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Introduction

Aviation Environment Federation (AEF) is a UK-based national NGO that focuses on reducing aviation's environmental impact, particularly in terms of climate change, noise and air pollution. Internationally, we are a leading representative of the NGO grouping ICSA (the International Coalition for Sustainable Aviation) which has observer status to the UN's International Civil Aviation Organisation (ICAO). We have an active membership comprising local community and amenity groups living under flight paths and around the UK's airports.

The UK's SAF mandate has been praised for its potential to underpin the development of a UK alternative aviation fuels industry, with associated ambition for job creation and energy independence. It has been built on a methodology which recognises waste-based feedstocks as the most sustainable. The methodologies for the RTFO which underpins the SAF mandate show clearly that biofuels are largely more carbon intensive than fuels from other feedstocks. Given that the UK SAF mandate is unique in its reliance on the carbon intensity factor, and not merely a focus on volume of SAF delivered, it seems illogical to consider fuels which will offer less benefit in terms of reducing carbon intensity. The RTFO suggests that some crops are twice as carbon intensive as waste-based fuels, presumably meaning that twice the volumes of fuel will need to be delivered to get the same climate benefit.

In order to support the development of this alternative fuels industry, the government is also currently working in parallel on developing a Revenue Certainty Mechanism (RCM) bill which aims to give financial support to first of a kind plants producing alternative aviation fuels in the UK from 2nd generation waste feedstocks. With the SAF mandate just one year into operation, any discussion of whether the eligibility rules for feedstocks should change poses a significant risk to investor confidence and possibly delay decisions needed to make the UK's alternative aviation fuel industry a reality - it certainly risks slowing down investment ahead of 2030 when the HEFA cap is introduced. This is evidenced by recent reactions to a similar unofficial proposal to consider allowing greenhouse gas removals into the SAF mandate which provoked a significant backlash from promoters of 2nd generation fuels. Their concern was that greenhouse gas removals would prove cheaper than advanced biofuels, and that this would undercut their product in the market. Any decision to allow in crops will likely have the same effect of flooding the market with cheaper fuels which out-compete the industries the government has spent significant amounts of public money to develop.

Not only is this call for evidence a threat to that strategy, it comes at the same time as another government department, Desnz, has just concluded a consultation on developing a

sustainability framework for biomass, which is being used in multiple ways for economy-wide decarbonisation. The biomass consultation referred to the blanket ban on biomass being eligible for the SAF mandate as a good guarantee of sustainability of feedstock. The consultation proposes a crop cap (as in the RTFO) as one of the ways to prevent bioenergy from crop-derived feedstocks being in direct competition with food requirements and as a way of protecting against the dangers of ILUC. Therefore, this call to evidence is a contradiction to the policy aims of the government department charged with overall emissions reduction policy.

There could be an approach to choosing eligible feedstocks which takes into consideration justifications other than sustainability - for example when there is a global shortage or over-supply of one feedstock or that UK farmers or producers need an alternative market for their products. However, this will always run the risk of undermining investor confidence, and government policy should be to act as a reliable backstop for nascent industries against the rapid fluctuations in global trade of commodities. Whether or not a UK industry needs another market for its products, industrial leadership cannot be built on chopping and changing according to the whims of international trade.

AEF also does not understand the rationale for holding this call for evidence at this time. The Department for Transport has been at pains to maintain that there is sufficient feed-stock available in the next few years to meet the SAF mandate requirements - and in fact the mandate was exceeded in 2025 with 2.36% of jet fuel in the UK being SAF. As things stand, the mandate should not be weakened without clear evidence that there is a supply crunch. It is therefore worth asking if there are other reasons behind the launch of this call to evidence which are not strictly about the sustainability and emissions reduction potential of assessed feed-stocks.

Question 1: How much feedstock is likely to be available for each of the crop types and at what cost could SAF be produced from these crops and using which technologies? Please provide evidence and consider how this may vary between current day and 2040, considering policies relating to biomass production and availability, land availability and land-use impacts. Please also consider how much feedstock is available in the UK specifically, in addition to a global scale.

