

ReFuelEU Aviation: boosting production and uptake of sustainable aviation fuels

Fields marked with * are mandatory.

Introduction

Outline of the questionnaire for the Open Public Consultation for a possible legislative initiative “ReFuelEU Aviation” announced in the Commission Work Programme 2020 as part of the implementation of the European Green Deal

In its Communication on the European Green Deal, the European Commission set the ambition for the EU to reach climate neutrality by 2050. In order to reach this goal, transport would need to reduce its emissions by 90% by 2050 (compared to 1990 levels). Boosting the production and use of sustainable alternative transport fuels was identified as a necessary measure for achieving this significant decarbonisation of the transport sector.

To tackle still growing greenhouse gas emissions (GHG) from aviation, a comprehensive set of measures is necessary. It consists of market-based measures (e.g. the EU Emissions Trading System and the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) of the International Civil Aviation Organisation - ICAO), improved air traffic management operations, research on more efficient aircraft design and technology, as well as the increased use of sustainable aviation fuels (SAF).

The potential of sustainable aviation fuels to reduce aviation’s GHG footprint and to improve air quality around airports is largely untapped. Indeed, the current use of SAF in the EU is estimated close to 0.05% of total jet fuel consumption. For sustainable aviation fuels to contribute to decarbonising the aviation sector, a significant ramp up of their production is necessary in a very short period of time.

EU policy providing incentives for production and use of SAF already exists. The EU Emissions Trading System, CORSIA and the recast Renewable Energy Directive contain provisions encouraging the production and use of sustainable aviation fuels. However, while recognising that CORSIA will start in 2021 and the recast Renewable Energy Directive has not yet been implemented, the impact of these policy frameworks on the share of sustainable fuels in aviation is uncertain.

This public consultation invites citizens and organisations to contribute to the assessment of how to boost the production and uptake of sustainable fuels in the aviation sector.

Although there is no recognised definition of Sustainable Aviation Fuels (SAF) at European level, for the purpose of this open public consultation, SAF means liquid advanced biofuels (made from waste and residues) or electro-fuels (made from renewable electricity, hydrogen and CO₂ ideally captured from the air) as defined in the recast Renewable Energy Directive (EU) 2018/2001[1]. While other energy sources may be relevant in the future for the decarbonisation of aviation, such as hydrogen, solar energy or electric batteries, this Open Public Consultation focuses only on advanced biofuels and electro-fuels.

This initiative was announced in the 2020 Commission Work Programme. It will also be part of the Sustainable and Smart Mobility Strategy, and part of a concrete follow up to the Strategy on Smart Sector Integration, both due to be adopted by the Commission by the end of 2020.

Please note that to participate in the public consultation you are not obliged to respond to all questions, e.g. the ones in section D are of more technical nature, investigating options on how to improve the design of specific policies, thus more tailored to professionals/stakeholders.

If you have questions and remarks, please contact: move-refueleuaviation@ec.europa.eu.

[1] Directive (EU) 2018/2001 Of The European Parliament and of the Council on the promotion of the use of energy from renewable sources

About you

* Language of my contribution

- Bulgarian
- Croatian
- Czech
- Danish
- Dutch
- English
- Estonian
- Finnish
- French
- Gaelic
- German
- Greek
- Hungarian
- Italian
- Latvian
- Lithuanian
- Maltese
- Polish
- Portuguese
- Romanian
- Slovak
- Slovenian
- Spanish
- Swedish

* I am giving my contribution as

- Academic/research institution
- Business association
- Company/business organisation
- Consumer organisation
- EU citizen
- Environmental organisation
- Non-EU citizen
- Non-governmental organisation (NGO)

- Public authority
- Trade union
- Other

* First name

* Surname

* Email (this won't be published)

* Organisation name

255 character(s) maximum

* Organisation size

- Micro (1 to 9 employees)
- Small (10 to 49 employees)
- Medium (50 to 249 employees)
- Large (250 or more)

Transparency register number

255 character(s) maximum

Check if your organisation is on the [transparency register](#). It's a voluntary database for organisations seeking to influence EU decision-making.

* Country of origin

Please add your country of origin, or that of your organisation.

