OCTOBER 2022

Recommendations for the ReFuelEU aviation trilogue

In July 2021, the European Commission released its proposal for ReFuelEU, the European Union's first regulation mandating sustainable aviation fuel (SAF) blending at European airports. The proposed regulation includes binding volumetric SAF targets with synthetic aviation fuel submandates from 2025 to 2050. In summer 2022, the Council of the European Union and the European Parliament suggested amendments for proposal. In September 2022, the two bodies entered a trilogue discussion with the Commission to consider these proposed changes and decide on a compromise agreement for the regulation.

A recent ICCT briefing paper assesses the differences between the original Commission proposal and the Parliament and Council's amendments, and identifies which proposals would increase low-greenhouse gas (GHG) compliance options and reduce GHG emissions. Table 1 summarizes the amendments and our policy recommendations.

Table 1. ReFuelEU aviation proposal and amendments and recommendation for the trilogue.

	Original European Commission proposal	European Parliament amendments	Council of European Union amendments	Recommendations
Definition of synthetic aviation fuels	Only drop-in hydrocarbons (electrofuels) qualify	• Expand definition to include all renewable fuels of non-biological origin (RFNBOs) (e.g. green hydrogen) and renewable electricity • Increase sub-mandate ambition	Same as Commission	Parliament amendments
Biofuels that qualify as sustainable aviation fuel (SAF)	Only advanced (Annex IX, A in the Renewable Energy Directive II) or Annex IX, B	• Until 2034, all biofuels qualify except those produced from food and feed crops, intermediate crops, all palm and soy-derived materials including palm fatty acid distillate, and soapstock and its derivatives • Starting in 2035, only feedstocks found in Annex IX qualify	• All biofuels except food- and feed-based biofuels • Cap on all biofuels except Annex IX of 3%	• Only Annex IX feedstocks • Cap Annex IX, B (waste oils) at 1.7% to promote nascent fuel industries and reduce fraud risk
Allowing "low-carbon" fuels to count towards the SAF targets	Not included	Not included	Included	Do not include

icct
THE INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION

These policy recommendations are derived from the following findings:

- **Almost all feedstocks that would now qualify under the SAF definition due to the proposed changes are used in food and feed or pose a fraud risk:**
  - The Commission's ReFuelEU proposal only allows wastes and residues identified in Annex IX of the Renewable Energy Directive (RED II) to be used to produced biofuel SAF. **It is not necessary to expand the SAF definition because any novel low-GHG feedstocks can be added to Annex IX through an existing process.**
  - **The Council amendments includes intermediate crops as a qualifying feedstock, which can pose a high climate risk.** In some countries, intermediate crops include massive quantities of business-as-usual food and feed crops. Because they are grown in the off-season, they are not included in the RED II definition of 'food and feed crops.'
  - **Other similarly unsustainable feedstocks include palm fatty acid distillates (PFADs), soapstock and its derivatives, and category 3 (edible) animal fats.** The Parliament voted to exclude PFADs and soapstock and its derivatives, but the Council did not. Due to the associated high indirect GHG emissions, SAF produced from these feedstocks would not deliver significant GHG savings compared to petroleum. PFADs in particular would be associated with GHG emissions exceeding that of jet kerosene. We calculate there would be enough PFADs available globally to meet the entire 5% EU SAF target in 2030, excepting the 0.7% PtL subtarget. Similarly, there would be enough soapstock and its derivatives to meet this 2030 target.[1] In Europe alone, there are millions of tonnes of category 3 animal fats available as well.
- Part B of Annex IX includes used cooking oil, which can include imported fraudulent material, and inedible animal fats, which carry high indirect GHG emissions (Figure 1). **Capping the amount of Annex IX, Part B feedstocks used in SAF would limit these risks.**
- **Allowing renewable electricity used both directly and in hydrogen to count towards the synthetic fuels submandate would send a policy signal to investors to support these nascent technologies and increase zero-carbon compliance options for ReFuelEU.** A recent ICCT study found that zero-emission planes could service more than two-thirds of all intra-European flights starting in 2035.[2]
- Allowing low-carbon fuels as they are currently defined to meet the SAF targets would mean SAF could be produced from blue hydrogen, which is produced from natural gas and coal. **A 2021 ICCT study found that hydrogen made from fossil fuels cannot deliver high GHG savings, even when using carbon capture technology.**[3]

---

1 Calculated by assuming that soapstock is produced at a rate of 6% of crude vegetable oil production (Food and Agriculture Organization of the United Nations, "World agriculture: towards 2030/2050, Interim Report: prospects for food, nutrition, agriculture, and major commodity groups," [2006], http://www.fao.org/fileadmin/templates/em2009/docs/FAO_2006_.pdf; Michael Haas, [2005], Improving the economics of biodiesel production through the use of low value lipids as feedstocks: vegetable oil soapstock, Fuel *Processing Technology, 86[10]*, 1087-1096, https://doi.org/10.1016/j.fuproc.2004.11.004). Since 50% of soapstock is made of water and the rest is acid oil, which can be converted to HEFA, there could be 3 million tonnes of SAF produced from soapstock and its derivatives in 2030 (Argonne National Laboratory, The greenhouse gases, regulated emissions and energy use in transportation [GREET] model, version 2020, https://greet.es.anl. gov/index.php).

2 Jayant Mukhopadhaya and Dan Rutherford, "Performance Analysis of Evolutionary Hydrogen-Powered Aircraft," (Washington, DC: ICCT, 2022), https://theicct.org/publication/aviation-global-evo-hydrogen-aircraft-jan22/; Jayant Mukhopadhaya and Brandon Graver, "Performance Analysis of Regional Electric Aircraft," (Washington, DC: ICCT, 2022), https://theicct.org/publication/global-aviation-performance-analysis-regional-electric-aircraft-jul22/.

3 Yuanrong Zhou, Diana Swidler, Stephanie Searle, and Chelsea Baldino. "Life-cycle greenhouse gas emissions of biomethane and hydrogen pathways in the European Union," (Washington, DC: ICCT, 2022), https://theicct.org/publication/life-cycle-greenhouse-gas-emissions-of-biomethane-and-hydrogen-pathways-in-the-european-union/.

PUBLICATION DETAILS

Title: Considerations for the ReFuelEU aviation trilogue

Authors: Chelsea Baldino, Jayant Mukhopadhaya

Download: https://theicct.org/publication/refueleu-definitions-trilogue-sep22/

Contact: Chelsea Baldino, chelsea.baldino@theicct.org

www.theicct.org

communications@theicct.org

twitter @theicct