

# Mandating the use of sustainable aviation fuels in the UK

## Introduction

Thank you for responding to our consultation your views will assist in us in creating a mandate for sustainable aviation fuels (SAF).

The closing date is 19 September 2021.

## View all the questions

This survey provides questions based on user choice, a [full copy of the questions is available \[opens in a new window\]](#).

## Print or save a copy of your response

When you get to the end of this questionnaire, you will be offered the chance to either print or save a copy of your response for your records. This option appears after you press 'Submit your response'.

## Save and continue option

You have an option to 'save and continue' your response at any time. If you do that you will be sent a link via email to allow you to continue your response where you left off.

It's very important that you enter your correct email address if you choose to save and continue. If you make a mistake in the email address you won't receive the link you need to complete your response.

## Accessibility statement

Read our [accessibility statement for SmartSurvey forms \(opens in a new window\)](#).

## Confidentiality and data protection

This consultation by the Department for Transport, working with Department for Business Energy and Industrial Strategy (BEIS) and Department for Environment, Food and Rural Affairs (DEFRA), on creating a mandate for SAF.

In this consultation we're asking for:

- your name and email, in case we need to ask you follow-up questions about your responses (you do not have to give us this personal information, but if you do provide it, we will use it only for the purpose of asking follow-up questions)

If an organisation we are additionally asking for your organisation's:

- name, for identification

- size, to weight responses accordingly
- country of location, to gauge interest from international suppliers
- area of work, to understand your sector's attitude towards the topic

Your consultation response and the processing of personal data that it entails is necessary for the exercise of our functions as a government department. DfT will, under data protection law, be the controller for this information. [DfT's privacy policy \(open in new window\)](#) has more information about your rights in relation to your personal data, how to complain and how to contact the Data Protection Officer.

We will remove your personal details before we share your response with BEIS and DEFRA.

We will not use your name or other personal details that could identify you when we report the results of the consultation. Any information you provide will be kept securely and destroyed within 12 months of the closing date. Any information provided through the online questionnaire will be moved to our internal systems within 2 months of the consultation period end date.

## You

### 1. Your (used for contact purposes only):

name?

email?

### 2. Are you responding: \*

as an individual? (Go to 'Proposals')

on behalf of an organisation?

## Organisation details

### 3. Your organisation's:

name is?

size is?

country of location is?

#### 4. Your organisational area of work is:

academia?

airport?

airline?

fuel producer or supplier?

feedstock producer or supplier?

non-government organisation?

consultancy?

another type of organisation?

## Proposals

Sustainable Aviation Fuels (SAF) are one of the main levers available to government and industry to accelerate the transition to net zero aviation. These advanced fuels, obtained from a wide range of waste feedstocks or electricity, can be easily dropped into existing conventional jet fuel. They can achieve lifecycle emissions savings of over 70% compared with conventional jet fuel, when fully replacing kerosene.

As announced in the [Prime Minister's 10 point plan in November 2020 \(opens in a new window\)](#), we would like to introduce a UK SAF blending mandate. The proposed long-term obligation will generate demand for SAF, provide an incentive to SAF producers (in the form of a tradable credit) and signal to investors the vital role that we believe the technology will play in the UK.

We are seeking views on the:

- high-level ambition and design of the proposed SAF mandate
- eligibility criteria SAF will need to meet
- interactions between SAF and other domestic and international policy
- compliance, reporting and verification principles that will steer the subsequent development of the scheme, should it be introduced

Additionally we want views on how best a SAF mandate could be designed and how it could be complemented by additional interventions to foster SAF plants development in the UK.

## SAF proposal

We recognise the need for SAF in the short, medium and long term to contribute to deliver net zero and the UK's carbon budgets. As a consequence, we are minded to mandate SAF supply in the UK. A mandate is our preferred option as it could deliver a number of outcomes altogether, which could likely not be achieved otherwise through an uncoordinated combination of multiple, individual interventions from government and industry.

To introduce the proposed obligation, we believe a standalone SAF mandate, outside the [Renewable Transport Fuel Obligation \(opens in a new window\)](#) (RTFO) will be easiest and fairest to implement. This proposal is also in line with the recommendation by the Climate Change Committee to introduce a bespoke SAF blending mandate.

We would prefer to implement the proposed SAF mandate as a greenhouse gas emissions scheme. Such a scheme would prescribe a reduction in the lifecycle carbon intensity of aviation fuel over time (defined as the amount of greenhouse gas emissions, on a lifecycle basis, per unit of energy and measured in gCO<sub>2</sub>e/MJ) through the use of SAF. It would not mandate a certain percentage of aviation fuel to be SAF over time, which is what a fuel volume-based scheme, like the RTFO, would do.

