



Jet Zero: further technical consultation

Consultation Response

April 2022

1. Summary

This submission summarises Transport and Environment (T&E's) views in response to the questions posed in the Department for Transport's [Jet Zero: further technical consultation](#). T&E is Europe's foremost sustainable transport think tank and environmental group. It is a federation of almost 60 national organisations across the UK and Europe campaigning for greener transport. Our work has informed and influenced key national and European Union policies and we regularly brief UK Government Ministers and ministries, other officials and other key stakeholders on the steps needed to decarbonise transport. It has had a UK office since 2019. T&E coordinates the International Coalition for Sustainable Aviation, which has observer status at the International Civil Aviation Organisation (ICAO); and is also an active member of the Jet Zero Council's SAF Delivery, commercialisation and zero-emission plane policy groups.

T&E [provided a response](#) to the original Jet Zero consultation, and therefore will not provide any evidence here that was contained in that response. However, there have been new developments in a number of different areas. The Department for Transport should be commended for its thoroughness in revising its scenarios, and the consultation document rightly describes some of the new evidence that has been published, but does not describe it all.

1.2 Non-CO2 Impacts

There have been a number of developments around the non-CO2 climate impacts caused by planes. Whilst the original consultation stressed it was focussed on carbon reduction only, non-CO2 effects are influenced by SAF. Furthermore, it is inconceivable that the aviation industry will be allowed to carry on causing these effects with impunity. At the very minimum, should there still be non-CO2 impacts in 2050, they will have to be offset - probably via greenhouse gas removals (GGRs). Therefore this new non-CO2 evidence is directly relevant to this consultation.

A [March 2022 study of flights over the North Atlantic](#) found that, of the 2.1m flights analysed, 1.3m (62%) formed contrails, of which 80% of these had a warming effect (50% of flights in total). Contrails are formed by ice forming around impurities that are ejected from a plane's engines into the atmosphere. Crucially, SAF contains less of these impurities, and therefore any policy that increases the amount of SAF

uplifted in the UK should also decrease the contrails that trail planes.¹ Consideration should be given to ensuring that, whilst SAF is still scarce (eg under 25% of total fuel supply) it is specifically supplied to flights that cross the Atlantic as half of these flights are known to cause additional climate damage.

Furthermore, at a recent [March 2022 Non-CO2 conference](#) in Brussels, there was general consensus that reducing aromatics, naphthalene and sulphur in fossil jet fuel is a technically and economically viable solution, which will reduce both UK aviation's air quality impacts and climate impacts in the short-term. Any credible Jet Zero strategy should involve regulating and imposing an upper limit on aromatic levels contained in fossil jet fuel. ICAO suggests that fuel should contain a minimum of 8% aromatics, so a credible UK policy could limit aromatic levels to no more than 16%, whilst keeping well within current safety levels.

Paragraph 3.4 of the Technical Consultation states “*we are improving our understanding of these impacts and will ensure that the latest scientific understanding of aviation non-CO2 impacts is used to inform our policy.*” However, it is well-known that, overall, non-CO2 impacts from aviation are causing a dramatic warming effect: the uncertainty lies in just how large an impact this is. The two developments above, combined with the longstanding precautionary principle, should suggest that any credible Jet Zero strategy should contain *something* on reducing the non-CO2 impacts from aviation.

1.3 Zero-Emission Aircraft

Perhaps the most important development of the last nine months is one already highlighted in the technical consultation. The Aerospace Technology Institute (ATI) presented its zero-emission aircraft findings. Contrary to perceived wisdom, it concluded that long-range hydrogen aircraft are technically possible. The problem now therefore is how to shift the aviation industry away from its current fleet of polluting planes into a new breed of climate-friendly aircraft. This followed [analysis from the ICCT](#) that found that hydrogen combustion aircraft entering service in 2035 could reduce emissions from aviation by 6-12% by 2050.

T&E published a [UK-focussed policy paper](#) in January 2022, laying out a plan as to how to dramatically increase the amount of zero emission aircraft and SAF being used by UK aviation. With this new evidence from the ATI and the ICCT, that plan should be given further consideration. This would ensure that some of the outcomes detailed in the consultation scenarios would be more likely to happen.