- | | | | |
|-------------------------------------|--------------------------------|-------------------------------------|---|
| <input type="radio"/> Afghanistan | <input type="radio"/> Djibouti | <input type="radio"/> Libya | <input type="radio"/> Saint Martin |
| <input type="radio"/> Åland Islands | <input type="radio"/> Dominica | <input type="radio"/> Liechtenstein | <input type="radio"/> Saint Pierre and Miquelon |

- Albania
- Algeria
- American Samoa
- Andorra
- Angola
- Anguilla
- Antarctica
- Antigua and Barbuda
- Argentina
- Armenia
- Aruba
- Australia
- Austria
- Azerbaijan
- Bahamas
- Bahrain
- Bangladesh
- Barbados
- Belarus
- Belgium
- Belize
- Benin
- Bermuda
- Dominican Republic
- Ecuador
- Egypt
- El Salvador
- Equatorial Guinea
- Eritrea
- Estonia
- Eswatini
- Ethiopia
- Falkland Islands
- Faroe Islands
- Fiji
- Finland
- France
- French Guiana
- French Polynesia
- French Southern and Antarctic Lands
- Gabon
- Georgia
- Germany
- Ghana
- Gibraltar
- Greece
- Lithuania
- Luxembourg
- Macau
- Madagascar
- Malawi
- Malaysia
- Maldives
- Mali
- Malta
- Marshall Islands
- Martinique
- Mauritania
- Mauritius
- Mayotte
- Mexico
- Micronesia
- Moldova
- Monaco
- Mongolia
- Montenegro
- Montserrat
- Morocco
- Mozambique
- Saint Vincent and the Grenadines
- Samoa
- San Marino
- São Tomé and Príncipe
- Saudi Arabia
- Senegal
- Serbia
- Seychelles
- Sierra Leone
- Singapore
- Sint Maarten
- Slovakia
- Slovenia
- Solomon Islands
- Somalia
- South Africa
- South Georgia and the South Sandwich Islands
- South Korea
- South Sudan
- Spain
- Sri Lanka
- Sudan
- Suriname

- Bhutan
- Bolivia
- Bonaire Saint Eustatius and Saba
- Bosnia and Herzegovina
- Botswana
- Bouvet Island
- Brazil
- British Indian Ocean Territory
- British Virgin Islands
- Brunei
- Bulgaria
- Burkina Faso
- Burundi
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- Chile
- Greenland
- Grenada
- Guadeloupe
- Guam
- Guatemala
- Guernsey
- Guinea
- Guinea-Bissau
- Guyana
- Haiti
- Heard Island and McDonald Islands
- Honduras
- Hong Kong
- Hungary
- Iceland
- India
- Indonesia
- Iran
- Iraq
- Ireland
- Isle of Man
- Myanmar /Burma
- Namibia
- Nauru
- Nepal
- Netherlands
- New Caledonia
- New Zealand
- Nicaragua
- Niger
- Nigeria
- Niue
- Norfolk Island
- Northern Mariana Islands
- North Korea
- North Macedonia
- Norway
- Oman
- Pakistan
- Palau
- Palestine
- Panama
- Svalbard and Jan Mayen
- Sweden
- Switzerland
- Syria
- Taiwan
- Tajikistan
- Tanzania
- Thailand
- The Gambia
- Timor-Leste
- Togo
- Tokelau
- Tonga
- Trinidad and Tobago
- Tunisia
- Turkey
- Turkmenistan
- Turks and Caicos Islands
- Tuvalu
- Uganda
- Ukraine

- China
- Christmas Island
- Clipperton
- Cocos (Keeling) Islands
- Colombia
- Comoros
- Congo
- Cook Islands
- Costa Rica
- Côte d'Ivoire
- Croatia
- Cuba
- Curaçao
- Cyprus
- Czechia
- Democratic Republic of the Congo
- Denmark
- Israel
- Italy
- Jamaica
- Japan
- Jersey
- Jordan
- Kazakhstan
- Kenya
- Kiribati
- Kosovo
- Kuwait
- Kyrgyzstan
- Laos
- Latvia
- Lebanon
- Lesotho
- Liberia
- Papua New Guinea
- Paraguay
- Peru
- Philippines
- Pitcairn Islands
- Poland
- Portugal
- Puerto Rico
- Qatar
- Réunion
- Romania
- Russia
- Rwanda
- Saint Barthélemy
- Saint Helena Ascension and Tristan da Cunha
- Saint Kitts and Nevis
- Saint Lucia
- United Arab Emirates
- United Kingdom
- United States
- United States Minor Outlying Islands
- Uruguay
- US Virgin Islands
- Uzbekistan
- Vanuatu
- Vatican City
- Venezuela
- Vietnam
- Wallis and Futuna
- Western Sahara
- Yemen
- Zambia
- Zimbabwe

*** Publication privacy settings**

The Commission will publish the responses to this public consultation. You can choose whether you would like your details to be made public or to remain anonymous.

