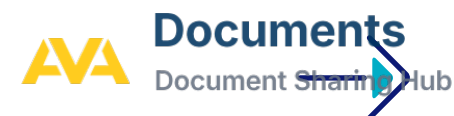


Our areas of work



Read the context and approach
to the strategy [here](#)

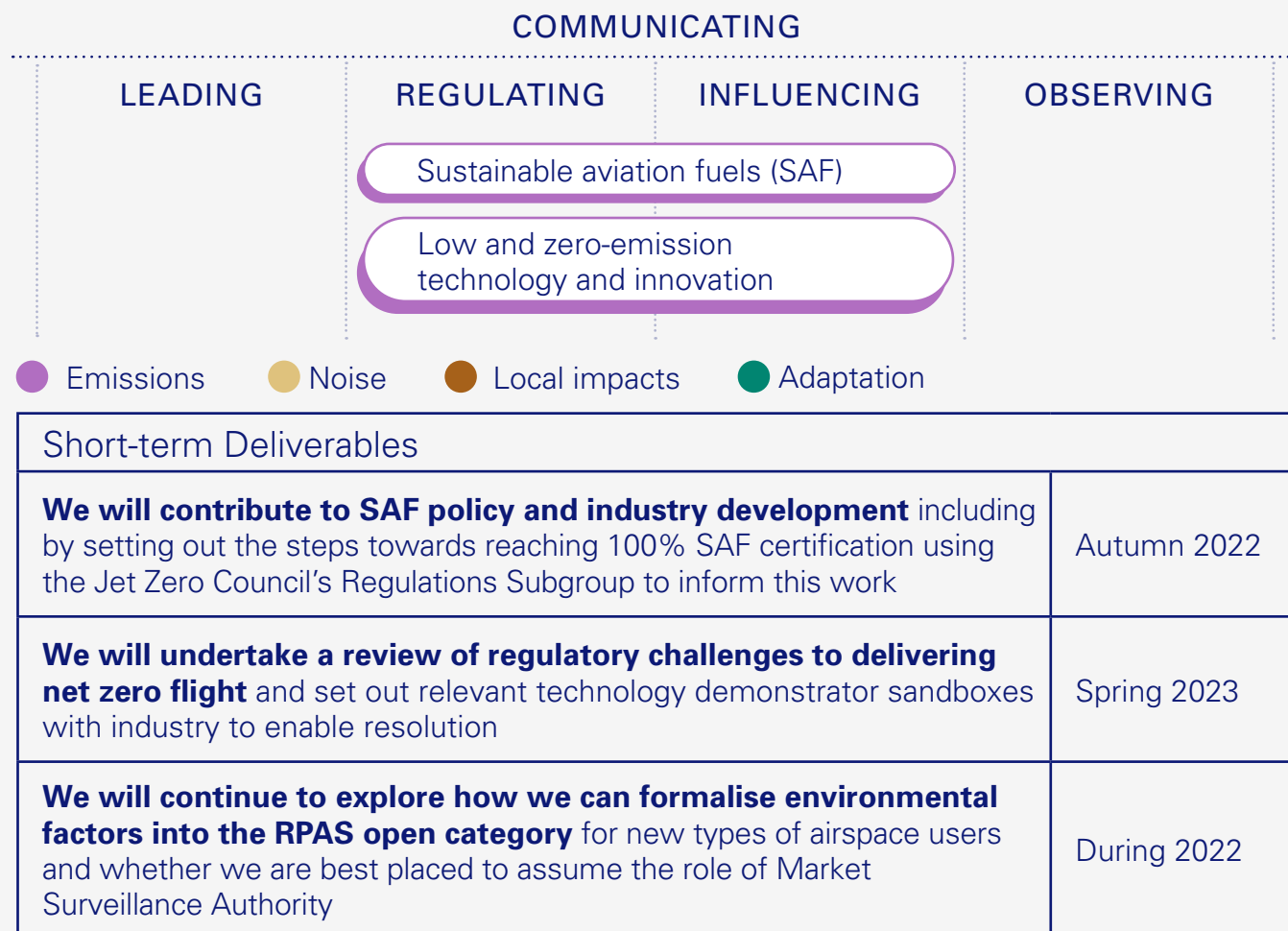
Full document details: UKCAA CAP2361 2022



1 Enabling the development of low and zero-carbon technology and innovation, including sustainable aviation fuels.

KEY MESSAGES

1. The benefit of new technology won't be felt in the short term. Our work creates a platform for carbon reduction in aviation but also across other sectors.
2. We expect our role to change from enabling and facilitating now to certifying in the near future.
3. We need to practice anticipatory regulation and horizon scanning to capture future ambition and disruptors.
4. We need to be tapped in with government, industry and the Jet Zero Council advising on regulation and certification and to ensure regulation is proportionate and standards are maintained.
5. The environmental factors of Remotely Piloted Aircraft System(s) need to be part of the plan.



