Committee on Climate Change

Independent advice to government on building a low-carbon economy and preparing for climate change

Building a zero-carbon economy – Call for Evidence

Question and response form

Response from the Aviation Environment Federation

When responding, please provide answers that are as specific and evidence-based as possible, providing data and references to the extent possible. Please limit your response to a maximum of 400 words per question.

Part 1: Climate Science

Question 1 (Climate Science): The IPCC's Fifth Assessment Report and the Special Report on 1.5°C will form an important part of the Committee's assessment of climate risks and global emissions pathways consistent with climate objectives. What further evidence should the Committee consider in this area?

ANSWER: In terms of the challenge of tackling global aviation emissions, please see ICAO CO2 projections for international aviation out to 2050 https://www.icao.int/environmental-protection/Documents/ICAO%20Environmental%20Report%202016.pdf

Question 2 (CO_2 and GHGs): Carbon dioxide and other greenhouse gas gases have different effects and lifetimes in the atmosphere, which may become more important as emissions approach net-zero. In setting a net-zero target, how should the different gases be treated?

ANSWER: While CO2 has a longer-lasting impact than other species emitted, the latest IPCC report suggested that the target date for avoiding a 1.5 degree temperature threshold should be 2030.

Aviation has unique non-CO2 impacts that are not included in the basket of GHGs commonly reported by the UK Government. Given their relatively short-lived nature, the climate impact of these aviation non-CO2 impacts depends on the time horizon selected, with shorter time horizons increasing the magnitude and significance of the impact in most cases. Given the IPCC advice regarding a 2030 temperature-based threshold, this would suggest using a temperature-based metric with a short time horizon.

While non-CO2 impacts have a less significant cumulative effect than CO2, if air traffic volumes continue to grow then the quantity of non-CO2 emissions at any given point in

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time risks also increasing. We understand that the DfT will be publishing updated information on aviation's non-CO2 impacts alongside the Aviation Strategy Green Paper in December 2018.

Part 2: International Action

Question 3 (Effort share): What evidence should be considered in assessing the UK's appropriate contribution to global temperature goals? Within this, how should this contribution reflect the UK's broader carbon footprint (i.e. 'consumption' emissions accounting, including emissions embodied in imports to the UK) alongside 'territorial' emissions arising in the UK?

ANSWER: Irrespective of whether aviation emissions are best accounted for in national plans (and NDCs) or somehow taken out of national plans and accounted for separately, aviation emissions should, we argue, be attributed to the UK on the basis of all departing flights, in line with IPCC reporting guidelines.

Question 4 (International collaboration): Beyond setting and meeting its own targets, how can the UK best support efforts to cut emissions elsewhere in the world through international collaboration (e.g. emissions trading schemes and other initiatives with partner countries, technology transfer, capacity building, climate finance)? What efforts are effective currently?

ANSWER: The UK should use its influence and Council membership to advocate for ICAO to set a long-term climate goal for international aviation in line with net zero. It should also use the three-yearly reviews of CORSIA to strengthen the 2020 carbon neutral growth baseline for offsetting in line with a pathway to deliver the long-term goal. In the short-term, the UK should encourage and support ICAO decisions that ensure that only offset credits with high environmental integrity and sustainability benefits are deemed eligible for use in CORSIA.

Domestically, it should show leadership and ambition by acting as if this will happen ie it should adopt a domestic planning assumption for aviation, and measures, in line with what it wants to happen globally, and, in the event of delays in setting global policies through ICAO, it should look to extend the emissions coverage of UK domestic arrangements by seeking bilateral and multilateral agreements with other states or groups of states.

Question 5 (Carbon credits): Is an effective global market in carbon credits likely to develop that can support action in developing countries? Subject to these developments, should credit purchase be required/expected/allowed in the UK's long-term targets?

ANSWER: We are concerned that the Government may soon propose a net aviation planning assumption for 2050 that can be met through the purchase of offset credits. The risk is that in the absence of any more challenging interim target or plan, and with access to uncapped voluntary offset programmes, the price signals arising from CORSIA will be

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too low to drive aviation efficiency improvements, new technologies and sustainable synthetic and biofuels.

It is also unlikely to act as a tool to moderate aviation growth in the short to medium term, while there is a credibility issue in terms of telling the public that aviation emissions are under control while the sector receives strong government support to grow. Both factors could build a 'culture of flying' or 'flying dependency' that may make it politically impossible for carbon pricing to reign in aviation activity in the future without very strong public opposition.