Anonymous

Only your type of respondent, country of origin and contribution will be published. All other personal details (name, organisation name and size, transparency register number) will not be published.

Public

Your personal details (name, organisation name and size, transparency register number, country of origin) will be published with your contribution.

I agree with the [personal data protection provisions](#)

A. General information about respondents

Please specify which interests you (the organisation on behalf of which you respond) represent

- National public authorities (transport ministries, agencies)
- International public organisation
- Regional or local public authorities
- Airline industry
- Airport industry
- Aircraft manufacturing industry
- Other organisation in aviation
- Investment and financing
- Energy producers and fuel supply (advanced / synthetic biofuel)
- Energy producers and fuel supply (mainly crop based biofuel)
- Energy producers and fuel supply (mainly fossil fuel sources)
- Sustainability certification bodies
- Technical standardization bodies
- Interest organisations representing societal interests, particularly on environmental and social topics
- Academic
- Other

If other, please specify:

Shell Aviation is a world leader in marketing aviation fuel and operating airport fueling facilities. Collaborating with Shell's New Energies and Trading & Supply businesses, Shell Aviation has significant experience in supporting airports with carbon management strategies; from formulating better fuels supply chains to designing and managing cost-effective installations. In this document, the term Shell is used for convenience where references are made to Royal Dutch Shell plc and its subsidiaries in general.

B. General assessment and policy context

1. The European Union has adopted a comprehensive approach to reducing emissions from the aviation sector, comprising a broad set of measures, among which is promoting the use of sustainable aviation fuels. In spite of the potential of sustainable aviation fuel to achieve emissions reductions, the production and use of such fuels is still negligible.

In your view, how relevant is the use of sustainable aviation fuels for achieving the decarbonisation of the aviation sector?

- Very relevant
- Relevant
- Somewhat relevant
- Less relevant
- Not relevant at all
- No opinion

2. In your view, how relevant is it to boost the use of sustainable aviation fuels in order to improve air quality around airports?

- Very relevant
- Relevant
- Somewhat relevant
- Less relevant
- Not relevant at all
- No opinion

3. In your view, what type of liquid sustainable aviation fuel is the most promising to decarbonise the aviation sector and contribute towards reaching climate neutrality by 2050?

- Advanced biofuels (made from wastes and residues)
- Synthetic fuels (made notably from renewable electricity, CO₂ captured ideally from the air)

Other

If other, please specify:

SAF based on biofuels will be essential to decarbonize the aviation sector, whereas synthetic aviation fuels potentially start to contribute in the 2030s and are foreseen to be available at scale earliest post 2040. SAF made from 1st generation feedstocks and waste-based biofuels feedstocks included in Annex IX Part B of the Renewable Energy Directive (RED), such as used cooking oil/tallow will provide an important contribution in the early years, while the share of advanced biofuels – made from feedstocks included in Annex IX Part A of RED - will increase progressively. SAF made from recycled carbon fuels, using the definition of the RED, should also be allowed as compliance options in a future EU mandate.

4. Sustainable aviation fuels are technologically ready and compatible with today's aircraft engines. However, while there is a growing interest from the aviation sector to start using these fuels in more significant volumes, the quantity of sustainable aviation fuels produced and used is currently still negligible.

What are your expectations concerning the uptake of sustainable aviation fuels in the near future, i.e. by 2025 (under the current conditions)?

- It will increase
- It will remain the same
- It will decrease
- No opinion

5. The European Green Deal set the objective of achieving climate neutrality by 2050. The air transport sector should contribute to this decarbonisation effort. The more widespread use of sustainable aviation fuels is expected to enable the aviation sector to contribute to the ambition of the European Green Deal, alongside other measures.