Globally, the limited availability of arable cropland greatly constrains the potential for crop-based SAF to provide a meaningful share of global aviation fuel demand. Tim Searchinger from the WRI has calculated that using vegetable oils like soybean for a quarter of global aviation fuel would require a full 40% of global cropland. In an industry where no meaningful emissions reductions are currently occurring, and in fact global demand growth is almost completely unconstrained, it is nonsense to imagine that crop-based fuels can do anything other than provide a drop in the ocean as a climate solution. The history of how huge swathes of the Indonesian rainforest was cleared to make way for palm and soy for incentivised road biofuels is well known; there is nothing to suggest that the global land dynamics have changed over time.

With limited resources it is much more efficient to use the arable land for other energy uses, according to ICCT using corn for alcohol to jet feedstock is 30 times less efficient than using that land to generate solar power.

This is even more pronounced in the UK, if the government intends to meet its climate commitments by domestic action and without relying on imports of biomass which undermine UK competitiveness and industrial strategy. The Climate Change Committee in its advice for

Carbon Budget 7 estimated that in the balanced pathway, *total* energy crops (ie. SAF is only a small proportion of this) would make up just 3% of UK arable land use. This allows for managing the land balance between food production and other uses (including woodland creation, a key element in the UK's decarbonisation strategy).

Question 2: What competing uses and emerging/future uses exist for crop feedstocks? Please comment on specific crops where possible.

The theory behind displacing fossil fuels is sound, but AEF believes that one question that has been repeatedly overlooked in evaluating SAF's decarbonisation potential is whether any feedstocks are best used in creating jet fuel. As the aviation industry clamours to access scarce supplies of all feedstocks, alternative uses of these resources in other economic sectors are not considered. AEF is concerned that without economy-wide planning, biomass will go to the "highest bidder" - the industry that can afford to pay a premium, which could lead to crops and biomass being used inefficiently for feed-stocks.

Whether or not a raw material should be turned into SAF depends on a few, sometimes contradictory, factors. Firstly, pragmatic consideration should be given to questions of what is the feedstock used for now, and is that end product useful? Will that end product be useful in the short, medium and long term? Secondly, even if there are excess and genuine crop volumes now, is this potential feedstock best used in jet fuel? The answer can be subjective, but environmentally, there is often only one answer. And will that best use be needed in the short, medium and long term?

In the case of **biomass**, these feedstocks are already being used in other sectors, and serious analysis needs to be applied to the question of whether the best emissions reduction outcome comes from using biomass for these sectors, rather than the inefficient production of aviation fuels, which are then burnt and re-release the carbon stored in the biomass. The EAC recently called on DESNZ to set out a clear cross-sector prioritisation framework within the Seventh Carbon Budget Delivery Plan, explaining how limited low-carbon resources, including clean electricity, network capacity, sustainable feedstocks and land, will be allocated between competing demands. This framework should set out how priorities will be managed where policies across sectors draw on the same constrained resources, and how trade-offs will be handled to ensure that progress in one part of the economy does not displace or constrain decarbonisation elsewhere.

Desnz has also just concluded a consultation about the use of biomass in economy-wide decarbonisation, with a clear focus on the use of limited resources of biomass in power generation. Biomass currently accounts for about 6% of heat generation, and 11% of electricity generation in the UK, according to the IEA. There are already huge problems associated with importing biomass from old growth forests in Canada to be burnt as wood pellets at Drax power station, immediately re-releasing all the carbon that has been stored in the forests for many years. Importing biomass to produce fuel is even more problematic, as not only does the carbon get re-released once the fuel is burnt in a plane, there are also significant emissions created during the fuel production process.

According to the CCC, Biomass is also needed in another key pillar of the government's decarbonisation strategy - Bio Energy with Carbon Capture and storage (BECCS) - which is expected to play a significant role in the abatement of residual emissions which will still exist in 2050 (many of which will be from aviation). In the Climate Change Committee's balanced pathway modelling, BECCS is expected to make up 19Mt of carbon removal capacity by 2040, a significant proportion of engineered removals deployment at this time. The pathway

allocates BECCS potential mostly to power generation, which fits with the overall Clean Power Plan mission of the current government. While we would question the assumption that burning biomass to produce electricity and then sequestering the carbon underground is as climate beneficial as some have claimed, it is even more problematic to then take that CO2 which has been sequestered and turn it into a feedstock for e-fuels, often to allow higher-income households to go on holidays. This is also relevant when it is recognised that the CCC expects a full 60% of the engineered removals capacity by 2050 will be needed by the aviation industry to offset the emissions it has failed to reduce. It stretches belief that with inviolable global limits to biomass, and with a focus on prioritising domestic production and developing strict sustainability criteria, there is any realistic prospect of aviation biofuels making up anything other than a tiny proportion of this use.