1 Enabling the development of low and zero-carbon technology and innovation, including sustainable aviation fuels.

Innovative technologies will continue to develop and expand in the next five to ten years, as organisations seek to improve their carbon footprint, save costs and capitalise on opportunities. Government, through the Jet Zero Council, will have an important role in encouraging and incentivising investments in new technology and fuels to guide and support the market in driving for these solutions. But we also have a key role to play to ensure that innovation can be safely, securely and sustainably introduced.

At the moment, this means using our regulatory advisory expertise to create the conditions required for innovation to be brought to market, a role that is more akin to facilitating participation rather than leading industry. And we support the government's early focus on domestic aviation as a stepping-stone to decarbonising the rest of the sector, as short-haul flights bring less complex technological challenges in this space and more flexibility in their

implementation, at the UK's discretion. Beginning to develop and plan today for measures which may require introduction in five or ten years' time to achieve our targets will help to futureproof the strategy, given the considerable uncertainty.

The impact of new technologies and innovation on decarbonisation is currently quite small, as these activities are at an early stage of development. However, our work in this space has the potential to create a catalyst for carbon reduction in other areas of transport, for example with emerging technology aircraft, which are likely to grow significantly over the incoming decade. And we expect our role to change, in response to those developments, from advising on and facilitating activities to certifying those solutions for commercial operation.

We will play our role in driving progress towards the regulation of safe net-zero emission flight through enabling innovators

to develop sustainable aviation fuels and aircraft, and the aerospace industry to safely bring new technology to market.

We will work with Government and the sector on green recovery ambitions, including making the UK a leading country for low carbon aviation innovation and manufacturing. This includes supporting the Jet Zero Council through advising on regulation and aircraft certification for new types of aircraft required to deliver net-zero aviation by 2050, and designing regulatory frameworks for the safe introduction of new technologies and fuels.

We will work with industry in the coming years to understand and anticipate ambitions and horizon planning for decarbonisation and implications for legacy hydrocarbon aviation systems as we transition to zero-emission technology, ensuring regulation remains proportionate and standards are maintained or improved.

1 Enabling the development of low and zero-carbon technology and innovation, including sustainable aviation fuels.

Sustainable Aviation Fuels (SAF) Roadmap

In the short-to-medium term, sustainable aviation fuels offer the best prospects for mitigating the carbon impact of the sector, and that is why the current focus is on scaling production. The Jet Zero Council aims to support the development and commercialisation of the UK SAF sector.

We will contribute expertise to accelerate the delivery of specific SAF policy and industry outcomes, working with international partners who have some responsibility for licencing of those products. We will also support government's upcoming SAF mandate and wider policy that will create the roadmap to the production and commercialisation of sustainable aviation fuels.

We will explore an ecosystem view based on key stakeholders for introducing up to 100% blends and widespread use of SAFs in the UK aviation sector (based on Government mandates and industry developments).

We will agree the role of the CAA in enabling the above and managing safety risks – including identifying timelines and resource requirements for cross-CAA decision making.

Review of Net Zero Regulatory Challenges

We will build on the Signals and Trends market intelligence report and initial Net Zero projects to identify regulatory challenges including format and structure for presenting challenges, likely ICAO Forum 2023. We will agree the role and actions for CAA to address regulatory challenge and timeline required against industry developments and/or applicable government mandates.

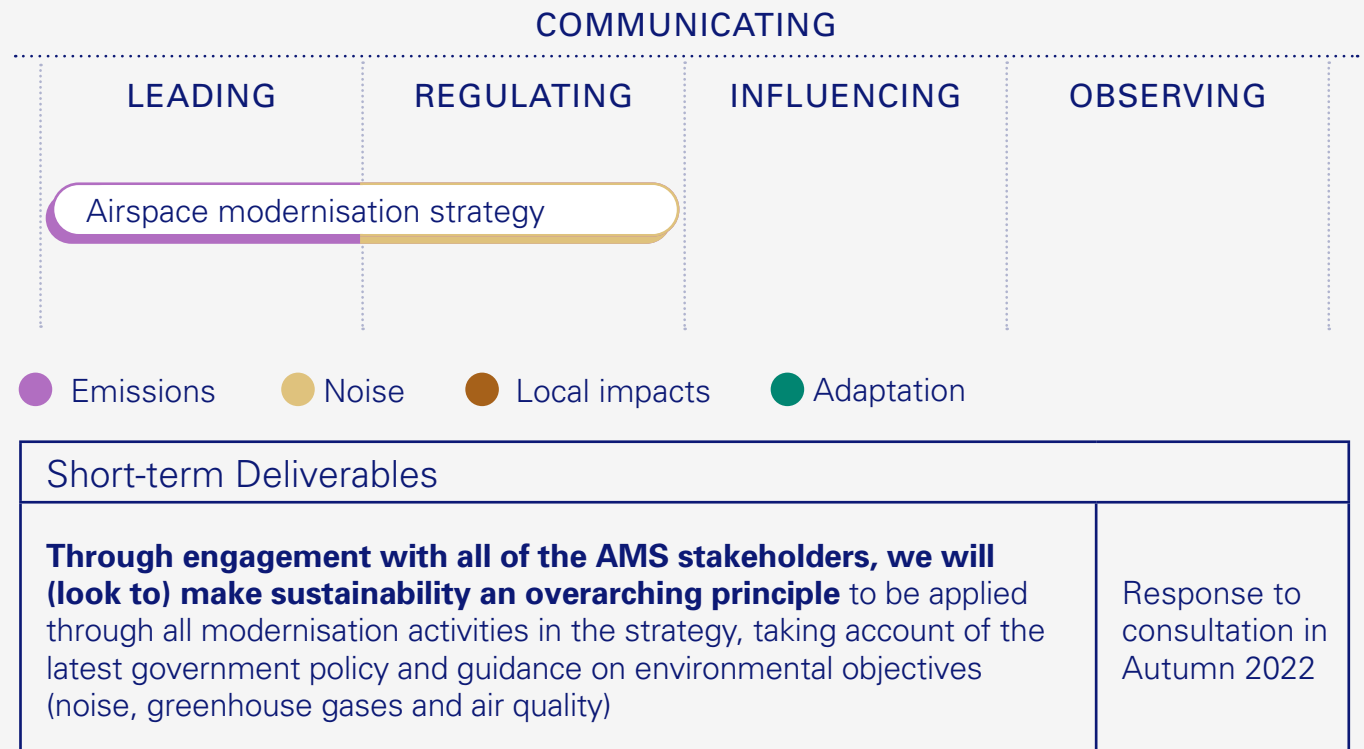
Remotely Piloted Aircraft Systems (RPAS) open category Market Surveillance Authority (MSA)