In your view, by when should a significant uptake of SAF take place in order to achieve this goal?

- It should take place before 2030
- It should take place between 2030 and 2040
- It should take place between 2040 and 2050
- Only after 2050
- No opinion

6. EU legislation provides incentives for the production and use of sustainable aviation fuels, through provisions under the recast Renewable Energy Directive (a

multiplier allowing EU member States to claim towards their renewable energy target the use of 20% more sustainable aviation fuels than actually used) and under the EU Emissions Trading System (a zero rating exempting airlines from surrendering allowances when using sustainable aviation fuels). However, the impact of these incentives on sustainable aviation fuels supply and demand are expected to be limited so far, keeping in mind that the recast Renewable Energy Directive has not yet been implemented.

In your view, how relevant is it to reinforce the existing EU regulatory framework on sustainable aviation fuels in order to achieve higher production and further uptake of these fuels?

- Very relevant
- Relevant
- Somewhat relevant
- Less relevant
- Not relevant at all
- No opinion

7. The development and deployment of sustainable aviation fuels is a complex matter that requires coordination among different economic actors (e.g. airlines, airports, fuel producers, fuel suppliers, aircraft manufacturers, public authorities, sustainability certification bodies, etc.). It also requires a consistent approach to allow availability of the fuel and guarantee the functioning of the EU's internal market.

Against this background, in your opinion, which level of regulatory intervention is best suited to address these objectives?

- The objectives would be best addressed at EU level
- The objectives would be best addressed at Member States level
- The objectives would be best addressed at regional level
- The objectives would be best addressed at the international level (ICAO)
- The objectives would be best addressed by businesses and the industry with no public intervention
- No opinion

C. Barriers to the uptake of sustainable aviation fuels

8. According to the data collected and made available by Eurostat, the vast majority of the 57 million tonnes of fuel consumed in 2018 by the aviation sector were conventional fossil jet fuel. Despite the existing framework for supporting their

deployment, SAF represented only a negligible fraction of the fuel consumed. In your view, what are the reasons for this situation?

Please rate the potential barriers listed in the table below from 5 (most important) to 1 (least important). Not all options need to be rated.

	1	2	3	4	5
Lack of clarity of the regulatory framework for SAF	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
High investment risk in SAF production plants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Lack of technically mature SAF technologies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Lack of commercially mature SAF technologies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Shortage of feedstock available to produce SAF	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shortage of renewable electricity for synthetic fuel production	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Excessive production cost of SAF	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Lack of cooperation between actors across the EU SAF value chain (energy producers, aviation sector)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Lack of certainty on the environmental added value of SAF	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Insufficient supply of SAF	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Insufficient demand for SAF	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Competition from other transport modes to access SAF feedstock and production capacity, due to national policies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Price of conventional kerosene relative to the price of SAF	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Lack of relevant infrastructure	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other reasons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

If other reasons, please specify:

Key barriers to action that make aviation a harder-to-abate sector include:

First, the aviation sector has few lower carbon options available. The sector's needs for high-density fuels combined with safety, weight and volume requirements limits lower carbon fuel and engine technology options to SAF, combined with offsets, likely for the next 20 years. It will take time until electric engines powered by batteries or hydrogen fuels cells or liquid hydrogen combustion will be ready and certified for the mass market.

Second, given the global nature of the aviation business and, in order to avoid any competitive distortions, any regulatory frameworks need to ideally globally applicable and regulated, i.e. regardless of country of registration or ownership of the aircrafts and founded on international convention. If this is not possible, local and regional policies need to be consistent across regions or trade areas in order to avoid perverse outcomes, e.g., by airlines circumnavigating specific country mandates by carrying more fuel, leading to higher emissions.

Third, SAF are and will likely remain structurally cost-disadvantaged, due to the high volume and low energy density of bio feedstocks and the costs of hydrogen production in the case of synthetic fuels. Bringing SAF supply to the market at scale will be slow and depend on strong and consistent policy support. The current EU regulatory framework isn't adequate to incentivize investments in SAF needed to deliver NZE by 2050 across the EU. Key barriers that needs to be addressed:

- Absence of both demand and supply side signals for the deployment and production of SAF.
- Regulatory uncertainty and predictability regarding the availability and eligibility of (novel) feedstocks increases investment risks for new SAF plants.
- Existing policies like Corsia and REDII do not provide sufficient investment signals to overcome the cost gap between conventional jet fuel and SAF.