There is a need for realism around the scalability of UK offsetting schemes related to peatland restoration, such as that proposed by Heathrow as part of its carbon neutral pledge relating to a third runway. While investment in peatland restoration is clearly needed, this should not be regarded as anything other than a very partial solution to meeting the aviation emissions challenge. We are particularly concerned about the potential for double counting of any CO2 reductions as a result of peatland restoration, or other land use based credits, if these reductions appears in both the UK GHG Inventory and CORSIA, unless appropriate accounting adjustments are made.

Part 3: Reducing emissions

Question 6 (Hard-to-reduce sectors): Previous CCC analysis has identified aviation, agriculture and industry as sectors where it will be particularly hard to reduce emissions to close to zero, potentially alongside some hard-to-treat buildings. Through both low-carbon technologies and behaviour change, how can emissions be reduced to close to zero in these sectors? What risks are there that broader technological developments or social trends act to increase emissions that are hard to eliminate?

ANSWER: It is clear that aviation remains a hard to decarbonise sector, which is anticipating significant global growth. Even in the UK, the Government's constrained forecasts estimate that UK passengers will have risen to 410mppa by 2050 (from 227mppa in 2005). It is equally clear that the UK Government is currently not expecting to see aviation emissions reduce in real terms and its current projections with Heathrow expansion show that emissions will continue to rise to around 40 Mt by 2050. The Government has indicated that it plans to permit the industry to claim participation in CORSIA as a means of limiting emissions to 37.5 Mt by 2050. We consider this to fall along way short of the action needed on aviation.

We note that both the Carbon Transparency Initiative and WWF-UK have recently published analyses of how to reach net zero – at an EU-wide and UK-wide scale respectively – including emissions from international aviation. The CTI report is here https://europeanclimate.org/wp-content/uploads/2018/09/NZ2050-from-whether-to-how.pdf, and the associated web tool is here https://stakeholder.netzero2050.eu. We note that while one of the three illustrative scenarios developed for meeting a net zero target allows aviation demand to increase, the report summary for aviation states the following: "Levers like biokerosene and e-fuels are still in development phases and it will be extremely difficult to decarbonise transport fully without them. Electrification of shipping and aviation is assumed to be at a very early stage, and will only take off after 2040. Hydrogen alternatives

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for all vehicles also require further up-scaling and commercialisation. Societal innovation needs to be encouraged to reduce the demand for transport, which requires changes in the way our societies are organised, improvements in shared transport systems and office infrastructure (distributed work places), as well as strong political signals to reduce passenger aviation demand and favour
local consumption."

We understand that WWF-UK will be submitting detailed evidence from its report.

We will be interested to see the results of the technology report co-commissioned by CCC and DfT for aviation. We note that while it is generally assumed that technology developments will reduce emissions (whether radically or incrementally), there is also a realistic prospect that a new generation of energy-intense supersonic business jets and commercial aircraft could be entering service, with demonstrators likely to take to the air as early as next year. In IPCC's 1999 Special Report on Aviation and the Global Atmosphere, it was estimated that supersonic aircraft flying at higher altitudes could result in climate impacts that would be approximately six times greater than subsonic aircraft. A recent report from the International Council for Clean Transportation (ICCT) has also examined the environmental performance of emerging supersonic transport aircraft https://www.theicct.org/sites/default/files/publications/Environmental_Supersonic_Aircraft_20180717.pdf

Question 7 (Greenhouse gas removals): Not all sources of emissions can be reduced to zero. How far can greenhouse gas removal from the atmosphere, in the UK or internationally, be used to offset any remaining emissions, both prior to 2050 and beyond?

ANSWER: Heathrow Airport has recently shown interest in the potential for investment in UK peatland restoration as a means of offsetting (a) some of the emissions associated with the airport's infrastructure and (b) emissions from flights, with potential eligibility under CORSIA. Aviation is very unlikely to fully decarbonise prior to 2050 and the production process for sustainable synthetic fuels, and the electrification of aircraft, will remain energy intensive. The extent to which it is possible to accommodate aviation in a net zero future will therefore depend to a large extent on the UK's ability both to generate negative emissions, and to fully decarbonise other sectors of the economy.

Question 8 (Technology and Innovation): How will global deployment of low-carbon technologies drive innovation and cost reduction? Could a tighter long-term emissions target for the UK, supported by targeted innovation policies, drive significantly increased innovation in technologies to reduce or remove emissions?

