JET ZERO STRATEGY

CONSULTATION BRIEFING NOTE

1. This DfT consultation closes on 8/9/21. Responses can be on-line or via email. The consultation consists of a main document and an evidence and analysis document (link below):

   https://www.gov.uk/government/consultations/achieving-net-zero-aviation-by-2050

Ambition

2. This is two-fold:

   i) to decarbonise aviation in a way that preserves the benefits of air travel, and
   ii) to maximise the opportunities that decarbonisation can bring.

3. The Government has legislated for net zero emissions across the economy by 2050 and has agreed with the Climate Change Committee (CCC) on a 78% reduction in emissions by 2035 (1990 levels) in Carbon Budget 6. Aviation will be the second highest residual emitter by 2050. The strategy will have knock-on benefits in reducing non-CO^2 impacts and noise and improving air quality.

Jet Zero Delivery

4. Delivery is underpinned by three principles:

   i) <u>Clear Goal, Multiple Solutions</u>,
   ii) <u>International Leadership</u>, and
   iii) <u>Delivery in Partnership</u>.

Clear Goal, Multiple Solutions

5. This will be a combination of sustainable aviation fuels (SAF), zero emission aircraft and greenhouse gas removal (GGR) technology. The development of all three will be accelerated such that by 2030 there is a clearer picture of what is needed to achieve Jet Zero.

6. The Government will set a CO^2 emissions reduction trajectory for aviation from 2025 to 2050 as follows – there are two optional trajectories that can be used:

	2030	2040	2050	
In-sector CO^2 emissions	39 Mt	31 Mt	21 Mt	Any residual emissions removed by GGR methods
Net CO^2 emissions	23-32 Mt	12-19 Mt	0 Mt	Offsetting and removals are considered as part of the target

7. The strategy, which will be reviewed every five years, sets out four illustrative pathways to net zero aviation in 2050, these are:

   i) continuation of current trends,
   ii) high ambition,
   iii) high ambition with a breakthrough on SAF, and
   iv) high ambition with a breakthrough on zero-emission aircraft.

8. All four pathways involve some element of abatement outside the aviation sector (such as through GGR). The most is in scenario i) – 36 Mt or 62.7% of total sector emissions in 2050. The least is in scenario iii) – 9 Mt or 15.2%. The assumptions used in each of the pathways are set out fully in the evidence and analysis document. The Government is also consulting on an earlier target for UK domestic aviation to reach net zero by 2040.

International Leadership

9. 96% of the UK's total of aviation emissions in 2019 were from international flights – 37 Mt out of a worldwide total of 627 Mt (about 6%). The Government intends to work through ICAO to agree ambitious emissions goals and effective mitigation measures for the entire global sector, including:

   - a global long-term goal for international aviation CO^2 emissions consistent with the Paris Agreement,
   - strengthening of CORSIA, and
   - adoption of policies that support the use of truly sustainable fuels.

Delivery in Partnership

10. The Government intend to work closely with Sustainable Aviation (SA) and others. SA has published its 2020 plan for 2050 net zero with interim targets.

The Jet Zero Council's[1] priorities are zero emission flights and SAF.

Measures

11. The strategy plans action across five different measures as set out below.

System Efficiencies

12. This involves aircraft, airports and airspace and should deliver between 25-36% of CO^2 emissions savings over the short and medium term. These efficiencies should also allow immediate improvements in noise and air quality.

13. The strategy's new policy proposals are:

- all England's airport operations should be zero emission by 2040 (scope 1 and scope 2 emissions)[2]
- to seek a voluntary agreement from all airlines to avoid tankering where there is no practical reason to carry additional fuel
- possible wider changes to incentivise efficiencies such as differential charging regimes and new regulations for operations such as formation flight.

Sustainable Aviation Fuels

14. These should bring about medium to long term emissions savings and are the only option for savings on long haul flights to 2050. The government's vision is to scale up SAF use over the coming years on flights that may be more challenging to operate by zero emission aircraft, reducing dependence on imported oil and creating new green jobs across the UK.

15. The strategy's new policy proposals are:

- to consider whether further policies are needed to provide SAF producers with greater confidence to encourage UK production
- to continue to negotiate in ICAO for comprehensive SAF standards and a future global SAF objective, including working with smaller groups of states
- to look at the feasibility of using SAF on UK public service obligation routes
- to undertake a SAF-specific review by 2030 and to use it to confirm a SAF trajectory to 2050
- to work across Government to pioneer the accelerated procurement and use

[1] The Jet Zero Council is a partnership between industry and government to bring together minsters and chief executive officer-level stakeholders, with the aim of delivering zero emission transatlantic flights within a generation.
[2] Scope 1 emissions are those owned and controlled by the airport operator, such as energy generation and airport vehicles. Scope 2 emissions are those from the off-site generation of energy purchased by the airport operator.

of SAF

Zero Emission Flights

16. The Government considers that a range of hydrogen-electric and battery-electric aircraft could enter the sub-regional and general aviation markets this decade.