Under the proposed mechanism, jet fuel with a carbon intensity below the target which meets the proposed eligibility criteria will be awarded a number of credits proportional to the amount of CO<sub>2</sub> saved. Jet fuel with a carbon intensity above the target or SAF which does not meet the proposed eligibility criteria will incur an obligation. It is proposed that the SAF mandate will entail a tradable credit scheme which will allow obligated parties to meet the carbon intensity obligation in a flexible and cost-effective way.

We would like the proposed SAF mandate to fall on suppliers of jet fuel to the UK, where jet fuel refers to aviation turbine fuel (avtur) used in jet and turboprop aircraft. To ensure all aviation fuel, regardless of its use and its dutiable status, decreases its carbon intensity over time as a result of the proposed scheme, it is proposed that all avtur supplied to the UK will incur an obligation.

However, given aviation emissions primarily come from commercial flights, we welcome views on whether we should introduce, a threshold below which the avtur supplied is not obligated. In addition, we acknowledge a potential threshold may need to distinguish between dutiable fuel and non-dutiable fuel to avoid mandating small volumes of fuels or emergency services, for example.

For avtur under the RTFO, the assessment point under the RTFO has been set at the blending and certification point for example the point where renewable fuel is blended with fossil fuel and certified to meet the appropriate aviation fuel specifications and a refinery certificate of quality is issued. We welcome views on where the assessment point under the proposed SAF mandate should be placed to ensure only those who are supplying jet fuel, and SAF, to the country incur an obligation and can claim credits effectively.

### 5. Do you agree or disagree that a SAF mandate should be introduced in the UK?

Agree

Neither agree nor disagree

Disagree

Y Don't know?

Your reasons are?

**6. Do you agree or disagree that an obligation to supply SAF in the UK should sit outside the Renewable Transport Fuels Obligation?**

Y Agree

Neither agree nor disagree

Disagree

Don't know?

Your reasons are?

The RTFO currently excludes fuels produced from nuclear energy. This exclusion ignores a very large potential supplier of clean, no carbon fuel. The obligation to supply SAF outside of the RTFO allows the use of nuclear energy and technology for the production of SAF to contribute towards net zero.

**7. Do you agree a greenhouse gas emissions scheme based on tradable credits should be preferable to a fuel volume scheme when designing a SAF mandate?**

Agree

Neither agree nor disagree

Disagree

Y Don't know?

Your reasons are?

**8. Do you agree that the proposed obligation to reduce the carbon intensity of jet fuel through SAF use should be placed on fuel suppliers that supply aviation fuel (avtur) to the UK?**

Y Agree

Neither agree nor disagree

Disagree

Don't know?

Your reasons are?

The use of SAF, which can be handled by the existing infrastructure and engines of the current supply chain and aircraft fleet is an attractive prospect to the immediate complete replacement of such infrastructure and propulsion which is likely to come at significant cost.

**9. Should the SAF obligation apply to all avtur supplied in the UK, regardless of whether it is subject to fuel duty?**

Yes

No

Y Don't know?

Your reasons are?

**10. If the obligation applies to all avtur supplied into the UK should:**

	Yes	No	Don't know?
there be a threshold below which fuel is not obligated, in a certain obligated period?	<input type="checkbox"/>	<input type="checkbox"/>	Y
this distinguish between dutiable and non-dutiable fuel?	<input type="checkbox"/>	<input type="checkbox"/>	Y

Your reasons are?

**11. Where do you think the assessment point should be placed for jet fuel not subject to fuel duty, and how is this going to affect the definition of the proposed obligated party (aviation fuel suppliers to the UK)?**

## Fuel eligibility criteria

To count towards the mandate obligation, it is proposed that the SAF supplied in the UK meets the [Def Stan 91-091 specification \(opens in a new window\)](#), which refers to the American Society for Testing and Materials (ASTM) standards. This means that, to be eligible under the SAF mandate, SAF will need to be produced through one of the production pathways listed in the relevant [D7566 Annex \(opens in a new window\)](#).

We would like to introduce a SAF mandate which delivers fuels with the highest sustainability credentials. To receive credits under the proposed mandate, SAF will therefore need to adhere to strict sustainability criteria.

It is proposed that the fuels that contribute towards the SAF mandate obligation are only:

- waste-derived biofuels
  
- renewable fuels of non-biological origin (RFNBOs)
  
- SAF from nuclear origin
  
- recycled carbon fuels (RCFs)

As these fuels can deliver high carbon savings and do not typically present significant direct or indirect land use or wider environmental impacts. We are keen not to extend eligibility to crop-derived biofuels, which could lead to modest GHG emissions savings or, in some instances, to an increase in carbon emissions when taking into account their indirect land use change impact. We have [identified feedstocks that we anticipate could meet this requirement in Annex B of the consultation document \(opens in a new window\)](#).

