

INCEPTION IMPACT ASSESSMENT	
TITLE OF THE INITIATIVE	ReFuelEU Aviation - Sustainable Aviation Fuels
LEAD DG – RESPONSIBLE UNIT – AP NUMBER	DG MOVE – AVIATION POLICY UNIT (E1)
LIKELY TYPE OF INITIATIVE	Legislative instrument
INDICATIVE PLANNING	Q4 2020
ADDITIONAL INFORMATION	-

A. Context, Problem definition and Subsidiarity Check

Context
<p>The European air transport sector has known sustained growth since the early 1990's, with an associated doubling of its greenhouse gas emissions (GHG) from 1990 to 2017. While policy and industry's efforts have led to efficiency improvements over the past years (for example fuel burn per passenger has dropped by 24% from 2005 to 2017), these environmental benefits have been outpaced by the sustained growth in traffic, where passenger kilometre flown has increased by 60% from 2005 to 2017. Furthermore, commercial air traffic is expected to grow in the years to come and the number of flights could increase by around 42% from 2017 to 2040¹.</p> <p>The Communication from the Commission on the European Green Deal² sets out the need to reduce transport emissions by 90% by 2050 (compared to 1990), and to ramp up the production and deployment of sustainable alternative transport fuels. In this context, the Commission has committed to consider legislative options to boost the production and uptake of sustainable alternative fuels for the different transport modes, including aviation.</p> <p>This initiative is part of the Commission's work programme for 2020. It will also be part of the Sustainable and Smart Mobility Strategy³, and will be a concrete follow up to the Strategy on Smart Sector Integration⁴, both due to be adopted by the Commission in 2020.</p>
Problem the initiative aims to tackle
<p>To tackle the greenhouse gas emissions from aviation, the Commission has put in place a set of measures. It consists of market-based measures (e.g. the EU Emissions Trading Scheme and the Carbon Offsetting and Reduction Scheme for International Aviation 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 (liquid advanced biofuels or electro-fuels as defined in the recast Renewable Energy Directive (EU) 2018/2001⁵).</p> <p>However, the potential of sustainable aviation fuels to reduce aviation's GHG footprint is yet largely untapped. In order to decrease significantly its emissions, the aviation sector will need to reduce its current reliance on fossil jet fuel and rely increasingly on the use of sustainable aviation fuels (SAF) in the years to come. The aviation sector lacks immediate alternatives for commercial aircraft propulsion. New clean aircraft technologies such as electric- or hydrogen-powered aircraft are not expected to be mature enough to play a significant role in commercial aviation in the next decades.</p> <p>Advanced biofuels (renewable and waste derived) and electro-fuels produced using additional renewable energy have the potential to make an important contribution to tackling GHG emissions in aviation (emission savings can go up to 80% compared to conventional jet fuel). While so-called "drop-in fuels" are compatible with current aircraft engine technology, the present production and use of SAF in the EU is still negligible. Indeed, the SAF production base in the EU is limited to a handful of producers and produced volumes likely do not exceed 100,000</p>

¹ European Aviation Environmental Report 2019 – EASA, Eurocontrol, EEA

² https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en#documents

³ See Communication from the Commission on the Commission Work Programme 2020 "A Union that strives for more"

⁴ ibidem

⁵ Directive (EU) 2018/2001 Of The European Parliament and of the Council on the promotion of the use of energy from renewable sources

tons. The current use of SAF in the EU is estimated close to 0.05% of total jet fuel consumption (57 million tons in 2017). Most of the SAF currently used is either imported from or tanked in third countries, e.g. the United States. The above figures are based on publicly available information⁶, and the absence of a clear monitoring of SAF production and use in the EU is a problem in itself.