9. In your opinion, which of the below-mentioned barriers should be addressed as a matter of priority?

Please rate the items in the table below from 10 (highest priority) to 1 (lowest priority). Not all options need to be rated.

	1	2	3	4	5	6	7	8	9	10
Lack of clarity of the regulatory framework for SAF	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>					
High investment risk in SAF production plants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>					
Lack of technically mature SAF technologies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>					
Lack of commercially mature SAF technologies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>					
Shortage of feedstock available to produce SAF	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				

Shortage of renewable electricity for synthetic fuel production	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Excessive production cost of SAF	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Lack of cooperation between actors across the EU SAF value chain (energy producers, aviation sector)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Lack of certainty on the environmental added value of SAF	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Insufficient supply of SAF	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Insufficient demand for SAF	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Competition from other transport modes to access SAF feedstock and production capacity, due to national policies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Price of conventional kerosene relative to the price of SAF	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Lack of relevant infrastructure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other reasons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

If other reasons, please specify:

Achieving net zero emissions in the aviation sector will require a sectoral focus and collaboration between the aviation industry, fuel suppliers and governments will be key to address barriers to decarbonisation in the aviation sector. However, the sectoral approach needs to be complemented by the economy-wide policy framework ensuring a cost-effective transition across all sectors. Specifically, in the transport sector, fuel supply and demand across sectors are linked and policy choices e.g. around biofuels need to be considered from a cross-sectoral perspective.

The current EU regulatory framework isn't adequate to incentivize investments in SAF needed to deliver NZE by 2050 across the EU. Going forward, policies will need to drive greater efficiency improvements and demand management/ behaviour change. In addition, the policy framework will need to address both supply side and demand side of commercializing and deploying low/no carbon aviation fuels and ensure that support levels are sufficient to reduce the cost gap between conventional jet fuel and either bio-jet from sustainable sources or synthetic fuels like PtL. In particular, time limited financial support to overcome first SAF plants. Finally, any national actions by Member States need to be ensured to be aligned with the future EU level framework.

10. From you experience, can you give an example of a successful introduction of SAF in air transport?

- Yes
- No

11. From your experience, can you give an example of a failed attempt to introduce SAF in air transport?

- Yes
- No

D. Possible policy options

12. The table below presents possible policy measures – both regulatory and non-regulatory, general or targeted – which could be taken at EU level to boost SAF in air transport. These measures are not mutually exclusive; combinations of measures could also be envisaged, and the list is not exhaustive.

Please rate them in the table below from 5 (most important) to 1 (least important). Not all policy measures need to be rated.

	1	2	3	4	5
Encourage investments and make use of public financial instruments to help overcome the high investment risk of SAF production	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Impose an obligation on the fuel industry to produce a certain share of SAF, and/or an obligation on airlines to use a certain share of SAF	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Provide specific incentives to use SAF, such as multipliers (a multiplier allows e.g. an EU member State to claim towards its renewable energy target the use of a larger percentage of sustainable aviation fuels than actually used)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Set up a European auctioning system for SAF volumes (under such a system, SAF producers would be invited by a central auctioning authority to bid at the lowest price to supply a certain volume of SAF to the aviation market over a certain period)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Set up a European trading system for fuel carbon credits across transport modes	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prioritise the use of feedstock for the production of sustainable aviation fuels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Support voluntary SAF purchase agreements between producers and airlines by establishing a coordination platform	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Accelerate research and innovation in new SAF technologies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Support and facilitate SAF approval processes for fuel producers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Establish a process to monitor SAF production and use in Europe	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environmental labelling or an accreditation scheme for “green airlines”	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other measures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

If other measures, please specify:

In its assessment of policy options, the EU Commission should ensure supply side and demand side measures go hand in hand to allow the large-scale availability of SAF in the medium to long term. Cooperation between the aviation industry, fuels suppliers and governments will be key to address barriers to decarbonization in the aviation sector.

