

CAA Environmental Sustainability Panel

Annual Report for the year ended 30 June 2024



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Chair's Foreword

It is a pleasure to share the Environmental Sustainability Panel's end of year report for 2023-2024, the second year of its operation. At the risk of stating the obvious, aviation plays a vital role in global connectivity and demand for air travel continues to rise; but with growth comes increased environmental impact, and this must not be overlooked. The CAA continues to build its understanding of environmental impacts and to consider how to use its levers to support and challenge organisations across the aerospace and aviation sectors in their efforts to develop a more sustainable industry.

Throughout the year, the CAA has continued to value the Panel's expertise as it delivers its Environmental Sustainability Strategy. The Panel, comprising scientists and environmental experts alongside experts in air traffic management systems and the rapidly evolving technologies across aviation, provides independent advice and evidence-based insights on how to balance aviation growth with environmental sustainability. Once again, we have heard from CAA teams on new technologies for future certification, on airspace modernisation strategies, on airport developments and a lot more too. We highlight the science, we reference developments from across the UK, Europe and beyond, to bring knowledge, understanding and evidence to the CAA capabilities. It remains challenging to bring insights across such a broad spectrum that balance growth and environmental sustainability, but the CAA remains committed to playing its part in supporting both growth and environmental sustainability.

The Panel has also embraced the appointment of Harry Armstrong as Head of Environmental Sustainability, a change that will further embed environmental sustainability into the CAA's Senior Leadership Team. Harry brings with him a deep understanding of how industrial regulators can enable environmental sustainability mitigation and adaptation; as a panel we are seeing a renewed focus on where the CAA can impact environmental sustainability developments. The Panel also wish to acknowledge the work of Nic Stevenson who led the development of the Environmental Sustainability Strategy and played a key role in establishing the Panel - we enjoyed working with Nic and wish him well in his ongoing Head of Strategy role at the CAA.

Our endeavours as a panel remain to bring the latest insight, knowledge, and expertise to the CAA teams. We are a non-statutory advisory panel and as we embed ourselves into the strategies of the CAA, we are seeing greater curiosity and ambition to bring about change across the aviation sector with regards environmental sustainability. We look forward to another year of discussion and knowledge exchange with CAA personnel.

Dr Ruth Mallors-Ray OBE

CAA Environmental Sustainability Panel Chair

Chapter 1

About the CAA Environmental Sustainability Panel

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

The Panel is a 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 work is therefore limited to those activities that fall within the CAA's statutory remit or reasonable influence.

The key activities of the Panel 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;
- Help the CAA to understand and take account of environmental interests and impacts in its regulatory policy and framework (although the Panel 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 aerospace sector and within the CAA itself, including informing the delivery and future evolution of the CAA's Environmental Sustainability Strategy (the Strategy);¹ and
- Provide advice, critique and recommendations on the CAA's research and identify where further research may be needed to inform the CAA's sustainability agenda.

We provide insight and expertise across a wide range of topics relating to noise, emissions and air quality, as well as on operational efficiencies and new technology, to inform the CAA on potential short-, medium- and long-term developments in our areas of expertise that are relevant to build the CAA's understanding of issues that may impact upon aviation mitigating its environmental sustainability impacts.

We provide advice to CAA teams and to the CAA leadership both reactively and proactively:

¹ <https://www.caa.co.uk/consumers/environment/environmental-sustainability-strategy/>

- Reactively, by responding to requests from the CAA for input and expertise on matters in its work programme seeking to incorporate environmental sustainability into its work; and
- Proactively, by drawing on our expertise, to identify where we consider the CAA can either make a significant difference or simply to be better informed on environmental matters that are constantly evolving.

The Panel does 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.

The Panel is a small, specialist policy resource for the CAA and delivers high-quality, evidence-based advice in a way which is designed to maximise our impact. Given our limited capacity, we 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 could 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 aviation to mitigate its environmental sustainability impacts?

Chapter 2

Understanding our impact

This report covers the Panel's second year of operation to 30 June 2024. Over this year, we built upon the foundations laid in our first year of operation as a trusted resource for the CAA by:

- Undertaking the first year of our [2023-2025 work programme](#);
- Continuing to build relationship with CAA Board and working teams.

A summary of the Panel's activities in each of these areas, and the impact this has had within the CAA, is set out below.

2023-2025 work programme

We published our 2023-2025 work programme in July 2023,² building on the foundations set within our first year of operation. This set out that we would focus on:

- Supporting delivery of the Strategy.
- Providing technical advisory support to CAA projects and programmes of work.
- Collaborating with the CAA's Consumer Panel.
- Providing strategic input from the Panel; and
- Building CAA knowledge, awareness and understanding of environmental sustainability issues.

Our work under each of the pillars of this work programme from July 2023 to June 2024 is set out below.