Ethanol is already used for biofuels in road transport. If it was diverted for use as aviation fuel feedstock, this would have an impact on the emissions from the road transport sector.

Cover crops are used by farmers to maintain soil health outside of the growing season, being ploughed back into the soil which promotes nitrogen and CO2 fixing in the soil. They are generally not considered to be waste. A full assessment of the impact changing when these crops or roots are removed from the soil must be carried out - again, Desnz has recently published proposals for how to assess the “soil criteria” in the biomass framework, which may involve including the released CO2 from removing the crops into the LCA of cover crops, ILUC, and the impacts of increased fertiliser use, especially the transport emissions of importing this from around the world.

Woody residues are currently used for panel boards, animal bedding and electricity production. For fuels produced from woody material and agricultural material, if not classed as waste, there should be a careful assessment of the changes in standing carbon stocks in biomass and soils implied by additional material harvesting. It requires setting appropriate sustainability criteria to govern the gathering of agricultural and forestry residues, and of applying principles of sustainable forestry if additional wood is harvested from existing forests

Question 3: What are the potential impacts of crops on a UK SAF production industry? Please consider any potential benefits or risks to advanced technology development.

The UK government has stated its intention to develop a world-leading advanced fuels production industry. The Department for Transport’s own modelling indicates that there are enough eligible feedstocks to meet the UK SAF mandate out to 2040, provided that production capacity and technologies for these new advanced fuels are deployed effectively. The 2025 requirements of the SAF mandate were met comfortably - the carbon reduction from the use of the least carbon intensive fuels was 2.36% against a requirement of 2%. Figures show that fuel suppliers are choosing the least carbon intensive fuels, and that with waste oils (which score highly on their carbon concentration) still being permitted in significant quantities well past 2030, there does not appear to be any overwhelming argument for including biofuels at this point. In scenarios where SAF delivery is marginally under the mandate, the additional environmental risks outlined below that come with crop based fuels are likely to make their addition undesirable.

It is clear that allowing crops into the SAF mandate would undermine investor confidence, especially for anyone trying to get FOAK advanced fuel plants over the line and hoping for support from the RCM bill. It would place these fuels at a severe cost disadvantage,

according to cost predictions modelled for the Refuel EU mandate. There was clear proof of how investors would react to any re-opening of the SAF mandate recently, when a policy proposal to include greenhouse gas removals in the UK SAF mandate was mooted. Advanced fuel producers and investors reacted very strongly against this idea, and AEF has become aware of similar fears from investors and developers in advanced fuel companies in the case of crop eligibility. The GGR inclusion idea was deeply unpopular because modelling from academics at the AIA suggested that if GGRs were cheaper than fuels made from advanced waste feedstocks then all the investment would go to GGRs and SAF production would dry up.

Any consideration of changing the eligibility rules of the SAF mandate simply undermines and frustrates a parallel flagship policy of this government - the Revenue Certainty Mechanism. Public money would be spent on developing and subsidising 2nd generation fuels which have no hope of competing in a market flooded with cheap crop-based biofuels from abroad, possibly causing the RCM bill and stated government industrial development policy to fail. It's important to remember who would benefit from this - not start-up or UK businesses attempting to build up an entirely new UK industry - it is big (often foreign) oil suppliers who are arguing that SAF made from other feedstocks is too expensive. This would undermine all the work which has already gone into developing the RCM as investors would likely refuse to invest in a product which will always be more expensive than cheap crop-based biofuels. It would also undermine the policy aim of reducing emissions because the government's Jet zero strategy assumes that some increased costs from advanced fuels are added on the cost of tickets - allowing in cheaper fuels would reduce the impact of a policy intended to have a dampening effect on the projected enormous growth in aviation emissions.

Question 4: If there are risks to advanced technology development, are there any policy options to mitigate these? Please consider short- and long-term measures.

We strongly disagree with the idea of allowing any kind of crops to be eligible under the SAF mandate. If this proposal does go forward to consultation, policy measures could be to limit the inclusion of crop-based feedstocks to only years when there is a proven under-supply of other feedstocks (and not merely because the government has been lobbied by other sectors about future trends). There should be rules in place to prioritise the use of domestically produced feedstock, to mitigate the difficulties of verifying sustainability of crops from global supply chains, and an assessment of ILUC.