- 1.) Scaling up SAF will require time-limited financial support to reduce costs and help emerging advanced biofuel technologies become ready for commercial deployment. This time-limited support should enable investment in novel production pathways of SAF and encourage the construction of a first wave of manufacturing plants in Europe in the 2020s. Shell supports the Commission's intention to set up an EU coordination platform to provide technical facilitation and support initiatives for the approval of new production pathways.
- 2.) Shell supports an EU wide mandate for the use of SAF, as this will strengthen the long-term certainty for investors. In complement to other demand side policy measures, this mandate should have fuel suppliers as obligated parties. Refer to Question 19 for more policy recommendations on the design of a mandate.
- 3.) Ensure stability of the regulatory environments impacting feedstocks availability to drive confidence to invest in the production of SAF. Policy measures supporting the production and consumption of SAF in Europe should incentivise biofuels for both aviation and road transport in the short term and help transition biofuels and power-to-liquids from road transport to aviation in the medium to long term. Shell sees a need for consistent sustainability criteria of feedstocks for alternative fuels across the transport sector.
- 4.) Tighten the EU ETS cap in line with EU NZE 2050 and reduce the free allowances given to airlines in line with the updated linear reduction factor. A robust and rising government led carbon pricing will contribute to balancing out the higher purchase costs of SAF.
- 5.) The current excise duty exemption for aviation fuels under the Energy taxation Directive (ETD) should be removed. The rate of excise duty should be linked to the CO₂ intensity of the fuel and based on a TtW approach with a full exemption for SAF to provide an additional incentive for low/ no carbon aviation fuels.
- 6.) Establishing rules/governance around the role of carbon offsetting. During the transition to net zero and in a net-zero world, carbon offsets will be needed. However, they should only be used in a way that does not undermine or substitute for making emission reductions. The EU should ensure during its upcoming EU ETS reform consistency with the CORSIA scheme, e.g. in terms of compliance clarity between the EU ETS and CORSIA.

13. In the EU, due to policies implemented at national level, renewable transport fuels are currently mainly intended for use in the road transport sector. The share of renewable transport fuels produced for use in the aviation sector is negligible. Would you agree to give a degree of priority to aviation for the access to feedstock (including renewable electricity) and production capacity for the production of sustainable aviation fuels (including synthetic fuels)?

- Fully agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Completely disagree
- No opinion

14. If an obligation were to be imposed on the production/uptake of SAF, in your view, who should be the obligated party?

- It should be an obligation on the fuel production/supply side
- It should be an obligation on the aviation demand side
- It should be an obligation on both the fuel production/supply and the aviation demand sides
- No opinion
- Other

15. In your view, would it be relevant to set sub-targets for the production/use of certain categories of SAF such as advanced biofuels or sustainable Power-to-Liquid fuels (also called electro-fuels)?

- Very relevant
- Relevant
- Somewhat relevant
- Less relevant
- Not relevant at all
- No opinion

16. The sustainability framework of the recast Renewable Energy Directive (sustainability framework and emissions saving criteria as well as limitations to use certain fuels) ensures that SAF would achieve significant emissions savings compared to conventional jet fuel:

- Fully agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Completely disagree
- No opinion

17. The table below outlines a number of funding instruments or mechanisms. In your view, which of these instruments or mechanisms could be used to help reduce the investment risk of SAF production or to help bridge the price gap between SAF and conventional jet fuel, or incentivise the production and use of SAF?

Please rate them in the table below from 5 (most important) to 1 (least important). Not all mechanisms or instruments need to be rated

	1	2	3	4	5
EU Emissions Trading System Innovation Fund	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Horizon Europe	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Connecting Europe Facility (CEF)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Just Transition Fund	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
InvestEU	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
NextGenerationEU	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Important Project of Common European Interest (IPCEI)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Fossil kerosene taxation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
An environmental levy on aviation	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
A strategic industrial alliance bringing together all actors in the sustainable aviation fuels value chain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Modulation of airport charges to create a fund for sustainable aviation fuels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Modulation of air traffic control charges under the Single European Sky to create a fund for sustainable aviation fuels	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

If other, please specify:

Scaling up SAF will require time-limited financial support to reduce costs and help novel SAF technologies to be ready for commercial deployment. Favourable fiscal treatment is needed to de-risk first investments in SAF manufacturing plants. Options for initial financial support include:

Direct financial support to encourage investments in commercial-scale first plants. Plants making SAF to be eligible for:

- Capital grants;
- Investment tax credits;
- Loan guarantees.