Whilst we are keen not to support biofuels produced from agriculture, forestry, aquaculture or fisheries products, we recognise that wastes and residues from crops and forestry constitute a valuable biomass resource which could be used to produce SAF. However, to ensure these residues have not been sourced from areas of land with high biodiversity value or high carbon stocks, we propose to introduce land use criteria for such residues only. That is the feedstock must not be obtained from land:

- with high biodiversity value in or after January 2008 including land designated for nature protection purposes

- with high carbon stock
- that was undrained peatland in January 2008 unless the land's status remains unchanged when the raw material is obtained

Where hydrogen is used as an input which contributes to the fuel's energy content, it is necessary to assess the sustainability of the hydrogen production process. We propose that under a SAF mandate, hydrogen must be low carbon (for example derived from sustainable biomass, renewable energy or nuclear power sources). For instance, nuclear power is a low carbon energy source which can offer significant GHG savings.

**12. Do you agree or disagree that only certified SAF that meets the Def Stan 91-091 should be eligible under the proposed SAF mandate?**

Y    Agree

Neither agree nor disagree

Disagree

Don't know?

Your reasons are?

It has not been possible to access Def Stan 91-091 however the production of SAF of nuclear origin should be eligible under the proposed SAF mandate as the consultation describes. Nuclear energy has a very low carbon dioxide lifecycle, comparable to that of wind. These figures are based on a full lifecycle analysis of nuclear technology for power generation. It should be noted that GHG lifecycle analyses should be carried out on other technologies, particularly new and novel technologies such as Carbon Capture and Storage and biomass combustion and gasification. This can determine the eligibility criteria for these respective methods. Nuclear can provide a reliable, high-capacity factor means of producing energy vectors such as SAF and the prospects such a SAF mandate can bring will help to grow a new industry and supply chain which can also support other energy vectors from nuclear (and other technologies) not only for SAF but also synthetic marine, road and other fuels allowing further industrial decarbonisation and emissions reduction.

The following studies are available for nuclear energy for power generation CO<sub>2</sub> lifecycle analysis:

Japanese Central Research Institute for Electric Power – 28g CO<sub>2</sub> per kWh (website)

Externalities– 19.7 g CO<sub>2</sub> per kWh

International Energy Agency 2000 – 30.5 g CO<sub>2</sub> per kWh

University of Wisconsin at Madison – 17 g CO<sub>2</sub> per kWh

Vattenfall Sweden – 6 g CO<sub>2</sub> per kWh (website)

Vattenfall Finland – 18 g CO<sub>2</sub> per kWh (website)

EDF Energy Sizewell B – 6.04 g CO<sub>2</sub> per kWh

Detailed References:

Life Cycle Assessment of Electricity Generation Systems and Applications for Climate Change and Policy Analysis, PJ Meier, University of Wisconsin – Madison, 2002.

Externalities and Energy Policy: The Life Cycle Analysis Approach, Workshop Proceedings, NEA, 2001.

Environmental Product Declaration of Electricity from Sizewell B Nuclear Power Station, AEA, [www.edfenergy.com](http://www.edfenergy.com)

### 13. Do you agree or disagree with the sustainability criteria set out?

Y Agree

Neither agree nor disagree

Disagree

Don't know?

If you do not agree, what alternative or additional criteria would you recommend?

### 14. Do you agree or disagree with the feedstocks set out?

Y Agree

Neither agree nor disagree

Disagree

Don't know?

If you do not agree, what alternative or additional feedstocks would you recommend?

To accurately reflect the lifecycle emissions of jet fuel, we would like to use 89 gCO<sub>2</sub>e/MJ as the baseline lifecycle carbon intensity, as internationally agreed by the [International Civil Aviation Organization \(ICAO\)](#) ([opens in a new window](#)). This figure will need to be used to calculate the minimum GHG emissions savings threshold (at least 60%) that we believe SAF should meet to be eligible under a SAF mandate. We welcome views on this threshold and whether it will be necessary to set out at this stage how it should change over time reflecting, particularly considering the impact of carbon capture, utilisation and storage (CCUS) technology

development on carbon intensity.

Fuel suppliers must be able to demonstrate that their fuel achieves the minimum level of GHG saving through an assessment of the carbon intensities of:

1. Feedstock cultivation.
2. Fuel processing.
3. Fuel transport.

To ensure that suppliers are able to calculate carbon savings in an accurate and consistent manner, a SAF mandate require these savings to be calculated with a prescribed GHG emissions calculation methodology. The GHG emissions methodology prescribed by the SAF mandate could use or expand on existing methodologies developed under existing schemes. This has the advantage of reducing administrative burden for fuel suppliers operating under more than one scheme. Two schemes where existing methodologies have been set out in detail are the RTFO, which focuses on biofuels in general, and CORSIA, which focuses solely on SAF. It is important that the GHG emissions methodology takes into consideration the different:

- fuels
- feedstocks
- power sources
- production pathways

In this respect, it may be necessary to include separate methodologies for waste-derived biofuels, RFNBOs, SAF from nuclear energy and RCFs.