EU policy providing incentives for production and use of SAF already exists. The Renewable Energy Directive includes an obligation for fuel suppliers to incorporate a share of renewable energy in transport (advanced biofuels and e-fuels can contribute). While the recast Renewable Energy Directive has not been implemented yet (Member States have until June 2021), its impact on the use of SAF in aviation remains uncertain given that Member States are left with a considerable degree of flexibility for its implementation. In line with the increased ambition level of the European Green Deal, a revision of the Renewable Energy Directive may be necessary. The EU Emissions Trading Scheme⁷ contains mechanisms intended to reward emission reductions including via the use of SAF. The Energy Taxation Directive contains provisions with the ability to favour certain types of fuel. The impact of these incentives on SAF supply and demand appears to be so far limited and may therefore also need to be reviewed.

The production cost of SAF is currently at least twice as high as that of conventional jet fuel and higher than that of sustainable alternative fuels used in other transport modes, depending on the pathway. Because of higher production costs, SAF are, in absence of support, not an economically attractive substitute to conventional jet fuel. The price volatility of the feedstock (important cost component of the final fuel price) contributes to the market uncertainty and acts as a disincentive to invest. In the absence of a long-term, stable policy framework with sufficient incentives, the necessary confidence for major investments in SAF production is not provided. Such investments would enable economies of scale in the production and drive production costs down. As a result of a lack of investments, production costs remain high and production levels are negligible. Although SAF currently have a higher cost than conventional kerosene, aviation will need to rely on increased SAF use already in the coming years. A key objective of the initiative is therefore to support the commercial development and rollout of innovative SAF at an early stage, to ensure their large-scale availability at low costs in the medium and long term.

The availability of feedstock is currently a limiting factor for an upscale of SAF production. The resources used to produce renewable fuels are limited and face various degrees of scarcity. Food and feed crops are considered to have a limited potential for decarbonisation, notably due to their indirect impacts on land use. Incentives to develop food and feed crop based aviation fuels are therefore not desirable. While waste-derived SAF can achieve emissions savings as high as 80% compared to conventional jet fuel, the availability of waste-based feedstock is currently limited by suboptimal supply chains. Waste may also be diverted to other usages, which are more cost effective. There is increasing interest for electro-fuels, which can achieve emissions savings higher than 80% compared to conventional jet fuel. However, electro-fuels require important amounts of additional renewable electricity, as the energy efficiency of the conversion process is still suboptimal.

In addition to this overall scarcity of feedstock, limited supply volumes are in competing demand with the road transport sector, where production costs for biodiesel and green diesel are lower.

On the technical side, an important barrier to market entry of new SAF pathways currently is the fuel approval process. SAF approval can be expensive, lengthy and challenging from a logistics and administrative point of view. These constraints can lead fuel producers to favour using their products in other lower-risk markets e.g. road transport, where fuel approval is less challenging.

Finally, there is currently a lack of effective framework for monitoring the supply and use of SAF by airlines in the EU. This absence of framework could make it challenging to assess in a reliable manner the effectiveness of the future policies in place to boost the SAF market.

Basis for EU intervention (legal basis and subsidiarity check)

The Treaty on the Functioning of the European Union confers to the European institutions the competence to lay down appropriate provisions in the air transport sector (Article 100(2) and/or Article 192(1) and/or Article 194(1) TFEU).

The problems above-described require EU action and cannot be solved by the Member States acting alone. Indeed, aviation is a very integrated market operating in a network dimension across the whole of the EU. The harmonised implementation of a common policy mechanism is important to avoid possible market distortions that could be caused by a patchwork of national policies.

It is essential to take into account the complexities of the aviation Internal Market and ensure its proper functioning. Concretely, a policy mechanism for the uptake of SAF needs to be common across all Member States, to allow airlines and other market players to operate based on equal opportunities.

⁶ Sources include Eurostat databases as well as cross-checking of publications by SAF producing firms and airlines.

⁷ Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowance trading within the Community

Different starting points of Member States in the energy transition, including differing commitments and obligations to promote renewable energy and decarbonisation in sectors not covered by the EU ETS need to be considered.

B. Objectives and Policy options

The objective of this initiative is to reduce the environmental footprint of the aviation sector and enable it to contribute to achieving the EU's climate targets, including with regards to the Paris Agreement, by boosting the supply and demand for sustainable aviation fuels in the EU.