Supporting delivery of the CAA's Environmental Sustainability Strategy

The Panel has supported and challenged the delivery of the Strategy as the CAA develops its policy and position across its regulatory and advisory functions. The Strategy sets out the CAA's roles in terms of leader, regulator, influencer and observer of developments, with an overarching imperative to communicate widely, iteratively and consistently. During the second year of the Panel's operation, we supported the CAA's work to refresh its Environmental Sustainability Strategy, by:

² <https://www.caa.co.uk/our-work/about-us/the-caa-s-environmental-sustainability-panel/>

- Reviewing the current strategic components of the Strategy using a series of scenarios developed by the European Research Establishment in Aeronautics. The Panel provided feedback on the structure and approach of the workshop that will inform how this tool is used more widely across the CAA to support the evolution of the Environmental Sustainability Strategy.
- Discussing with the CAA possible interpretations of the CAA's roles, including advising that the CAA could fulfil its 'leading' role in the environmental sustainability space without necessarily being the organisation doing a particular piece of work.
- Providing technical input on the CAA's proposed development of an environmental sustainability glossary to be included in its refreshed Strategy, to facilitate consistency of messaging, ensuring that environmental sustainability terms and phrases are used accurately.

The impact of this work has been:

- The CAA has been able to develop increased clarity over its potential roles in the environmental sustainability space; and
- Increased knowledge and awareness of environmental sustainability topics and issues, especially around scientifically accurate environmental sustainability terminology.

Providing technical advisory support to the CAA

We have continued to fulfil our role of reacting to requests from a wide range of teams across the CAA for input and expertise on issues and queries arising from its work programme, including by:

- Supporting the Future Safety & Innovation team to explore and prioritise the environmental credentials of a new technology from innovative technology companies, where it currently has minimal regulatory requirement to assess sustainability as part of its certification role.
- Advising the Hydrogen Challenge team on how it can most effectively fulfil its ambition to drive wider understanding of the environmental impacts of hydrogen as a fuel through commissioning academic research.
- Working with the Airspace Modernisation Strategy (AMS) team on a range of sustainability-related issues related to airspace modernisation, including:
 - encouraging the CAA to position itself as a leader to establish a thorough understanding and robust evidence base of the impact of the AMS on environmental sustainability; and
 - considering how to take noise and emissions into account in the implementation of the AMS. The panel has provided insight how, through the fourth AMS objective, environmental sustainability can be an overarching

principle applied across all airspace modernisation activities. This would deliver the Government's key environmental objectives set out in its Air Navigation Guidance and, in doing so, consider the interests of all stakeholders affected by the use of airspace.

- Supporting the Economic Regulation & Competition Policy team to take into account the environment as it begins work towards the next cycle of Heathrow Airport and NATS price controls. This has included encouraging the team to consider how and to what extent price controls could be used as a tool to influence behaviours of regulated companies to drive environmental improvements.
- Advising the Sustainability team on proposals to review the methodologies that are used to assess the impact of airspace change proposals on greenhouse gas emissions, to understand best practice and applicability for different types of airspace change.
- Advising the Sustainability team on approaches for calculating the carbon impact of flights ahead of its consultation on the provision of Consumer Environmental Information.
- Facilitating the CAA to develop its knowledge and consider its ambition in relation to its responsibility to produce the Aviation Environmental Review (AER), including by:
 - providing technical scientific input on its initial AER published in December 2023; and
 - supporting the CAA to consider options for the future development of the AER, including technical input on the different areas of environmental impact. In addition, the Panel has constructively challenged the CAA to be more ambitious to consider the AER as a tool to drive environmental performance in future.

The impact of engaging with such a wide range of teams across the CAA has been:

- Increased knowledge and awareness within the CAA of the environmental impact of aviation, including local impacts from noise and poor air quality, and global impacts from emissions. The Panel has advised each team on issues that they need to consider and the potential unintended consequences of their policy proposals.
- A more robust strategic awareness of environmental sustainability issues, including those from other industries outside of aviation and how these could be relevant to the CAA's work.
- The facilitation of collaborative links that have enhanced CAA's sustainability work, including linking the AMS work with Defra's Science Advisory Council; and

- Supporting the CAA to embed a culture of considering environmental sustainability from the outset of projects and programmes of work.

Collaboration with the CAA's Consumer Panel

There are several areas of aviation where both consumer and sustainability interests intersect; a particular note has been to consider how consumers can have confidence in information that they are provided with on the environmental impacts of flying is based on foundations of scientific evidence. Discussions between the Panel Chairs and secretariats have been on going and there is growing collaboration between the Environmental Sustainability and Consumer and Markets teams in the CAA. This has created increased awareness of where there may be an intersection between sustainability and consumer issues, such as in new and emerging technologies, as well as a more joined up approach to embedding both a sustainability and consumer-focussed culture across the CAA.