It is proposed that SAF that does not meet the feedstocks, carbon and sustainability criteria proposed is treated in the same way as conventional jet fuel and would therefore become subject to an obligation under the proposed scheme. This should minimise the risk such fuels may be supplied in the UK and result in increased emissions.

**15. Do you agree or disagree that the baseline lifecycle GHG emissions intensity for aviation fuels for reporting purposes under a UK SAF mandate should be 89 gCO<sub>2</sub>e/MJ?**

- Agree
- Neither agree nor disagree
- Disagree
- Y Don't know?

If you do not agree, what should the baseline emission be and how should it be calculated?

**16. What should be the minimum GHG emissions intensity reduction SAF will need to meet to be considered eligible under the mandate (subject to the final GHG methodology used)?**

**17. What are the, if any, land use (direct or indirect) or other implications associated with the feedstocks list that we should reflect in the:**

eligibility criteria?

minimum GHG threshold?

Your reasons are?

**18. As more CCUS becomes available and the GHG emissions intensity of fuels decreases, should the envisaged minimum threshold be raised over time?**

Yes

No

Don't know?

Your reasons are?

Provided that the full lifecycle analysis and production of CO<sub>2</sub> can be produced for each method of protection and that this is sufficiently low, the mandate should accommodate these.

**19. How do you think our GHG methodology should calculate the carbon intensity of fuel?**

**20. How, in your view, should the GHG methodology vary to take into consideration the different:**

fuels?	<input type="text"/>
feedstocks?	<input type="text"/>
power sources?	<input type="text"/>
production pathways?	<input type="text"/>

**21. Do you agree or disagree that SAF that does not meet the proposed eligibility and sustainability criteria should incur an obligation?**

Agree

Neither agree nor disagree

Disagree

Y Don't know?

## Overarching trajectory

Choosing a level of ambition for SAF uptake which could be ambitious and deliverable comes with uncertainties and risks. We have reviewed data and feedback gathered from stakeholders and existing publications to determine high-level scenarios for SAF uptake in the:

1. short term
2. long term

The scenarios are only to be considered as indicative representations of the ambition we believe could be possible for SAF uptake on the back of certain:

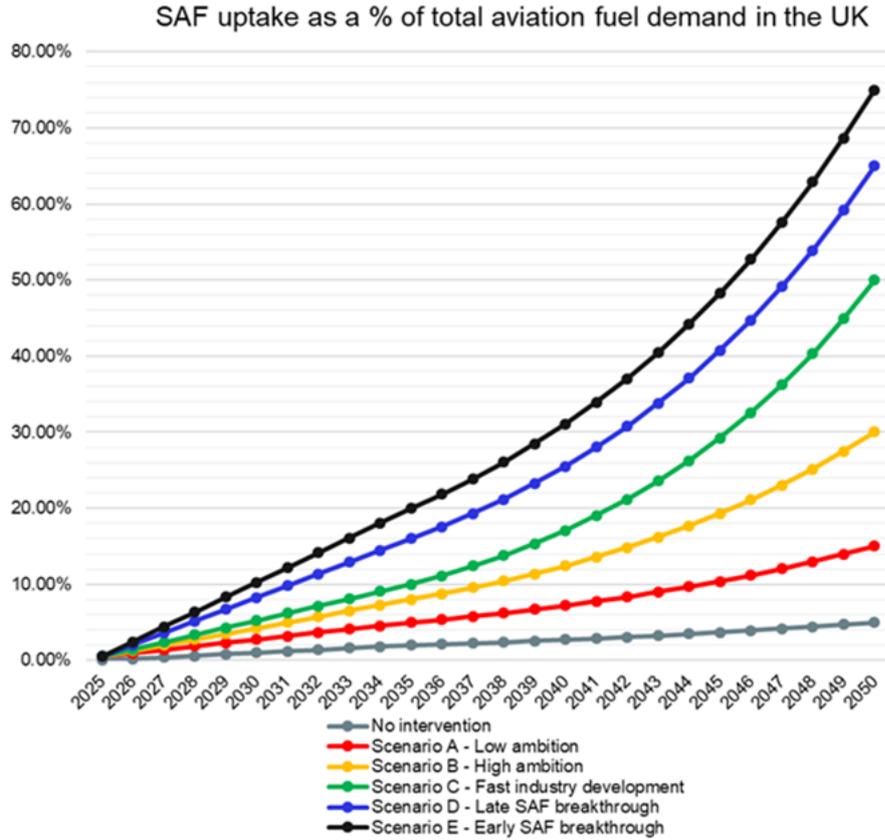
- market conditions
- technology conditions
- policy conditions

These ambitions are subject to substantial uncertainty.