ANSWER: Despite a relatively weak CO2 standard for new aircraft, airlines argue that they already have a strong financial incentive to invest in aircraft that are more fuel efficient because of the high cost of fuel. There are currently only very weak market signals, however, for airlines to buy alternative fuels (which are significantly more expensive than

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kerosene) or to invest in development of more radical technologies that could cut emissions in the longer term. Aircraft fuel efficiency is not always prioritised in airlines' purchasing decisions, with aircraft range and comfort sometimes taking priority.

The UK is proud of its aerospace manufacturing capability and history. A tighter emissions target that explicitly includes aviation, together with appropriate innovation funding, could, we hope, help to ensure that some of the more radical technologies, such as electrification, can be brought to market as quickly as possible. It should also be noted that there is industry and independent evidence to suggest that decarbonisation of the aviation sector will require a strong carbon price to deliver in-sector reductions at scale.

Given the limits to how much impact such technologies are likely to have on total aviation emissions, however (with electrification likely to be confined to short-haul flights for example), as well as their early stage of development, it seems likely that some demand constraint for aviation will also be necessary.

Question 9 (Behaviour change): How far can people's behaviours and decisions change over time in a way that will reduce emissions, within a supportive policy environment and sustained global effort to tackle climate change?

ANSWER: While our work focuses on government policy, we are interested in how conversations about flying less can be broached. We have noted in recent months, for example, both Steve Westlake's work suggesting that knowing someone has given up flying for climate reasons can have a powerful impact on your own flying choices https://drive.google.com/file/d/1GHMzLpkPVJ-a2fifjswLxxqAqTEllVNs/view, and the initiative by two Swedish women to ask people to commit not to fly in 2019 https://www.bbc.co.uk/news/video_and_audio/headlines/46362159/the-two-swedish-mums-who-want-people-to-give-up-flying-for-a-year.

Question 10 (Policy): Including the role for government policy, how can the required changes be delivered to meet a net-zero target (or tightened 2050 targets) in the UK?

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ANSWER: AEF has heavily criticised the failure of successive governments to set out a climate change policy for aviation that ensures that the sector's emissions do not exceed the level of the CCC's planning assumption for the sector. We have argued that it is unsatisfactory for the Government to say that because aviation emissions are international, the solution should be international. In particular we note that whether measures are taken at a domestic or global level, or both (as is likely to be necessary), the consequence in terms of overall UK ambition, including for other sectors, will be the same. If aviation is not to be accounted for domestically then targets for other sectors will (still) need to increase in stringency in order for the UK to play its fair part in delivering global climate ambition. With all countries and all sectors now needing to be on a trajectory that delivers the Paris Agreement, there will be no slack to accommodate excess emissions from any one sector. Please see our recent discussion paper on the policy gap with respect to aviation that we have asked the Government to address in the Aviation Strategy: https://www.aef.org.uk/uploads/2018/09/Climate-discussion-paper-.pdf

The Government will need to set out a plan, as opposed to just a MAC analysis and some modelling of potential policies, for bringing aviation into line with wider climate ambition. To the extent that this relies on carbon pricing, the Government should explain how it will ensure that every tonne of CO2 emitted from aviation will be exposed to an effective carbon price. We note that the EU's recent long-term emissions reduction strategy includes consideration of aviation emissions and how European policy will deliver effective abatement. We note also several recent indications from other EU states that they are considering domestic policy on aviation emissions including Norway's biofuel mandate and commitments on electrification, and the recent Dutch Parliament vote to seek European cooperation on the introduction of a kerosene tax on intra-EU flights.

Part 4: Costs, risks and opportunities

Question 11 (Costs, risks and opportunities): How would the costs, risks and economic opportunities associated with cutting emissions change should tighter UK targets be set, especially where these are set at the limits of known technological achievability?

ANSWER: Aviation marginal abatement cost (MAC) curves show that significant in-sector abatement will only be unlocked with a high carbon price. Tighter targets are likely to accelerate moves towards higher prices.

Question 12 (Avoided climate costs): What evidence is there of differences in climate impacts in the UK from holding the increase in global average temperature to well below 2°C or to 1.5°C?

ANSWER: No comment.

Part 5: Devolved Administrations

Question 13 (Devolved Administrations): What differences in circumstances between England, Wales, Scotland and Northern Ireland should be reflected in the Committee's advice on long-term targets for the Devolved Administrations?

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ANSWER:

Part 6: CCC Work Plan

Question 14 (Work plan): The areas of evidence the Committee intend to cover are included in the 'Background' section. Are there any other important aspects that should be covered in the Committee's work plan?
ANSWER: No comment.