

CAA Environmental Sustainability Panel

Work Programme April 2023 – March 2025



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1. About the CAA Environmental Sustainability Panel

Who we are

The CAA Environmental Sustainability Panel (the Panel) is a group of independent experts who bring together expertise and experience, along with strategic thinking, on a wide range of environmental sustainability topics. Our members' biographies can be found at the end of this document.

What we do

We are a specialist, non-statutory body which acts as a critical friend, giving expert advice to the CAA as policy is being developed, and ensuring environmental sustainability is considered in the thinking and work of the CAA. Our objective is to bring expertise, insight and challenge into the CAA's work programme where it is related to environmental sustainability.

Our key activities are to:

- provide expert technical advice to the CAA to support the CAA's work programme relating to its environmental roles, or on specific tasks as requested by the CAA, including input to the CAA's response to any relevant external consultations;
- help the CAA to understand and take account of environmental interests and impacts in its regulatory policy and framework (although we will not be expected to review or comment on individual regulatory decisions);
- challenge and support the CAA on its progress towards its strategic focus of improving environmental performance, both within the aviation and aerospace sectors and within the CAA itself, including informing the delivery and future evolution of the CAA's Environmental Sustainability Strategy; and
- provide advice, critique and recommendations on the CAA's research and help identify where further research may be needed to inform the CAA's sustainability agenda.

What we do not do

We will not:

- campaign publicly or deal with individual complaints from the public;
- represent or correspond directly with air travellers, industry or community groups unless requested to do so by the CAA;

- be involved in or comment on operational issues or complaints raised by individuals, such as noise from flight paths.

Our remit

Our work shall be limited to those activities that fall within the CAA's statutory remit or reasonable influence.

Chair's Foreword

It is with great pleasure that we publish our 2023-2025 work programme as the CAA's Environmental Sustainability Panel. Our first work programme,¹ which ran from October 2022 to March 2023, enabled us to 'form and storm' as a Panel and to work out how we can best support the CAA. It has proven to be a very worthwhile exercise and approach to create this work programme that will span the next two years to support, challenge and advise the CAA as it delivers on its Environmental Sustainability Strategy.²

Since its establishment in June 2022, the Panel has held expansive discussions with the CAA on environmental sustainability topics in relation to aspects of its work and remit. We have considered novel technologies, economic models, airspace modernisation, new modes of flight and implications of surface access to airports on air quality. What is clear to the Panel is the CAA's keen appetite to enable change across the sector by improving its knowledge and understanding of technical environmental matters.

We continue to challenge and provide scientific advice to the CAA as it delivers its own Environmental Sustainability Strategy, as well as on aspects of its wider Strategy³ and individual packages of work. We have provided technical briefings to CAA personnel and developed high level briefing notes on specific themes. The make-up of the Panel, with experts in air quality, atmospheric chemistry, noise, economics, airspace management and systems engineering, means that we are able to provide well-rounded advice.

Our 2023-2025 work programme builds on this approach with the additional focus to deepen the CAA's understanding of environmental impacts of aviation and their implications – not necessarily so the CAA become deep environmental sustainability subject matter experts, but to become consciously aware that environmental impacts need to be considered when supporting the overall safety of the sector and other consumer and public interests.

As time ticks on towards 2050 and the UK's focus on its net zero target for carbon emissions, the Panel encourages consideration of environmental matters in terms of health – both the health of our planet and the health of our people and biodiversity. This has proven to be an excellent way to consider the wide and expansive nature of environmental impacts, making our discussions with the CAA more targeted and pertinent.

The industry continues to invest directly into new aviation technology, with significant investments globally into hydrogen and electric propulsion research and development. The

¹ <https://www.caa.co.uk/media/3yenaon3/revised-caa-environmental-sustainability-panel-interim-work-programme-oct-2022-march-2023.pdf>

² <https://www.caa.co.uk/consumers/environment/environmental-sustainability-strategy/>

³ <https://www.caa.co.uk/our-work/about-us/our-strategy/>

unrelenting pressure on the aviation industry to address its impact on the health of both people and planet is driving it to develop and test new fuels and propulsion systems, and there is a sense that the technology may well be ready ahead of the much-needed fuel supply. The Panel is helping the CAA to understand both the environmental benefits and potential impacts of this new technology from a whole system point of view. We are focussed on helping the CAA to build its capability in this field so it can decide whether and, if so, how to build sustainability considerations into its regulatory policy and decision-making processes.