All scenarios assume the proposed SAF mandate would start in 2025.

There are 6 potential scenarios of:

- no additional intervention scenario: in this scenario it is unlikely that all the existing SAF plants in the UK will develop to commercialisation nor will the existing policy framework secure additional SAF plants in the UK
- scenario A – low ambition: this assumes a low uptake of SAF in both the short and long term. Under this scenario, fuel production would be primarily optimised for road transport and the contribution of HEFA will likely be marginal in both short and long terms
- scenario B – high ambition: assumes approximately 30% SAF uptake in the long-term. It is expected all the (non-HEFA) SAF plants currently developing in the UK will become operative by 2030 and will continue to expand. More HEFA should become available at that point, as competing demand for feedstocks for renewable road transport fuel will reduce with higher uptake rates of electric vehicles, although HEFA availability in the long term will likely be limited by feedstock constraints
- scenario C – fast industry development: half of the UK aviation fuel demand in 2050 is met through SAF. This assumes a very high increase of plants post-2025, with approximately 6 to 8% of total 2035 fuel demand met by domestically produced (non-HEFA) SAF, and approximately a further 2 to 4% from HEFA. After 2035, total domestic supply of SAF could increase by approximately 11% per annum and could mean up to approximately 85 large-scale plants will be operational in the UK by 2050
- scenario D – late SAF breakthrough: this assumes a very high number of plants will develop post-2025 with a high success rate, with domestically produced (non-HEFA) SAF reaching approximately 8 to 10% of total aviation fuel in 2035 and an additional approximately 2 to 4% of aviation fuel demand to be met through HEFA. After 2035, it is expected that domestic SAF supply could increase by approximately 9% per annum, reflecting high growth rates seen in previous sectors and could mean over 100 large-scale plants will be operational in the UK by 2050
- scenario E – early SAF breakthrough: assumes a very high number of plants beginning to develop before 2025 with a very high success rate, with up to 20 large-scale plants already operational by 2030 and achieving up to 125 large-scale plants in 2050. Beyond 2035, supply across all pathways could increase by approximately 9% per annum, Under this scenario, SAF breakthroughs will primarily happen in the short term



Across all scenarios, the SAF uptake trajectory grows linearly from 2025 to 2035, to take into account the gradual:

- commissioning of SAF plants
- progress to the maximum or "nameplate" capacity

Once the market is more mature, it is expected more plants will become operational and will be able to reach nameplate capacity more quickly. As SAF costs are also expected to come down, an exponential trajectory from 2035 to 2050 is assumed.

These scenarios for SAF ambition have been translated into equivalent greenhouse gas emissions reduction trajectories, which represent the target aviation fuel suppliers would need to meet. These trajectories have been calculated based on the expected carbon savings eligible SAF could bring about and an approximate mix of SAF production pathways that could be expected in the UK.

	2025	2030	2035	2040	2045	2050
No additional intervention	89.00 gCO <sub>2</sub> e/MJ	88.40 gCO <sub>2</sub> e/MJ	87.72 gCO <sub>2</sub> e/MJ	87.28 gCO <sub>2</sub> e/MJ	86.73 gCO <sub>2</sub> e/MJ	85.96 gCO <sub>2</sub> e/MJ
A	88.71 gCO <sub>2</sub> e/MJ	87.32 gCO <sub>2</sub> e/MJ	85.67 gCO <sub>2</sub> e/MJ	84.25 gCO <sub>2</sub> e/MJ	82.39 gCO <sub>2</sub> e/MJ	79.71 gCO <sub>2</sub> e/MJ

B	88.71 gCO2e/MJ	86.35 gCO2e/MJ	83.67 gCO2e/MJ	80.81 gCO2e/MJ	76.71 gCO2e/MJ	70.36 gCO2e/MJ
C	88.70 gCO2e/MJ	85.79 gCO2e/MJ	82.41 gCO2e/MJ	77.85 gCO2e/MJ	70.48 gCO2e/MJ	57.88 gCO2e/MJ
D	88.70 gCO2e/MJ	83.92 gCO2e/MJ	78.66 gCO2e/MJ	72.64 gCO2e/MJ	63.49 gCO2e/MJ	48.75 gCO2e/MJ
E	88.70 gCO2e/MJ	82.64 gCO2e/MJ	74.72 gCO2e/MJ	68.89 gCO2e/MJ	58.56 gCO2e/MJ	42.37 gCO2e/MJ

We would like to introduce a carbon intensity target which is as ambitious as possible and that could create a world-leading UK industry.