We are exploring internally whether we are best placed to assume the role of MSA. If the outcome is positive, as part of our future role of MSA, we could include scope to oversee how parts from Remotely Piloted Aircraft System(s) can be re-used and recycled, including battery recycling. We would also actively suggest this if another agency takes on the role.

2 Co-leading the modernisation of the airspace

KEY MESSAGES

1. The benefit of more efficient and direct routes to carbon reduction (and noise) is only small – 5% estimate.
2. But it is important as it can be realised without new technologies or SAF.
3. There are trade-offs, such as more efficiency = more capacity = more carbon.



2 Co-leading the modernisation of the airspace

The Airspace Modernisation Strategy (AMS) is aimed at delivering cleaner, quicker and quieter journeys and more capacity for the benefit of those who use and are affected by UK airspace. Airspace modernisation has an expected delivery timescale of 2040 and is co-sponsored by the CAA and the Department for Transport.

The government believes that airspace modernisation will form a significant part of its Jet Zero Strategy for short- to medium-term measures, allowing aviation to meet increasing demand in a sustainable way, including helping the UK meet its climate change obligations.

There are several environmental improvements that airspace modernisation will bring, such as reduced fuel burn and emissions per flight through more efficient flightpaths and more frequent continuous ascent and descent, as well as less need for holding due to better management

of arrival times through optimised routes and speeds. Modernisation could also enable aircraft to climb more quickly, descend more quietly, and to navigate more accurately around population centres or other noise-sensitive areas.

Airspace and Air Traffic Control procedure modernisation has the potential to reduce airspace related fuel burn/CO₂ emissions by around 20%, which represents around 4-5% of the UK's total aviation related CO₂ emissions. Whilst a relatively modest impact on overall aviation related carbon emissions, the AMS is important as it can be realised with current aircraft, without using sustainable aviation fuels or technologies that are not yet in widescale commercial use (although both would obviously maximise impact).

On the other hand, we recognise that a more efficient use of airspace will generate additional capacity, in turn potentially leading to more flights and increased emissions. We recognise we will have to consider these different factors in our work.

We will continue to keep the context for the AMS under review and update it where necessary, particularly as technological innovations are forthcoming or become ubiquitous, gaps in the policy or regulatory framework emerge that are affecting delivery, or where the Government has signalled upcoming of widescale policy developments such as net zero.

2 Co-leading the modernisation of the airspace

We are bound by government policy when assessing proposed changes to the airspace design. We are required to take into account the Department for Transport's Air Navigation Guidance to the CAA on its environmental objectives when carrying out its air navigation functions.

In our consultation on the refresh of the Airspace Modernisation Strategy, we have proposed a revision to the way we articulate our strategic objectives for airspace modernisation in respect of sustainability.

The revision proposes we introduce sustainability as an overarching principle to be applied through all modernisation activities, taking account of the latest government policy and environmental guidance, which may change over time. Our commitment to this strategic objective and to relevant law and policy is thus much more visible.

The aim of this approach is to achieve better management of noise and help meet government commitments to net zero emissions, and our focus will be meeting the challenge of enabling delivery of the strategy.

The CAA and Department for Transport cannot deliver these alone: airspace modernisation will need to be delivered collaboratively by a range of aviation organisations, such as air navigation service providers, airports, airlines, manufacturers, representative organisations and, where appropriate, bespoke delivery bodies. A wider range of other stakeholders will need to be engaged throughout this transition.