Price support for SAF

- Public authority, country, or consortium of airlines/airports to set out a long-term objective in terms for SAF volumes to be sold on the market.
- Competitive auctions to deliver volumes of SAF.

Second, the current excise duty exemption for aviation fuels under the Energy taxation Directive (ETD) should be removed. The rate of excise duty should be linked to the CO2 intensity of the fuel and based on a TtW approach with a full exemption for SAF to provide an additional incentive for low/ no carbon aviation fuels.

18. The price gap between conventional fossil kerosene and SAF is caused by various factors (e.g. the market price of crude oil, the type of SAF considered, the tax exemption on kerosene etc). It is generally acknowledged that SAF are between 2 to 5 times more expensive than conventional fossil kerosene. Even if policy measures manage to bridge this price gap over time, it is likely that a price difference will remain for some time. In your view, by whom should this price gap be borne?

- Air passengers
- Tax payers
- Airlines
- Fuel producers
- Public authorities
- No opinion
- Other option

If other option, please specify:

19. As the availability of SAF may increase at EU airports in the coming years, the logistics and infrastructure of SAF supply will need to be fit for purpose. In your view, to what extent is it relevant for policy action at EU level to take into account the logistics and infrastructure of SAF supply?

- Very relevant
- Relevant
- Somewhat relevant
- Less relevant
- Not relevant at all
- No opinion

E. Additional information

20. Are there other key aspects which you did not find reflected in the questions and you would like to comment upon?

Feel free to upload documents, such as additional evidence supporting your responses, such as a policy brief or a position paper. Please do note that the uploaded document will be published alongside your response to the questionnaire which is the essential input to this open public consultation. The document is an optional complement and serves as additional background reading to better understand your position.

1500 character(s) maximum

In addition, to the recommendations for policy measures provided above, the following key design considerations for a SAF mandate should be considered:

- Need for a clear multiyear obligation that is increased over time. Level should be ambitious but consistent with pace of building out supply capabilities and infrastructure. Regulators should be able to adjust the mandate downwards if supply volumes are not being delivered.
- Mandate should be set on either a volume basis or CO2 basis and should:
 - > Measure CO2 on a well-wing basis;
 - > Reward lower CO2 on a graduated scale, provided it meets a minimum CO2 savings.
- The obligated party should be fuel suppliers.
- In the initial stages the mandate should allow continued use of SAF made from 1st generation feedstocks and used cooking oil/tallow.
- There should be a sub-target for advanced SAF with a sufficiently high price signal for investment.
- Once the SAF mandate has been reached the fuel supplier should be able to generate credits within the existing (road transport) fuels obligations for the additional quantity of SAF used in aviation.
- Sustainability criteria to be consistent across all transport sectors and mandates.
- Need for a clear alternative compliance pathway.
- Use of a book-and-claim approach for obligated parties to help meet their obligation.
- Consistency with other policy measures, e.g., fiscal and demand side measures to de-risk investment and pull SAF into the market.

Please upload your file (optional)

The maximum file size is 1 MB

Only files of the type pdf,txt,doc,docx,odt,rtf are allowed

21. Please provide references to any studies, reports or other documents that you think are relevant for this consultation, with links for online download where possible.

The Clean Skies for Tomorrow (CST) initiative, of which Shell is a founding member, has published a European joint policy proposal on increasing the uptake of sustainable aviation fuels (SAFs) over the next decade.

http://www3.weforum.org/docs/WEF_CST_Policy_European_Commission_SAF_2020.pdf

The CST is a coalition of leading airlines, airports, manufacturers, and fuel providers working together to find solutions for reaching net-zero emissions from global aviation by mid-century. The key policy proposals include:

1. Support innovation to bring lignocellulosic/bio-waste and power-to-liquid pathways to market.
2. Support SAF provision through price floors guaranteed by government during the early stages of deployment.
3. Support early deployment by de-risking investment in the first wave of production facilities.
4. Announce in 2021 a SAF blending mandate for European aviation to be enforced by no later than 2025 with a blending level increasing progressively over time to 2050.

