industry cannot improve what it cannot measure, the group first developed the Contrail Impact Mitigation Framework (CIMF). This five-level "Maturity Model" allows us to benchmark national capability, scaling from Level 1 ("Unknown") to Level 5 ("Optimising").

Table 4: The Five Maturity Levels of the Contrail Impact Mitigation Framework (CIMF)

Level	Level Name	Description within the Contrail Mitigation Context
1	Initial / Unknown	No formal processes or coordinated activity exists. Contrail impact is not a consideration in standard operational, design, or regulatory practice.
2	Managed / Reactive	Capability is developed through isolated, project-by-project trials. The focus is on gaining initial experience and understanding in an uncoordinated environment.
3	Defined / Proactive	Organisations implement formal, standardised processes and tools based on validated trial data, enabling a consistent and proactive approach to mitigation.
4	Quantitatively Managed / Measured	The performance and climate impact of the standardised processes are actively measured and monitored using agreed-upon metrics and KPIs (Key Performance Indicators).
5	Optimising	A continuous improvement loop is established, using performance data to proactively refine and optimise mitigation processes, technology, and regulations for maximum effectiveness.

Using this framework, the Group conducted a comprehensive ecosystem assessment across seven distinct workstreams: Aircraft/Engine Manufacturers (OEMs), Airline Operations, Climate Science, Weather Data, Air Traffic Control (ANSP), Regulation, and Fuel Producers. This ensured that our analysis covered the entire supply chain, rather than looking at any single actor in isolation. Furthermore, the Group conducted a rigorous global gap analysis, reviewing 18 major trials conducted worldwide over the last five years. This review identified successful elements but also highlighted critical omissions in current global efforts, particularly regarding the scale and location of trials.

Findings and Next Steps

1.3 The analysis provides the first consolidated national assessment of UK capability in this field. The report concludes that the UK currently sits at Maturity Level 2 ("Reactive") (see full report for further information). This is due to continuing uncertainties with aviation's non-CO2 impacts, despite the sector's ongoing engagement and activity in the non-CO2 space. Contrail trials often occur in isolation, with limited findings shared, sporadic funding, and an inconsistent national approach to mitigation.

The gap analysis confirmed that existing global trials are unable to validate the science needed for routine operations, and that current trials appear too small, geographically limited, and often focused on the wrong time of year.

Crucially, the assessment identifies that the sector is currently limited from reaching Level 3 ("Proactive, Standardised") due to cross-cutting barriers. These include critical data gaps regarding humidity in the upper atmosphere and a lack of automated flight planning tools for airlines. Furthermore, regulatory uncertainty exists across the system; the sector currently lacks the policy framework required to mandate standardised tools, incentivise participation, or empower Air Traffic Control to initiate mitigation actions.

To accelerate UK leadership, the report proposes four strategic priorities:

- Establish a Permanent Governance Structure: Government should establish a permanent UK-led body to own this roadmap, coordinate trials, and synchronise learning across the industry.

- Adopt the CIM Framework: The sector should use the Maturity Model to guide investment, ensuring that airlines, air traffic control, and regulators improve capabilities at a comparable pace.

- Implement Large-Scale UK Trials: The UK should move beyond small experiments. The report recommends launching large-scale trials specifically in UK-controlled North Atlantic airspace. These must run across different seasons (prioritising winter) and times of day to gather the statistical data required to validate climate models.

- Develop Enabling Policy and Procedures: The sector requires a comprehensive policy framework to move from research to routine operations. This includes mandating the use of standardised prediction software in pre-flight planning and

reviewing regulations to empower ANSPs to initiate mitigation actions. The roadmap also outlines the need to design a non-CO2 Monitoring, Reporting, and Verification (MRV) system. This work carefully distinguishes between the necessary policy design (a Level 3 activity) and the eventual full operational implementation (a Level 4 activity), ensuring that regulation enables rather than hinders progress.