What is very clear, from discussions at the Panel and beyond, is that conversations continue to expand beyond aviation stakeholders to consider how Sustainable Aviation Fuels (SAF) can be produced at scale and how hydrogen can be supplied for demonstration and ultimately operation. Such discussions include energy producers, utilities firms, wider transport system developers. In February this year, the Royal Society published its much-awaited report: [Net zero aviation fuels: resource requirements and environmental impacts](#). The Panel viewed this as a rounded and realistic read out of challenges to reach net zero aviation, showing clearly some of the significant barriers that the industry has to overcome.

The Panel's 2023-2025 work programme will continue to build on our work so far, working proactively with the CAA, responding with clarity and deftness to requests and offering the Panel's expert technical insight as the CAA executes its business plans and actions. The work of the Panel will focus on:

- Supporting the CAA as it evolves and develops its Environmental Sustainability Strategy through the provision of insight, direction to latest research insights and ensuring the strategy is environmentally holistic;
- Responding to wider CAA programmes of work that require insights from the Panel regarding environmental matters – whether this is in connection to airspace modernisation, technology transformation or other programmes that the CAA covers; and
- Aiding the CAA to broaden and deepen its overall knowledge and understanding of how and where environmental impacts must be considered, offering insights on the latest research and ensuring that environmental matters are one of the organisation's key considerations.

The first year of the Panel's operation has served its purpose of establishing a strong cadence of discussions between the Panel and all aspects of the CAA. I look forward to working with the fabulous members of the Panel in the months to come and supporting the CAA as it supports the sector in turn.

Dr Ruth Mallors-Ray OBE FRAeS

Panel Chair

2. The Panel's vision

What we seek to provide to the CAA

We will support and challenge the CAA on the delivery of its Environmental Sustainability Strategy (the Strategy) as it develops its policy and position across its regulatory and advisory functions. The Strategy seeks to reflect the roles of the CAA in terms of leader, regulator, influencer and observer of developments, with an overarching imperative to communicate widely, iteratively and consistently.

As a Panel, we seek to ensure that the CAA is equipped with appropriate insight, robust evidence and constructive challenge to inform the delivery of these roles set out in its Strategy and, as a result, the work it delivers to support the aviation community. We also seek to provide insight and expertise across a wide range of topics relating to environmental sustainability, and inform the CAA on potential short-, medium- and long-term developments in our areas of expertise that are relevant to and impact upon aviation's journey to environmental sustainability.

Having established our ways of working and our role as the CAA's advisor and 'critical friend', we now seek to work both actively and proactively with the CAA. We will work actively by responding to requests from the CAA for input and expertise on particular matters in its work programme, where the CAA recognises that it needs our expertise and challenge to ensure it is best able to incorporate environmental sustainability into its work. And we will work proactively by drawing on our expertise, reviewing areas in the CAA's forward work programme and assessing the CAA's levels of knowledge and awareness to identify where we consider the CAA may be able to make the most significant difference by drawing in environmental thinking into its work. We consider that this connected approach ensures that both the CAA and the Panel can effectively drive the CAA's role in facilitating a sustainable aviation industry.

Recognising that many areas of the CAA's work have implications for both the environment and consumers, we will also continue to build our relationship and work collaboratively with the CAA Consumer Panel⁴ where there are synergies between each panels' remit.

⁴ <https://www.caa.co.uk/our-work/about-us/caa-consumer-panel/>

How we prioritise our work

The Panel is a small, specialist policy resource for the CAA and will deliver high-quality, evidence-based advice in a way which is designed to maximise our impact. Given our limited capacity, we will prioritise our work carefully, asking six key questions before embarking on any given project:

- Does it fall within the Panel's remit?
- Is it an area where the CAA is best placed to effect change?
- Is it (or should it be) a priority for the CAA?
- Is it an area which is poorly understood or not represented which could benefit from additional focus?
- Is the requirement of the Panel explicitly clear in the activity?
- Does the impact of the work have the potential to inform future developments to enable environmental sustainability?

We will manage our work programme to ensure that we balance both responsive short-term and longer-term work requests from the CAA, as well as our own strategic work pieces.