Question 5: What are the impacts of crop use in SAF production on the wider UK supply chain? Please consider UK competitiveness compared to other regions, including potential agronomic practices that could be adopted to ensure the UK is competitive.

UK bioethanol production is significantly more expensive than US ethanol, and the US production is currently subsidised meaning that any benefit of including crop-based fuels in the UK Saf mandate is unlikely to be felt by UK farmers or bioethanol producers. The UK producers have been locked out of access to the US market by President Trump's tariff regime, not because they can't sell their crops for fuel. It is simply not clear that by opening up the SAF mandate to cheap imports from abroad that there would be any benefit to UK Plc, rather it would create a new channel for US subsidised products. It may mean that British taxpayers' money ends up being used to prop up the bioethanol industry in Brazil or the US through the establishment of the RCM contracts system. It looks likely that at least in the early days of production, much of the ethanol to be used in advanced fuels, including that used in the alcohol-to-jet technology, is likely to be imported and possibly already

processed as a 2g feedstock before it reaches the UK. Other means of support to these British industries can be considered.

Question 6: Please provide data on the carbon intensity of crop-derived SAF production, taking into account different types of crop and production pathways.

Crop-based fuels typically deliver lower and more uncertain greenhouse gas savings than waste-based HEFA and PtL fuels, particularly once fertiliser use is taken into consideration. They also carry substantial direct and indirect emissions risks. When ILUC effects are accounted for, food- and feed-based biofuels can have lifecycle emissions comparable to or even exceeding fossil jet fuel. Under the current UK methodology, ILUC is not included in compliance calculations, creating a risk that fuels with significant indirect emissions could qualify under the mandate.

CORSIA default values, which do take into account ILUC factors, show consistently much higher emissions (and thus higher carbon intensity for the purposes of the SAF mandate) from biofuels than waste oils - with the worst performers being palm oil (which can cause 3.5 times more emissions than fossil fuel use), rapeseed oil and soy beans. Depending on the production process, corn and maize feedstocks also perform poorly against a range of other feedstocks under the RTFO rules. All this is before asking more complex questions about whether this choice to use attributional approaches to sustainability questions (simply assigning a default value to a fuel without fully assessing whether the emissions saving has actually occurred in the real world) is valid - other LCA approaches consider the consequences across the whole economy of incentivising the development and use of alternative aviation fuels (i.e. what happens if animal fats are diverted to fuel production, and palm or soy is needed in increased quantities as a substitute, or market distortions occur).

Question 7: What are the sustainability risks that exist for each of the crop types? Please consider how these risks vary between different crop types and regions.

For any of the crop types there is a danger that the redirection of agricultural resources producing energy crops and fuel feedstock crops risks increasing food prices and food insecurity through increased competition. The associated risks in ILUC are well-known, and have been assessed in the accompanying Desnz consultation on the common biomass sustainability framework.

This risk of land use change is not merely theoretical. As has been shown in this analysis, There have been substantial changes to what farmers in the US midwest have been growing in response to ethanol being subsidised in order to produce feedstock for biofuels, yet despite the conversion of land, corn ethanol based fuels still make up only a tiny proportion of US transportation fuels. There is evidence of land being displaced which could have been used for food production.

Desnz's biomass consultation provides a proposed framework for assessing the sustainability risks of differing feedstock or crop types. However, it is questionable that it should start from the assumption that biomass is carbon neutral. The framework proposes a

land use criteria (assessing impacts of biomass cover change, biodiversity impacts and social impacts), forest criteria (sustainable forest management), soil criteria (the role of roots and plants in fixing carbon and nitrogen in the soil), greenhouse gas criteria (LCA emissions reductions), and monitoring. It also proposes several different approaches to accounting for ILUC, and again supports the current robust rules of the RTFO and SAF mandate as possible ways to avoid ILUC.

Question 8: To what extent does ILUC exist for different crops? How can ILUC most robustly and accurately be accounted for?