Under current trends and adopted policies (i.e. baseline scenario), without further EU level intervention, consumption of SAF is projected to increase from currently 0.05% of the total jet fuel demand to merely 2.8% by 2050. This will not enable to curb substantially emissions from the air transport sector.

Subject to further analysis, scoping and screening, the policy options will include the following measures, or a combination thereof:

- **SAF blending mandate:** it would consist of imposing a minimum share of SAF, which would gradually increase over time, to be supplied to airlines and/or a minimum share of SAF to be used by airlines. The aim is to create a stable policy framework over a sufficient time horizon to provide investors with the necessary confidence to invest in the production of sustainable aviation fuels and for airlines to pursue an efficient fuels policy. Sub-options to be considered could include a mandatory volume-based minimum share of SAF uptake by a certain time horizon or a minimum level of reduction of GHG-intensity of jet fuels used.
- **Revision of the multiplier** under the Renewable Energy Directive: Currently, with a 1.2 multiplier for aviation, Member States where biofuel is supplied to the aviation sector are allowed to count towards their national target 20% more than the SAF volumes provided. The approach could be further specified ensuring a harmonised implementation and the multiplier could be increased.
- **A central auctioning mechanism:** 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. Such schemes have been used in the field of renewable electricity.
- **Funding mechanism:** The EU would channel funds through one or more EU financial instruments with the aim of encouraging the deployment of SAF production facilities in the EU and of accompanying the gradual uptake of SAF by the aviation market at competitive prices by helping to bridge the cost gap and upscale production.
- **Prioritisation:** As feedstock used to produce sustainable transport fuels are a scarce resource, sustainable transport fuels should be directed to transport modes where they are the most needed, i.e. transport modes with limited or no alternatives to decarbonise in line with the EU's climate objectives. A degree of prioritisation of feedstock for the production of sustainable aviation fuels could be necessary in this context.
- **Voluntary agreements:** setting up of a collaborative platform to facilitate purchase agreements between SAF producers and airlines. It could also issue guidance on how to conclude efficiently purchase agreements.
- **Technical facilitation and support initiatives:** a dedicated facilitation initiative for SAF approval could be put in place in the EU. The objective would be to accompany SAF producers along the approval process, by providing the necessary technical support. The idea of an EU coordination platform could also be envisaged to bring closer together aviation stakeholders, SAF producers and regulators with a view to communicate and engage towards the common objective of developing the SAF market.
- **Monitoring:** a dedicated data stream could be put in place to better monitor the production and use of SAF in the EU. Key Performance Indicators could be designed to monitor the effects of SAF policies.

The impact assessment will define policy options based on these policy measures. These policy options will be assessed against the baseline scenario. They will demonstrate different degrees of policy ambition and different regulatory instruments as well as soft law. Coordination and consistency will be ensured with other possible initiatives such as the revision of the EU Emissions Trading Scheme, of the Energy Taxation Directive, the Single European Sky's charging scheme, the Fuels Quality Directive, the Airport Charges Directive and others.

C. Preliminary Assessment of Expected Impacts

Likely economic impacts

- **Growth and investment.** Boosting the production and uptake of SAF will attract important investments in the EU, notably for the development of the SAF production capacity and distribution. Important growth of the alternative transport fuel market is expected.
- **Sectoral competitiveness.** Although the aviation industry may be subject to higher operating costs in the short term, important improvements in the sustainability of its operations will allow it to sustain its current growth trends in the longer term, including through lower carbon emission costs.