Development of this work programme

This work programme has been developed in consultation with the CAA, focussing in particular on its requirements to continue to develop and deepen its knowledge and understanding of environmental sustainability whilst focusing on the delivery and evolution of its Strategy. This is against the broader context of a rapidly evolving move towards sustainability, not just in aviation but across all aspects of how we live and work. In considering how we shape our work over this two-year period, we have reflected on both the need for the CAA to clearly articulate the ways we can most effectively assist it, while also considering how we can use our expertise and position to support the CAA to consider the broader environmental sustainability landscape.

3. Work programme April 2023 - March 2025

The CAA took several initiatives in 2022 to sharpen its focus on environmental sustainability, including the publication of its Strategy in May 2022 and the establishment of both the CAA Environmental Sustainability Team and the Panel. Recognising that the Panel was newly established, and the CAA's Strategy, resources and capabilities were early in their formation, we undertook to initially deliver a shorter-term work programme covering October 2022 to March 2023. This allowed us to properly establish ourselves in our 'critical friend' role to the CAA while developing our understanding of the CAA's capabilities, responsibilities and ambitions. Our first annual report will be published on the CAA website in due course and will reflect on the lessons learned during this initial work programme.

The interim work programme has proven to be a useful baseline and framework on which to produce this two-year work programme, which will now move to a more focussed delivery of our role. This work programme aligns to our Terms of Reference⁵ and aims to:

- develop and drive an organisational culture of environmental sustainability awareness and action across the CAA;
- equip the CAA with bespoke, relevant environmental knowledge, insight and challenge to drive the Strategy forward;
- stimulate necessary discussions and thought processes across the CAA to help it ensure that environmental sustainability considerations are embedded as far as possible into all facets of the wider CAA Strategy⁶ and work programmes; and
- deepen the CAA's wider understanding of environmental sustainability across all levels of the organisation through knowledge-building activities.

To achieve these objectives, we have identified four specific activities that form the basis of this work programme:

- i. Supporting delivery of the CAA's Environmental Sustainability Strategy.
- ii. Providing technical advisory support to CAA activities that are directly and indirectly concerned with environmental impacts.
- iii. Working collaboratively with the CAA Consumer Panel on mutually agreed themes of interest.

⁵ <https://www.caa.co.uk/media/lpm1tvaw/updated-sustainability-panel-terms-of-reference-jan-2023.pdf>

⁶ <https://www.caa.co.uk/our-work/about-us/our-strategy/>

- iv. Supporting the growth of the CAA's collective knowledge, understanding and awareness of environmental sustainability.

Support delivery of the CAA's Environmental Sustainability Strategy

The CAA's Environmental Sustainability Strategy (the Strategy) ensures the CAA is focussed on the ways it can drive aviation towards environmental sustainability. The Strategy is endorsed by the CAA Board, which has sustainability as one of its five priorities for 2023/2024. Our interim work programme noted that this longer-term work programme would develop our role in offering independent expert advice and commentary on the CAA's Strategy. Our holistic view of environmental matters and levers is ideally positioned to provide critique and review of the Strategy to challenge the CAA to ensure it is responsive to environmental sustainability developments, which continue to evolve at considerable pace.

Over the course of this work programme, we will support the CAA Environmental Sustainability Team in evolving and maturing the Strategy. When first shaped, the Strategy reflected immediate CAA requirements, versus a longer-term outlook on environmental sustainability. These requirements were primarily related to:

- clarity on the CAA's roles and remit in environmental sustainability;
- a common vision and mission for the CAA's work in this space; and
- a set of policy positions for direction.

It needed to be applicable in the short-to-medium term, to enable the CAA to see tangible activities taking place in the first instance as the CAA set out to nurture the organisational culture. A year on from its publication, the Strategy has been socialised across the CAA and with external stakeholders, and its delivery is now formally overseen by a newly established Sustainability Programme Board. With these foundations in place, the CAA now intends to evolve the Strategy to reflect a more forward-facing outlook. We will support this development through regular workshops and feedback sessions with the CAA, as well as an annual deep dive. As new evidence or research emerges, we will ensure that the CAA is not only made aware of this but will also provide any necessary interpretation of the insight against the CAA's Strategy. As aviation adapts to the outputs of new research, we will also challenge the CAA to ensure that its Strategy is responding to new evidence of the environmental impacts of aviation.

Technical advisory support

We will offer technical advisory support on its work programmes in response to specific requests for input. These requests will be driven by the CAA.