When certain uses of agricultural products are incentivized through government mandates, farmers will adjust what they grow in order to benefit from the incentive. This can also lead landowners to start converting land from one use to another in order to grow the crop which is being incentivised - this is exactly what happened when the EU pushed for the introduction of first generation biofuels and it led to huge deforestation in Indonesia as forest was cleared to make way for palm and soy. This forest clearance leads to increases in greenhouse gas emissions as the stored carbon in the forests and soil is lost to the atmosphere, and has devastating impacts on biodiversity. This has led to the development of methodologies for assessing ILUC, which as this response shows, have widely differing parameters depending on who is doing the assessing.

Some of these problems can be identified when tracking the supply chain. For example, in relation to HEFA feedstocks, real-world evidence is now emerging of ILUC occurring because of the trade in beef tallow, which is permitted under the UK SAF mandate as a waste oil. Reported evidence highlights that a company has been producing alternative aviation fuel made from beef tallow sourced from slaughterhouses that have bought cattle from illegally deforested ranches in the Amazon. The fuel is produced in the US, where the company can claim tax credits for producing biofuels, and some of it has been shipped to the UK where it presumably entered the UK aviation fuel supply and was burnt on planes leaving the UK. The story shows beef tallow can be potentially permitted under multiple sustainability accrediting regimes because it is classified as a by-product (or waste), and therefore not subject to the same ILUC “high risk” criteria as for example, palm oil. ISCC certification means that beef tallow can be aligned with Corsia and RED III – but this example clearly shows that tallow is a feed-stock at high risk of creating ILUC, and should be subject to greater scrutiny.

It is important to note that in addition to the difficulty of guaranteeing sustainability at the beginning of the fuel’s journey, it is also hard to track the use of this fuel once it reaches the UK, because the DfT does not track imports of SAF into the UK, the only publicly available information comes from fuel suppliers’ claims in terms of where the feed-stock was sourced (based on ISCC certification). There are well-known problems with the ISCC accreditation process, and a strong case for UK government spot checks on these issues. Despite the EU RED III having the power to designate feed-stocks as high risk for ILUC, beef tallow is not considered high-risk as it is considered a by-product.

The Biden administration provided subsidies and tax credits for crop-based biofuels, leading to fears that large areas of the US midwest will be converted to bioenergy crop production, in particular corn for ethanol production. This became attractive to farmers because the Biden administration developed its own sustainability framework (GREET) which underestimated ILUC changes by at least 5 times according to one analysis. The US Congress subsequently voted to score ILUC as zero in its calculations for tax credits. The GREET model was in opposition to the CORSIA model which put more weight on ILUC in the lifecycle emissions of the fuels, which made crop-based fuels much less attractive. This has led to high-level

disagreements in international fora such as ICAO where the US and Brazil disagree on ILUC values for second-cropping corn in Brazil. The result is the attribution of a somewhat arbitrary number pending review.

We see here two examples already where demand in biofuel feed-stock - and associated ILUC - is being driven principally by one industry, and one that is still on an emission growth trajectory, and one which is on track to be the UK's highest emitting sector by 2040. It is logical to conclude that additional pressure to convert land to feed-stock production will come from incentive schemes such as the UK SAF mandate as the requirements of the mandate increase, especially if aviation emissions growth is not constrained.

While it is generally accepted that modelling ILUC is extremely challenging, given global supply chains and reliable counter-factuals across multiple actors, Desnz has recently proposed a government-wide framework for how to assess it. The section below is taken from Desnz's biomass consultation, suggesting why and how ILUC values should be accounted for:

"Depending on the feedstock type used, there may be associated direct and indirect land use impacts on GHG emissions which must be considered. Indirect Land Use Change (ILUC) emissions are not directly accounted for in the greenhouse gas (GHG) calculation methodologies in existing UK criteria. Instead, it focuses on direct emissions from bioenergy production rather than the broader land-use impacts caused by shifting agricultural production. As set out in the land criteria chapter, **current evidence suggests that food crop and oil-based feedstocks carry a much higher ILUC risk than forest derived feedstocks**. This is because competition with food crops has the potential to pose a high ILUC risk if non-agricultural land (e.g. forest) elsewhere is brought into agricultural production due to displacement of existing food and feed crops by biomass production. ILUC risks can be addressed in a number of ways within the biomass sustainability criteria. These include: 1. **Regulatory measures such as a crop cap, feedstock exclusions and high ILUC risk categorisation as proposed under the land criteria**. 2. Inclusion of ILUC emissions within the GHG criteria life cycle assessment. 3. Reporting of ILUC emissions separately outside of the GHG criteria to inform future regulatory measures under option 1. Under the common framework, we propose that in addition to the regulatory measures proposed under the land criteria, individual biomass policy schemes include a requirement to separately report estimated ILUC values for food and feed derived biomass feedstocks based on published ILUC factors such as EU RED II, initially outside of the GHG criteria life cycle assessment. This is because modelling ILUC emissions is inherently uncertain due to the complexity of global land use dynamics, price elasticity effects, and agricultural productivity changes, and how far markets are assumed to be relatively 'slack' or 'tight', with different models producing varying results