Building on the potential scenarios set out, we welcome evidence on what SAF uptake trajectory you believe will best convey this ambition and what market, policy and technology circumstances will unlock such ambition.

We will review feedback and evidence and, should a SAF mandate be introduced, propose our preferred trade-off between ambition and feasibility in our next consultation.

**22. Do you agree or disagree that a SAF mandate should start in 2025?**

- Agree
- Neither agree nor disagree
- Disagree
- Y Don't know?

If you disagree, when should it start and why?

**23. Do you agree or disagree to that the targets should assume:**

- |                                   | Agree                    | Disagree                 | Don't know? |
|-----------------------------------|--------------------------|--------------------------|-------------|
| a linear growth up to 2035?       | <input type="checkbox"/> | <input type="checkbox"/> | Y           |
| an exponential growth after 2035? | <input type="checkbox"/> | <input type="checkbox"/> | Y           |

**24. Which scenario do you think represents the best trade-off between ambition and deliverability?**

- Scenario A
- Scenario B
- Scenario C
- Scenario D
- Scenario E
- None of the listed scenarios

**25. What evidence can you provide to support your position?**

[ Attach any evidence you have to your return ]

Comments:

It is our ambition to go further and faster and develop a strong SAF sector in the UK as quickly as possible. This means we are open to increasing the SAF uptake in 2050 should the market and the technology develop quickly and SAF costs and carbon abatement costs come down significantly. This is why we will introduce review points in:

1. 2030, for post-2035 uptake.
2. 2040, for post-2045 uptake, including beyond 2050.

**26. Do you agree or disagree that we should include review points in (depending on initial mandate levels):**

	Agree	Disagree	Don't know?
2030?	<input type="checkbox"/>	<input type="checkbox"/>	Y
2040?	<input type="checkbox"/>	<input type="checkbox"/>	Y

We acknowledge that SAF may need further technology and commercial development to confidently meet our proposed or higher ambition.

Currently Hydroprocessed esters and Fatty Acids (HEFA) is the only commercial SAF production, with existing facilities already supplying SAF to the:

- UK
- globally

This means a SAF mandate, in the short term, could drive an increased supply of HEFA. Relying on this fuel could also divert used cooking oil (the feedstock primarily used to produce HEFA) away from the renewable diesel also known as hydrotreated vegetable oil (HVO) production process. HEFA supply will be, to some extent, part of the UK fuel mix, but we welcome views on:

1. Whether HEFA should be capped.
2. How this potential cap should evolve over time as demand for HVO decreases in road transport.

We keen to capitalise on the opportunities that innovative fuels, such as power-to-liquid, can bring to the UK. Given the costs are significantly higher than the cost of SAF produced through any other pathway and that the production of these fuels is not expected to be widespread until the late 2030s, we welcome views on how to accelerate technological and commercial development of power-to-liquid fuels specifically. This could be obtained, for instance, through the use of a multiplier system within the mandate, similar to the double reward certain waste fuels obtain under the RTFO or through specific sub-targets that could push power-to-liquid technology over others. We are also keen to understand how the SAF mandate more in general can foster the development of SAF with the lowest greenhouse gas emissions intensity across all technologies.

**27. In your view should the amount of HEFA able to be claimed under the SAF mandate be capped over time?**

Yes

No (Go to 'Overarching trajectory')

Y Don't know? (Go to 'Overarching trajectory')

## HEFA capping

**28. In this case:**

how could the cap work, given the scheme will be based on carbon emissions

savings?

how should the  
cap be  
calculated?

## Overarching trajectory

### 29. How can power-to-liquid fuels innovation and roll-out be accelerated?

A call for evidence or economic characterisation of potential liquid fuel manufacturing processes with potential sub-targets could be used.

### 30. Should a:

- sub-target be introduced?
- multiplier be introduced?
- something else be introduced?

Your reasons are?

### 31. How can SAF produced through pathways other than HEFA and power-to-liquid be accelerated?

## Interactions with other domestic and international policy

In line with the approach set out in the government response to the RTFO consultation, we would like to require that any SAF supplied to meet the proposed standalone SAF mandate cannot be claimed under the RTFO, and the other way around. This is to ensure carbon emissions reductions are only accounted for once. Any SAF claimed under a SAF mandate would therefore not be able to receive a double reward under the RTFO, and the other way around, regardless of the party submitting the claim.

It is also proposed any emissions reductions claimed under a SAF mandate cannot also be claimed under another GHG scheme to ensure that they are only claimed once. We welcome views on how the UK ETS, CORSIA and proposed SAF mandate could be used together to continue to incentivise SAF uptake, while preventing double counting of emissions reductions.