Providing strategic input

As a Panel we bring a broad range of expertise and experience, both from aviation and other sectors, that can benefit the CAA. In July 2023 we engaged with the CAA Board and ExCo to agree areas of strategic focus for more in-depth study and support from the Panel over the course of the current work programme. The CAA agreed it would value input from the Panel on:

- Aviation systems thinking – understanding how and when to consider the different environmental impacts of aviation; and
- Understanding sustainability claims made by new technologies, products or services.

Over the course of this report period, we focussed on the first topic. In May 2024, we delivered to the CAA Board a briefing on systems thinking and an interactive systems map of environmental impacts based on a generic commercial flight. These tools gave the CAA a way to visualise the complexity of interconnected systems when considering the environmental impacts of aviation; enables the CAA to consider how environmental impacts do not occur in isolation but must be considered holistically.

In addition to this, we have raised and discussed upcoming issues that we think may have adverse consequences for the aviation sector and as such should be on the CAA's radar. These have included the evidence of environmental credentials of SAF feedstocks, the developing science on the warming effect of non-CO2 emissions and the creation of contrails, airspace efficiencies, the impacts of noise on public health and air quality issues.

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

A fundamental role of the Panel is building the CAA's knowledge, awareness and understanding of environmental sustainability so it is best equipped to consider the implications in its work and most effectively able to carry out its role in facilitating the move to a more environmentally sustainable aviation industry. We aim to provide not only technical knowledge of different environmental impacts and effects but also support the CAA to understand where there are uncertainties in scientific knowledge. We provide the CAA with awareness of the work, and potential strategic value, of the lessons learned and best practices of other organisations and industries, including those outside of aviation.

We worked with the CAA to better understand its existing communication tools and mechanisms that have been proven to work best to ensure that the knowledge and expertise we share can be disseminated and embedded across the organisation. This includes established CAA tools including Lunch & Learn webinars, inputs to the internal Environmental Sustainability Learning Hub blog posts and utilising established meeting forums directed at specific groups of CAA (including the Senior Leadership Team) as opportunities for engagement and knowledge sharing between ourselves and the CAA. With an understanding of these tools, we have developed and agreed a Knowledge Delivery Programme that creates a recognised and proven format for CAA colleagues to receive our inputs. We look forward to further establishing this rhythm of knowledge delivery in our next year of operation.

Continuing to build relationships with the CAA

In our first year of operation to June 2023 we focussed primarily on building strong relationships across the CAA to establish our role as a credible and trusted 'critical friend' to the organisation. We have built these relationships this year with all levels of the CAA and have been pleased to see positive engagement with both new and returning teams.

Being able to establish a rhythm with different teams throughout the lifecycle of a project or programme of work ensures continuity of thinking and a deeper embedding of a culture of thinking about sustainability. We have seen teams return to the Panel several times, demonstrating how the Panel's advice has influenced their work. This shows a stronger relationship between the Panel and the CAA.

The Panel Chair also continues to meet regularly with the CAA Chair and CEO to share perspectives on the CAA's work and role in the environmental sustainability space, and they both attended a Panel meeting this year. The Panel Chair, representing the full Panel, also met with the CAA Board in May 2024 to deliver the Panel's systems thinking work and share the Panel's reflections on the CAA's progress to embedding environmental sustainability thinking across the organisation. This was a constructive discussion where we both recognised the progress and ambition of the CAA in environmental sustainability, and reemphasised how we can support the CAA to achieve delivery of its Strategy.

Panel priorities for 2024-2025

Our current work programme runs until March 2025, and we will be publishing our next work programme running from April 2025 in due course. We expect that this work programme will focus on:

- Implementing our Knowledge Delivery Programme, to help embed environmental considerations deeper into the CAA's thinking.
- Supporting teams across the CAA, including welcoming new teams and projects, to advise on the environmental issues relevant to their projects, explaining the science behind the issue to help understanding of why it is important.
- Supporting and challenging the CAA as it delivers its Strategy and advising on this as it evolves to keep pace with the fast-moving changes in the sector.
- Building on the foundations established in our first two years and looking to future, including the skills and expertise needed to best support the CAA.

Chapter 3

Transparency

Expenditure

The Panel cost £71,158 (excluding VAT) in Chair and member fees and expenses in the year to 30 June 2024. This was paid for by DfT.

Panel meetings

In the year to 30 June 2024, the Panel met formally six times. The minutes of these meetings are published on the CAA website.³

The Panel also met informally five times between the main formal meetings.

Terms of Reference

The Panel's Terms of Reference are published on the CAA website.⁴ These are due to be revised ahead of the next work programme.

³ [The CAA's Environmental Sustainability Panel | Civil Aviation Authority](#)

⁴ [The CAA's Environmental Sustainability Panel | Civil Aviation Authority](#)

Chapter 4

Panel members

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 Environmental Epidemiology and Director of the Population Health Research Institute at City 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 brings 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 (resigned from Panel in February 2024)

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 and Net Zero at Northumbria University. His research focuses on environmental and sustainability assessment of land use, transportation and other developmental policies. His work also focusses on health impacts of air pollution and environmental justice. 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.