Alternative modelling approaches may use different, but nonetheless justifiable, assumptions and alternative baseline (counterfactual) scenarios, making the direct comparison of model outputs difficult, and sometimes impossible. There is general agreement that economic models provide the most comprehensive approach to assessing ILUC, but there is no agreement on which of the many alternative models (or modelling assumptions) provides the most robust overall Common Biomass Sustainability Framework. While there have been some examples of international regulation such as the California Low Carbon Fuel Standard (LCFS) or the US Renewable Fuel Standard (RFS2) which incorporate ILUC factors into life cycle assessment calculations by estimating ILUC emissions per unit of biofuel produced, further work is required to assess whether similar approach could be applied in the UK context, including addition research and modelling. **Not accounting for ILUC impacts**

carries risks, including that the use of certain feedstocks is over-incentivised and that GHG emission savings from the use of some forms of renewable energy are lower than claimed. Equally, the inclusion of uncertain values within the GHG criteria life cycle assessment could risk overestimating the carbon intensity of the supply chain, which could lead to unintended consequences where certain sustainable pathways may become ineligible under the GHG criteria. Separate reporting of these values would still enable greater transparency and monitoring of ILUC impacts of relevant biomass feedstocks. These reported figures could then be used to support development of future policy measures on ILUC e.g. the use of ILUC factors in calculating emissions savings, crop caps and identification of high ILUC risk feedstocks. This approach is aligned with some existing UK and international criteria, such as those set out in RTFO, LCHS and the EU RED III.

Because of the difficulties of assessing ILUC, and the evidence that SAF production is already creating ILUC, AEF would support the first proposal: 1. Regulatory measures such as a crop cap, feedstock exclusions and high ILUC risk categorisation as proposed under the land criteria. Again we would ask, why is the Department of Transport proposing to change what is classed by another government department as an acceptable way to limit ILUC impacts?

Question 9: To what extent can policy frameworks for crop-based biofuels be designed to minimise the impact of crop-based feedstock use on international market volatility? Are there any regulatory measures that could help mitigate any impact on potential price spikes?

n/a

Question 10: What agronomic practices and management measures could be applied to mitigate against any sustainability risks identified?

n/a

Question 11: Are the current sustainability criteria sufficient to mitigate against risks identified? If not, what sustainability criteria would be required?

AS noted above - Desnz is currently consulting on sustainability criteria for biomass, and seems minded to agree that land use (thorough examination of how the land that the crops are sourced from has been used since 2008) and soil criteria (how much carbon the soil is currently holding and how soil fertility can be affected by removing crops and roots from the soil), should be used to assess sustainability. While we strongly disagree with any proposal to include crops in the SAF mandate, if they do become eligible, there should be a requirement for these stringent criteria (agricultural land criteria, soil criteria, forest criteria, GHG criteria and MRV), and that the ILUC is accounted for as part of the LCA of the feedstock. Including ILUC would give the public a better understanding of the full picture of claimed emissions savings from the use of a particular fuel.

We noted in our response to the biomass consultation that there is clear evidence of the failure of international accounting schemes such as ISCC, with feedstocks being fraudulently passed off as waste when they are not. We have highlighted issues with the use of default values which are an approximation of the carbon savings assumed from the product. The whole system of certification for the UK SAF mandate relies on ISCC certification as a baseline, yet we know that ISCC is unable to visit all the sites of where feedstock has been

produced. We recommend, as was suggested in the biomass sustainability consultation, the UK government should increase its own level of site visits to verify that ILUC has not occurred and that feedstocks are accurately certified. If certification was done by a trusted UK government body, consumers and corporate buyers of alternative fuels would be better able to trace the veracity of sustainability claims, instead of having to rely on dubious evidence from third parties such as ISCC, which have been repeatedly criticised for insufficient checks and not picking up on supply chain fraud. If the public is to be expected to support the transition to a Net Zero economy, they need to be able to trust that the things they are being asked to pay more for (in this case, more expensive alternative aviation fuel), are actually delivering the climate benefit claimed. This opens up the possibility that SAF could become mired in accusations of greenwashing.