We will support the work programme of the CAA's Environmental Sustainability Team, which was established in 2022 with the focus to facilitate the CAA's role in improving aviation's environmental performance. In the capacity of Environmental Sustainability Team development, we will continue to provide advice and challenge on:

- supporting the development and strategic forward-planning of the UK's Aviation Environmental Review (due to first be published in 2023) and Noise and Greenhouse Gas Emissions Reports (due to be published in 2024);
- consideration of the interdependencies of emissions and other environmental impacts such as noise, and their impacts on public health;
- continuing to support the CAA with establishing and carrying out the multi-year Aviation Noise Attitudes Survey (ANAS); and
- the provision of information to consumers on the environmental impact of their flights, to develop trust and consistency.⁷

We will also respond to requests for advice and challenge from wider CAA work programmes supporting other aviation developments, to challenge the CAA to ensure that environmental considerations are embedded into CAA areas of work. These may include:

- development of low and zero-carbon technology and innovation, through:
 - building environmental sustainability considerations into the CAA's engagement with innovators through the CAA's Innovation Sandbox;
 - supporting the CAA's understanding of and roles in enabling Sustainable Aviation Fuel (SAF) to be used as an alternative fuel source;
 - ensuring the CAA has appropriate knowledge and awareness of design and certification considerations of new engines and aircraft;
- the modernisation of UK airspace, by ensuring that a holistic consideration of environmental impacts is considered; and
- the revision of the wider CAA Strategy,⁸ to help ensure that this drives a strong organisational culture of sustainability.

We will support the development of this work by ensuring the CAA is utilising the most up-to-date research findings in its evidence, including making the CAA aware of where there is uncertainty or need for further research. Such an approach assists the CAA to consider environmental impacts holistically, including the impacts on public health.

⁷ The CAA issued a call for evidence in January 2023: <https://www.caa.co.uk/news/call-for-evidence-launched-on-providing-environmental-information-to-air-passengers/>

⁸ <https://www.caa.co.uk/our-work/about-us/our-strategy/>

Collaborating with the CAA Consumer Panel

Our first work programme highlighted that both the Environmental Sustainability and Consumer panels would regularly engage to explore topics and areas of work where both could bring their respective areas of expertise. The panels will continue to work together to add value by bringing awareness of consumer and environmental thinking to the forefront of CAA work, focussing on their respective remits and areas of expertise.

The panels also recognise that enabling informed choices for consumers is only possible where information is both trustworthy and accessible. The panels consider that by working together they can add value to the CAA by bringing objective analysis that can build confidence and trust for the consumer in the information they are presented on the environmental impacts of flying. This is both in terms of validating the science behind information, ensuring it is underpinned by a consistent and scientifically robust methodology, and also presenting it in a way that is meaningful to consumers.

Supporting the CAA's knowledge, understanding and awareness of environmental sustainability

Embedding environmental sustainability as a cross-organisational theme, which informs the CAA's work and supports the delivery of the Strategy, needs strong organisational culture. The CAA also recognises the imperative to create an organisation with the right skills and knowledge to ensure capability to facilitate the move to sustainable aviation. We will further enrich the CAA's sustainability culture and understanding by delivering a programme of knowledge building on topical issues related to environmental themes.

As scientific and technical authorities in our fields, we are well-placed to support the CAA's development of its knowledge, understanding and awareness. This expertise and knowledge will be deployed into and across the CAA through the following specific mechanisms:

| <u>Mechanism</u> | <u>Approach</u> | <u>Aim</u> |
|------------------|---|---|
| Webinars | Covering the fundamental science of Panel members' specialist areas (including air quality, noise, climate) and discussions on broader topics of relevance (which may include the precautionary principle, critical thinking and other considerations relevant to effective environmental decision making). | Informing CAA personnel about specialist areas of environmental sustainability knowledge and how these link to and are impacted by aviation, such as the public health impacts of aviation's air quality and noise effects. |

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| Board Level Briefings | Challenge notes ⁹ covering the science, the challenges and what these mean for the CAA. | Bring a focus on how the science of environmental sustainability applies to specific challenges faced by the CAA, to support the Board's decision making. This may include the sustainability implications of new technologies, and how these may impact on the CAA's role in facilitating the development of these. |
| Forum events | Series of discussion events aimed at exploring the intersection and overlap between science, regulation and policy. | Tease out the interdependencies, overlaps and trade offs between Panel members' different areas of expertise, such as between aircraft emissions and noise. |
| Development of a knowledge bank | Curated lists of relevant resources – may include a regular newsletter from the Panel summarising recent reports, events, research and other publications. | Development of a wider knowledge resource available to all CAA personnel, both in terms of the relevant science but also where there are uncertainties or a need to think critically. |

This will support the development of the CAA's environmental sustainability literacy in a targeted way, so it is able to effectively carry out its roles and functions while also embedding a strong organisational culture of a considered approach to the impact of aviation on the environment.