It is proposed that any SAF produced from plants which have benefitted from government support, either in the UK or abroad, would count towards the proposed SAF mandate obligation and can still receive support under the SAF mandate. This would include plants which have benefitted from government support for:

- research and development
- feasibility studies
- front end engineering design (FEED)
- construction of commercial plants

To avoid double counting and double claiming between the SAF mandate and the RTFO, SAF suppliers will technically be able to choose between what scheme they would like to claim a certificate or a credit from, and will not be able to claim the same consignment of SAF under the other scheme. We would therefore like to make aviation fuel ineligible to receive certificates under the RTFO once a SAF mandate is in place, likely in 2025.

It is important that any SAF mandate introduced in the UK or elsewhere does not result in carbon leakage, to avoid an increase in carbon emissions outside the region where a SAF mandate is implemented. In particular, airlines may decide to take on additional fuel on inbound trips to the UK to cover the outbound trip from the UK by refuelling elsewhere – this is known as ‘tankering’. We welcome views on whether some additional provisions under the proposed SAF mandate may be needed to decrease the risk of tankering that mandatory SAF use could result in.

**32. Do you agree or disagree that SAF GHG emissions reductions should be claimed only once under different schemes?**

Agree

Neither agree nor disagree

Disagree

Y Don't know?

Your reasons are?

**33. How could the UK ETS, CORSIA and proposed SAF mandate be used together to continue to incentivise uptake, while preventing double counting of emissions reductions?**

**34. Do you agree or disagree that SAF that has been produced on the back of industrial plants which have received competition funding from government can be claimed under the proposed UK SAF mandate?**

Y Agree

Neither agree nor disagree

Disagree

Don't know?

Your reasons are?

**35. Do you agree or disagree that SAF should no longer be rewarded under the RTFO if a SAF mandate is in place?**

Agree

Neither agree nor disagree

Disagree

Y Don't know?

Your reasons are?

**36. What provisions, if any, do you think should the UK SAF mandate include to reduce the risk of carbon leakage and tankering even further?**

## Providing SAF to the market

While a mandate would secure demand, it does not determine the price that a plant owner may receive for their finished fuel, as the value of both the fuel itself and tradable credits under a mandate may fluctuate over time. Alongside the high capital and operational costs faced by developers considering building commercial scale SAF facilities, revenue uncertainty adds additional risk to projects which may limit the attractiveness to investors and increase the overall cost of finance.

We are keen to understand how we can build investor confidence in UK plants and secure investment, allowing the UK to develop a world-leading domestic SAF sector. We therefore welcome views on what, if any, additional interventions may be needed to provide more certainty for developers and investors considering building plants in the UK.

We acknowledge future market developments or other external circumstances could mean fuel suppliers may not be able to produce sustainable fuel or buy credits, thus failing to meet (part of) their proposed obligation. It may be necessary for suppliers to pay a fixed sum for each litre of fuel for which they wish to 'buy-out' their obligation. Should suppliers fail to produce SAF, an equivalent buy-out under the SAF mandate would allow them to fulfil their obligation, but this would result in a loss of additional carbon emissions savings. We welcome views on what measures or penalties should be in place to deter suppliers from falling short of the proposed carbon intensity targets and whether buy-out should be allowed.

**37. Do you agree or disagree that a more comprehensive policy framework beyond the SAF mandate is required to create a successful UK SAF sector?**

- Agree
- Disagree (After giving reason go to 'Providing SAF to the market')
- Neither agree or disagree
- Y Don't know? (After giving reasons go to 'Providing SAF to the market')

Your reasons are?

## Additional support

**38. How, in your view, can this policy framework be designed (provide any evidence you have)?**

[ Attach any evidence to your response ]

Choose File

Comments:

## Providing SAF to the market

**39. Should a buy-out be allowed?**

Yes

No (Go to 'Providing SAF to the market')

Y Don't know? (Go to 'Providing SAF to the market')

## Buy-out

**40. How should we set the buy-out price set to encourage actual supply of SAF and delivery of carbon savings?**

**41. How should the buy-out evolve over time?**

## Providing SAF to the market

**42. What penalties should be introduced either in addition or alternatively to a buy-out to ensure sustainable SAF, that meets the proposed criteria, is supplied?**

## Scheme practicalities, reporting and verification

We are proposing that a mass balance approach should be the only chain of custody system permitted as part of the SAF, where a chain of custody is defined as the system that allows to link the final product with the raw materials used to produce it. Such a system ensures that, for each unit of biofuel claimed, an equivalent amount of feedstocks with the same sustainability characteristics of the final biofuel has been effectively used in the fuel market, even if those feedstocks have not been physically separated during the production process.