1.4 Legally-binding 2035 Targets

No consideration is given to the UK's legally binding 2035 target of reducing total national territorial emissions by 78% compared to 1990 levels. All proposed scenarios have either no, or relatively little, emissions reduction by 2035 against 2019 levels, and all scenarios are therefore far above 1990 levels (17 MT CO2e), let alone contributing to the UK's 2035 target. By 2035, international aviation (and shipping)

¹ It should be noted that the amount of carbon emitted by burning SAF is still the same as the amount emitted by burning fossil jet fuel.

emissions will be included in the UK's national carbon budgets: this means that any reduction not assigned to aviation must be compensated for elsewhere. Whilst it is entirely conceivable that this is outside the scope of this technical consultation, the Government's Jet Zero strategy should explain which sectors will 'cover' UK aviation's shortfall.

Below are specific answers to the questions posed:

1. 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? (question 2 of the initial consultation)

The scenarios are all realistic, and it is welcome that one of the scenarios now gets in-sector emissions to zero by 2050. However, the question should be how to craft UK policy to ensure that zero is the outcome. Since the Government controls the policy levers that would ensure the best possible outcome, scenarios should be predicated on different Government policies being applied.

Of the four scenarios, it is inconceivable that no decarbonisation policies will be applied to the sector, and so T&E questions why this is included and not a 'low ambition' scenario. Additionally, all scenarios use the mid-price ETS scenario: why has each scenario not been replicated using low and high ETS price points? This is especially relevant as the UK ETS currently has an auction reserve price (ARP) of £22: since the Government has proved - via its current ARP policy - that minimum ETS allowance prices are under the control of the government, it can do so again in the future. [T&E previously suggested](#) that the ARP is simply raised annually to ensure that allowance prices in the future drive decarbonisation. To guarantee a high ambition price of £568 per allowance in 2050 (the consultation's illustrative high price), the ARP should rise by £20.22 per annum from 2023.

Some specific points also need raising:

- There is only one SAF production pathway (green hydrogen derived from zero-carbon electricity combined with direct-air-captured carbon) that reduces lifecycle carbon emissions of SAF by 100%, yet the focus of all current firmly proposed commercial plants in the UK, and the SAF delivery groups that T&E sit in has been on other pathways. The consultation presumes that all SAF will reduce carbon emissions by 100%, but this is clearly not the case now, and will not be the case for at least the next decade. T&E questions why this consultation uses this assumption.
- CORSIA is scheduled to finish in 2035, and the price of an offset is predicted to be low: Indeed, under [ICAO's own \(May 2021\) "high" price scenario](#), an offset would only cost \$15 in 2026 (which is inconsequential when compared to the recent ([18th February 2022](#)) high UK ETS price of £88). Given this, it is hard to understand how the Department for Transport has derived its values for a post-2035 CORSIA scheme, especially considering that the 'high' prices rise from £147 per tonne in 2035 to £203 per tonne in 2037: a 38% increase in price immediately following the end of the

scheme! The ‘current trends’ scenario should not include any CORSIA (or similar global price mechanism) price in it post-2035, and it is questionable if the other scenarios should include the CORSIA price.

- Additionally, given that the CORSIA price would only be applied to (only some) long-haul flights which are not covered by the UK ETS, and that the bulk of the UK aviation emissions come from long-haul, this leaves a serious ‘implementation gap’ in the scenarios.

2. Do you agree or disagree with the possible trajectories we set out, which have in-sector CO2e 3 emissions of 36Mt in 2030, 28Mt in 2040 and 15Mt in 2050, or net CO2e emissions of 24-29Mt in 2030, 12-17Mt in 2040 and 0Mt in 2050? (question 3b of the initial consultation - values updated in line with the new analysis)

Since these are possible scenario trajectories, then they are all reasonable. However, as demonstrated above T&E questions why other scenarios have not been included. The aim of any decarbonisation strategy should be to reduce in-sector emissions to zero: where are the other possible trajectories that, for instance, attain this goal in the 2040s? In particular, why is there no trajectory that includes a reduction in the growth of demand? This scenario is clearly possible: businesses and corporations are adapting to a new post-covid way of working (via video-conferencing), which will have an impact on flight demand.

3. Do you have any other comments in relation to the updated illustrative scenarios?

No other comments.

Further information

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