17. The strategy's new policy proposals are:

- to ensure the UK is at the forefront of deploying zero emission aircraft (zero emission routes operating by 2030)
- to look at the feasibility of using zero emission aircraft on UK public service obligation routes
- to work with industry to encourage the adoption of innovative zero emission aircraft and aviation technology in general aviation
- to work through the Jet Zero Council to consider the wider enabling framework for zero emission flight

Markets and Removals

18. The government states that the implementation of carbon markets and GGR technologies are vital to achieving Jet Zero. Of GGR, the Government says:

"To achieve net zero by 2050, analysis from the CCC shows that a mix of engineered and nature-based GGRs will be required to balance residual emissions from aviation and other difficult-to-decarbonise sectors, such as agriculture and certain heavy industries.

GGRs are not yet implemented at commercial scale, either in the UK or globally, and forecasts of costs and scale-up potential are highly uncertain. Demonstration of early-stage GGR solutions in the coming years will help to refine the Government's current assessment of GGR costs and the role they will play in achieving net zero. Work is ongoing to assess how the aviation sector could interact with GGRs for example through bilateral agreements with GGR producers or through markets".

19. The strategy's new policy proposals are:

- to strengthen carbon pricing for aviation to ensure the "polluter pays" principle is maintained and to consider incentives for GGR
- to explore how the UK can support other states that may need help with CORSIA implementation

Influencing Customers

20. The Government wants to preserve the ability of people to fly whilst supporting consumers to make sustainable travel choices. There is currently much uncertainty over the longer-term effects of the pandemic on demand.

21. The Government does not believe that it will need to directly intervene to limit aviation growth in order to achieve Jet Zero. The focus will be on new fuels and technology and their economic and social benefits. The cost of fuel and carbon pricing will themselves help to reduce demand. The CAA has recently launched a research project to explore the feasibility and utility of sharing carbon information with consumers to enable better decision-making.

22. The strategy's new policy proposals are:

- to work with the CAA to explore whether mandating the provision of environmental information when flights are booked could influence consumer decision-making
- to look at other ways to support consumers to make sustainable choices when booking flights and reward those parts of the aviation sector that move to decarbonise more quickly

<u>Non-CO^2 Impacts</u>

23. These include condensation trails and NOx emissions, though there is low confidence in the magnitude of their warming effect. The Government says it is working in four ways to address the non-CO^2 impacts:

- where there is evidence that system efficiency measures have a negative impact on reducing non-CO^2 emissions, it will carefully consider the overall impact on the climate
- it will ensure that the latest scientific understanding of aviation non-CO^2 impacts is used to inform policy
- it will continue to negotiate with ICAO for an improvement in aircraft emissions regulations as well as considering operational guidance and regulation of fuel composition
- it will consider whether it would be beneficial to undertake UK-based trials on contrail prevention (by considering the outcomes of EUROCONTROL's trial)

<u>Consultation Questions</u>

24. There are fifteen questions. These are set out below:

1. Do you agree or disagree that UK domestic aviation should be net zero by

2040? How do you propose this could be implemented?

2. Do you agree or disagree with the range of illustrative scenarios that we have set out as possible trajectories to net zero in 2050? Are there any alternative evidence-based scenarios we should be considering?

3. Do you agree or disagree that we should set a CO_2 emissions reduction trajectory to 2050?

    a . Should the trajectory be set on an in-sector CO_2 emissions basis (without offsets and removals) or a net CO_2 emissions basis (including offsets and removals)?

    b. Do you agree or disagree with the possible trajectories we set out, which have in-sector CO_2 emissions of 39 Mt in 2030, and 31 Mt in 2040 and 21 Mt in 2050, or net CO_2 emissions of 23-32 Mt in 2030, 12-19 Mt in 2040 and 0 Mt in 2050?

4. Do you agree or disagree that we should review progress every five years and adapt our strategy in response to progress?

5. Do you agree or disagree with the overall approach to improve the efficiency of our existing aviation system?

6. What more or differently could be done to ensure we maximise efficiency within the current aviation system?

7. Do you agree or disagree with the overall approach for the development and uptake of SAF in the UK?

8. What further measures are needed to support the development of a globally
competitive UK SAF industry and increase SAF usage?

9. Do you agree or disagree with the overall approach for the development of zero emission flight in the UK?

10. What further measures are needed to support the transition towards zero emission aviation?

11. Do you agree or disagree with the overall approach for using carbon markets and greenhouse gas removal methods to drive down CO_2 emissions?

12. What could be done further or differently to ensure carbon markets and greenhouse gas removal methods are used most effectively?

13. Do you agree or disagree with the overall focus on influencing consumers?

14. What more can the Government do to support consumers to make informed, sustainable aviation travel choices?

15. What could be done further or differently to ensure we tackle non-CO2 impacts from aviation?

Acknowledged Uncertainty

25. It is interesting to word search on “uncertain” or “uncertainty” in the consultation document. This produces the following (with paragraph or page references in brackets):

Costs of SAF are high and uncertain (para 3.16)

Forecasts of costs and scale-up potential of GGRs are highly uncertain (page 36)

Uncertainty regarding the future technological mix of the pathways (para 2.8) - *and the short-term Covid uncertainty over* CO^2 *emissions*

The exact scale of the net warming effect of condensation trails has a large degree of uncertainty (para 4.2)

Quite a lot to resolve between now and 2030 or so!

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