We will regularly review these mechanisms, in consultation with the CAA, and be willing to evolve or change them should there be more effective ways to embed environmental sustainability knowledge.

⁹ A challenge note is a short paper crafted by the Panel to provide insight on specific areas, reflecting the current thinking and research on particular environmental factors and areas of further investigation that the CAA may wish to consider.

Strategic Panel input

As part of our proactive approach to carrying out our role, we will consider both the CAA's Environmental Sustainability Strategy and wider Strategy against our own expertise and view of developments in environmental sustainability, to ensure that the CAA is informed of areas where it is likely best able to influence and impact upon the aviation industry's journey to environmental sustainability.

We will deliver this strategic input through 'challenge note' pieces to stimulate discussion with the CAA. The topics and themes of these challenge notes will be developed in consultation with the CAA. It is our intention to produce a small number of high-quality briefings in any given year to provide an informed, evidence-based view of emerging trends, developments and issues regarding environmental matters. The challenge notes may serve the purpose of deepening the CAA's understanding in particular areas, or may include recommendations, such as where further research is required. The approach to delivery of these challenge notes will be agreed with the CAA to establish the most effective means of dissemination of the knowledge and messages.

4. Who we are

Chair

Dr Ruth Mallors-Ray OBE FRAeS

Ruth has a broad and extensive understanding of both the aviation industry and the complex relationships between government, industry, academia and the public. A Non-Executive Director of the National Composite Centre and Chair of the Strategic Advisory Board of the Digital Supply Chain Innovation Hub, and the former Chief Operating Officer of the Aerospace Technology Institute, Ruth has significant experience of strategy development and execution with a focus on challenge led innovation with impact. She is an experienced chair of technical and advisory panels, focusing on engagement and consensus building on complex topics, with a strategic approach to act in the best interests of the whole and achieve the outcomes for a range of stakeholders.

Members

Professor Charlotte Clark

Charlotte is a Professor in Epidemiology at St George's, University of London. She is an expert in applying social science to the issue of noise effects on health and communities, and has broad experience working with airports, regulators, governments and communities. Charlotte will bring objective and evidence-based advice on the impacts of noise on the community to the Panel.

Dr Martin Hawley

Martin is an expert in Air Traffic Management and airports, especially around the interfaces of business, technology and operations. His experience and skills include climate technology, environmental economics, sustainability innovation and performance indicators. He brings wide international experience and a strong grounding in research methodology.

Professor David Lee

David is a Professor of Atmospheric Science and Director of the Centre for Aviation, Transport, and the Environment (CATE) at Manchester Metropolitan University. With 25 years of experience as a specialist in climate science, having participated in many assessments of the Intergovernmental Panel on Climate Change, he is skilled in developing the links between science and policy. He has particular interest in the policy aspects of mitigating the impacts of aviation on climate.

Professor Alastair Lewis

A Professor of atmospheric chemistry at the University of York, Alastair has over 25 years of experience in scientific research on the environmental impacts of transport, fuels and combustion on public health, climate change and the response of ecosystems. He is also the Science Director for the National Centre for Atmospheric Science, and is passionate about communicating science, technology and risk to the general public.

Dr Chikage Miyoshi

Chika is a Reader in Environmental Systems for Aerospace at Cranfield University Academic. She is involved in developing multidisciplinary research projects with a focus on the environmental and economic elements of aviation, and brings expertise in the impact of economic instruments on aviation, including the EU Emissions Trading Scheme and carbon and fuel taxes.

Professor Anil Namdeo

Anil is a Professor of Air Quality Management at Northumbria University. His research focuses on environmental and sustainability assessment of land use, transportation and other developmental policies. Passionate about translating scientific information in easy-to-understand language, his overall focus is on developing win-win policies by providing scientific expertise to support analysis and trade-offs between carbon, noise and air quality.

Professor Mark Westwood

Mark is a Professor and Head of Centre for Aeronautics at Cranfield University. A technology leader and specialist in aerospace and autonomous systems, including R&D in drone and advanced air mobility sectors, he is passionate about exploring the opportunities presented by new technologies and developing them into sustainable, practical real-world applications.