Question 12: What assurance measures are required to evidence these crops protect against risks identified?

AEF has produced research with the University of Bath Sustainable Energy Systems research centre, which highlights the multiple risks to the environmental integrity from using SAF in the current regulatory reporting system. It revealed double counting risks when it came to whether Scope 1 aviation emissions were claimed under national accounting, while corporate Scope 3 emissions could be claimed under corporate inventories. We found that paper trails across multiple borders and complex international chains of custody were not always complete, and that customers and corporate buyers could be confused about the nature of claimed emissions savings.

Therefore, we support the government's suggestion to hold a call for evidence about whether government nominated bodies carrying out targeted in-person site visits and inspections of all elements of biomass supply chains. The main benefit of this would be to strengthen public acceptance and support of any sustainability claims made about alternative fuels – if certification was done by a trusted UK government body, consumers and corporate buyers of alternative fuels would be able to trace the veracity of sustainability claims, instead of having to rely on dubious evidence from third parties such as ISCC, which have been repeatedly criticised for insufficient checks and not picking up on supply chain fraud. If the public is to be expected to support the transition to a Net Zero economy, they need to be able to trust that the things they are being asked to pay more for (in this case, more expensive alternative aviation fuel), are actually delivering the climate benefit claimed. We have provided evidence of where sustainability claims relating to alternative aviation fuels have turned out to be fraudulent (UCO fraud). Without this clearly understandable chain of custody reporting, there may be public backlash against policies which incentivise the use of biomass for climate reasons.

There should also be more frequent benchmarking of any VCS schemes that provide certification in sustainability reporting; there should be better verifying of third party verifiers, including ISCC accreditation, better auditing frameworks, better understanding of auditors working with operators. While we are strongly against any suggestion that crops should be eligible under the SAF mandate, if this does happen, ILUC assessments should be incorporated into the LCA of any crop-based biofuels. However, it is important to remember that adding another category of feedstock that is notoriously difficult to verify - particularly because large amounts of biomass will inevitably be imported - will only stretch the resources available in the compliance and technical teams in the Low Carbon Fuels team.

Question 13: How could cover crops and crops on degraded or marginal land be defined? Please provide evidence of the availability, as well as the risks and benefits of growing crops on this degraded or marginal land.

We do not support the use of cover crops grown on degraded land as eligible feedstocks. It is generally accepted that cover crops are not considered waste. As previously mentioned, the proposed Desnz biomass sustainability framework would assess the impacts of harvesting crops for fuels using, among others, the soil criteria. As the theory of growing cover crops is presumably that they would be grown to fix CO2 and nitrogen in the soil and improve its quality (and effectively act as a carbon sink), it seems questionable that those crops and roots should then be pulled back out and turned into jet fuel. It would likely lead to the need to import more fertiliser from abroad to make these crops viable. Using cover crops to produce SAF will lead to ILUC if it reduces yields of the primary crops through exhausted soils. The EU Renewable Energy Directive provides a framework for cover crops, but this includes strict rules on ILUC accounting, which will likely increase costs especially in the case of imports.

The amount of marginal land available in the UK is not limitless, and seems unlikely to provide the required amounts of feedstock; using this for biofuels would be in direct competition with other uses that may provide a much higher climate benefit, such as afforestation, or the siting of a solar farm. For cover crops grown on degraded land, it is necessary to consider the “carbon opportunity cost” of using that land for feedstock - ie. what other carbon mitigating activity could have happened on that land (windfarms or solar panels could have been installed). Areas in the UK which have long been unsuitable for agriculture, such as moorland, are used for other purposes such as sheep grazing, and supporting rare wild habitats and leisure activities - experience from the attempts to grow forestry plantations on many of these sites in the post-war years showed that high-levels of fertiliser use and land draining were needed to promote growth on degraded soil.

Experience at EU level demonstrates that high-level definitions do not automatically prevent land-use change, yield impacts, or unintended increases in emissions.