<ul style="list-style-type: none"> • <u>Regional competitiveness</u>: the impact of the initiative should be assessed on the European industry's competitiveness, as compared to the same industry in other regions of the world. • <u>Increased innovation and research</u>. With ambitious policy to boost the production and uptake of SAF, the EU has the opportunity to create a lead market in innovative and sustainable aviation fuel. • <u>Energy Union</u>. By boosting the production of SAF in the EU, this initiative is an opportunity for the EU to deepen its Energy Union, to ensure its transition towards cleaner mobility, to improve its energy security and reduce its dependency on extra-EU energy sources. The assessment will take into account the wider context such as the use of alternative fuels in other sectors or the feedstock markets.
Likely social impacts
<ul style="list-style-type: none"> • <u>Employment</u>. Boosting the SAF market may create additional employment, in particular in the areas of production and supply of SAF. Possible negative effects on employment could be observed in the fossil jet fuel refining sector as a consequence of potential lower demand of fossil jet fuel.
Likely environmental impacts
<ul style="list-style-type: none"> • <u>Fighting climate change</u>. A meaningful deployment of SAF in the aviation market will lead to a net decrease of the air transport sector's CO₂ emissions, as well as non-CO₂ emissions' impact on the climate. SAF can achieve as high as 80% emissions savings compared to conventional jet fuel, and therefore, if deployed at a large scale, have important potential to help aviation contribute to EU reaching its climate targets. • <u>Preserving the quality of natural resources</u>. Any policy measure aiming to increase the sustainability of aviation by boosting the SAF market will require paying particular attention to the overall environmental integrity of the SAF incentivised. • <u>Reducing and managing waste</u>. The production of SAF notably from biogenic waste could contribute and be an incentive for more effective waste management in the EU.
Likely impacts on fundamental rights
N/A
Likely impacts on simplification and/or administrative burden
<p>The impact on administrative aspects could vary depending on the preferred option. Independently from the instrument used to promote SAF, it will be essential to ensure coherence with the existing sustainability requirements, definitions and methodologies set out for renewable fuels in the recast Renewable Energy Directive (EU) 2018/ 2001 as well as the EU Emissions Trading Scheme. There is no need to develop specific sustainability requirements for aviation. Similarly, aviation fuel standards are set internationally. Several types of sustainable aviation fuels have been certified for commercial aviation use and more work is ongoing at global level. The intention is to rely to the extent possible on the existing EU framework for monitoring and reporting of fuel use by airlines. There is a priori no need for additional provisions in that regard.</p>
D. Evidence Base, Data Collection and Better Regulation Instruments
Impact assessment
<p>An impact assessment will be prepared to support the preparation of this initiative and to inform the Commission's decision.</p>
Evidence base and data collection
<ul style="list-style-type: none"> • An external study supporting the impact assessment will be launched in order to gather evidence and consult stakeholders. • Events such as a roundtable chaired by the Commission services will be organised to gather information from and consult stakeholders on the policy options at hand. • Outcomes of workshops and events on the topic of SAF as well as studies already performed on the topic, academic papers and publicly available recent literature will be useful to document the work.
Consultation of citizens and stakeholders
<p>The consultation aims at gathering views and evidence regarding possible policy measures to boost the supply and uptake of sustainable aviation fuels.</p>

Main stakeholders to be contacted and interviewed during the impact assessment phase include but are not limited to: national and regional authorities (where relevant) and bodies responsible for or related to policy in the area of SAF, European and international organisations with an interest for SAF, non-governmental organisations with interest for transport and renewable energy, airlines, airports, airport ground handling companies, aircraft manufacturers, aircraft equipment manufacturers, SAF producers and suppliers, feedstock suppliers, organisations dealing with SAF sustainability certification, trade unions and professional organisations active in air transport sector.

The public consultation is planned to be launched tentatively in the second quarter of 2020. It will run for 12 weeks. The questionnaire will be available in all EU languages and replies can be submitted in any of the 24 official EU languages. The public consultation can be accessed via the Commission's central public consultations page⁸. The results will be summarised in a report.

Will an Implementation plan be established?

It is yet unclear as to which degree provisions in the eventual proposal would require an implementation plan as this depends on the regulatory instrument chosen (Regulation, Directive). Should such a guidance be required, the Commission will envisage to adopt an implementation plan.

⁸ https://ec.europa.eu/info/law/better-regulation/have-your-say_en