To ensure the fuel delivered under a mass balance approach is truly sustainable, there is a need to track sustainability data throughout the supply chain and back to the original source of the fuel. To allow this information to be verified, credible and adequate evidence must therefore be in place at each stage of the supply chain and this needs to flow smoothly from the owner of the feedstock used to produce a sustainable fuel to the obligated party that incurs an obligation.

For an effective and smooth delivery of the proposed SAF mandate, it is envisaged a reporting requirement on all aviation fuel (SAF and conventional) will need to be introduced so that the proposed obligation on aviation fuel suppliers can be calculated accurately.

Data to meet the proposed annual reporting obligations will be collected on top of the information SAF suppliers will need to submit to the Department for Transport to claim credits under the proposed SAF mandate. It is proposed that aviation fuel suppliers can apply for credits how often they choose, at any time within the given reporting period.

It is proposed that obligated fuel suppliers will need to show that the SAF supplied meets the proposed SAF sustainability standards and will need to have their claim data independently verified before submitting an application for credits. We are minded to allow certifications from voluntary schemes that show the SAF supplied under the proposed UK SAF mandate meets its prescribed sustainability criteria. It is not proposed that reliance on voluntary schemes will be mandatory, so that fuel producers can have flexibility to bring their preferred evidence to show compliance with the sustainability criteria.

On top of the proof of sustainability supplied by a voluntary scheme or the provision of evidence deemed acceptable, it is proposed that independent verification or assurance is also needed for fuel suppliers submitting claims under the SAF mandate. As we introduce a standalone SAF mandate, with an aim to:

- reduce risks
- improve the credibility and effectiveness of the new scheme

Under the RTFO, this needs to be conducted by a qualified and competent party in line with the [International Standard on Assurance Engagements \(opens in a new window\)](#) to at least the 'limited' assurance level defined by this (or another equivalent) standard. When aviation fuel became eligible under the RTFO in 2018, respondents to a previous government consultation highlighted the proposed 'reasonable' assurance would create disproportionate administrative burden.

We welcome again views on whether verification should be conducted to a 'reasonable' or 'limited' assurance.

We [regularly release reports \(opens in a new window\)](#) with information provided under the GHG Reporting Regulations and the RTFO. We are keen to continue to provide transparent access to information collected as part of the proposed SAF mandate, where this information is not commercially sensitive.

**43. Do you agree or disagree that a mass balance approach should be the only chain of custody system permitted under the proposed SAF mandate?**

- Agree
- Neither agree nor disagree
- Disagree

Y Don't know?

Your reasons are?

**44. Where do you think the chain of custody should end?**

[ Attach any evidence to your return ]

Choose File

Comments:

**45. Do you agree or disagree that obligated suppliers will need to report annually information on the aviation fuel supplied to the Department for Transport, regardless of whether they claim SAF credits?**

Agree

Neither agree nor disagree

Disagree

Y Don't know?

Your reasons are?

**46. What, if any, views do you have on:**

what  
information  
obligated fuel  
suppliers  
should report?

the reporting  
calendar?

**47. What, if any, views do you have on what the required:**

timescale for  
submitting  
claims should  
be?

information or  
evidence for  
this process  
should be?

**48. Should certification provided by voluntary schemes count as evidence of compliance with the sustainability criteria of the SAF mandate?**

Yes

No (After giving reasons go to 'Scheme practicalities, reporting and verification')

Y Don't know? (After giving reasons go to 'Scheme practicalities, reporting and verification')

Your reasons are?

## Evidence of compliance

**49. Should, in your view, this evidence step be mandatory?**

Yes

No

Y Don't know?

Your reasons are?

## Scheme practicalities, reporting and verification

**50. What, if any, additional information should, in your view, the obligated party provide to demonstrate compliance with the sustainability criteria?**

**51. Do you agree or disagree that claims for credits under the SAF mandate should be verified?**

Agree

Neither agree nor disagree

Disagree (After giving reasons go to 'Scheme practicalities, reporting and verification')

Y Don't know? (After giving reasons go to 'Scheme practicalities, reporting and verification')

Your reasons are?

## Verification

52. Do you think should these be verified to a:

'limited' assurance?

'reasonable' assurance?

different level of assurance?

## Scheme practicalities, reporting and verification

53. What, if any, data on the related to the SAF mandate should Department for Transport make publicly available?

54. How often do you think this should this information should be published?

Quarterly

Annually

Biannually

Another time period:

## Final comments

**55. Any other comments?**

The Nuclear Institute are pleased to be able to respond in part to this consultation and remain available to discuss the opportunity that nuclear energy could bring to the production of SAF and other fuels in the pursuit of net zero.