

An overview of the international SAF commercialization activities – a European perspective

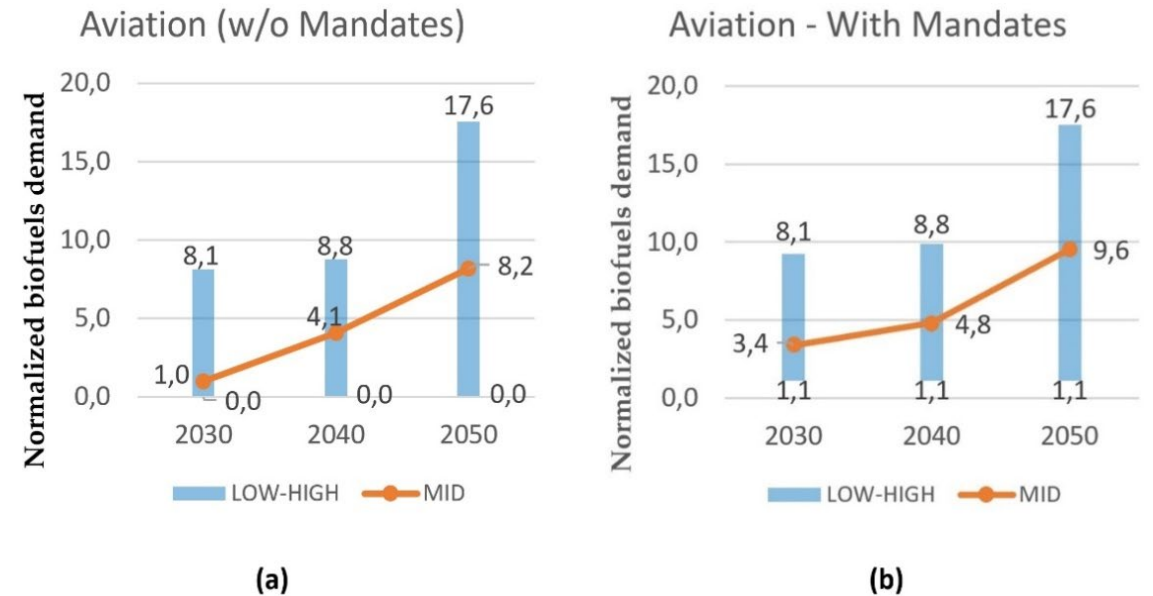
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SAF demand: pre-covid estimate EU-28

- EU meta-study by **PolITO** and **JRC** assessing ranges of possible volumes.
- **Meta-analysis of 56 scenarios elaborated by** various research groups and Institutions.
- Expected alternative fuel volumes at **2030: 1.0 – 3.4 MTOE**, depending on **incentivising/mandate regimes**
 - *Assumptions and methods in scenario-making not often transparent and clearly declared*
- These volumes would cover **1.6–5.6%** of the **expected demand at 2030** (estimated at 60–65 Mt/y).
- ✓ *This work to be updated after ReFuel EU Aviation/FitFor55 is finalised*



Chiaramonti, D., Talluri, G., Scarlat, N., & Prussi, M. (2021). **The challenge of forecasting the role of biofuel in EU transport decarbonisation at 2050: A meta-analysis review of published scenarios.** *Renewable and Sustainable Energy Reviews*, 139, 110715.

ReFuel EU & MS initiatives

Table 3 – Central SAF ramp-up trajectory¹²⁸ (volume based approach).

Total shares in the fuel mix (in %)	2025	2030	2035	2040	2045	2050
SAF ramp up out of which:	2	5 <i>(..or 6 ..)</i>	20	32	38	63
Biofuels (including Part A and Part B biofuels)	2	4.3	15	24	27	35
Specific sub-mandate on RFNBOs¹²⁹	-	0.7	5	8	11	28

Country	SAF mandate (%v/v)	Notes	Timeframe
Finland	30%	For all aviation fuel uplifted in the country.	2030
France	5%	Based on the " French roadmap for the deployment of sustainable aeronautical biofuels "	2030
Germany	200,000 t	Based on the " The PtL roadmap ". The annual 200,000 tonnes of SAF corresponds to a third of the current domestic flights fuel use.	2030
Netherlands	14%	This was established on the basis of a " Study on the potential effectiveness of a renewable energy obligation for aviation in the Netherlands "	2023
Norway	0,5% (30%)	The Norwegian government established a blending obligation for a 0.5% minimum content of advanced biofuel from January 2020. The goal is to reach 30% by 2030.	2020 (2030)
Sweden	1% (30%)	Obligation for jet fuel suppliers to promote the use of SAF from 2021. SAF blend ratios will be needed to meet the reduction obligation, increasing from 1% by volume in 2021 to 30% in 2030.	2021 (2030)

- All these initiatives are under revision as the **ReFuel EU regulation** is currently **under discussion**.

- Being part of the «**Fit-for-55**» package, the Refuel EU aims at stimulating the uptake of alternative fuels in EU aviation sector.

- In the first version, the “Central scenario”, targeted a **minumim SAF share of 5% at 2030**, with a **specific sub-mandate for RFNBO/Synthetic Fuels (PtL) of 0.7%**.

EU-IT installed/announced capacity

EU Memb.State	COMPANY	CAPACITY
Sweden	STI	40
	Preem	199
Finland	Neste	100
	UPM	100
Norway	Norsk e-Fuel	8
Belgium	SkyNRG/ LanzaTech	30
France	TOTAL	170
Spain	REPSOL	50
Netherlands	SkyNRG	100
	UPM	100
	Neste	450
	Synkero	50
Italy	ENI	375
Total (kt/y)		1772

EU

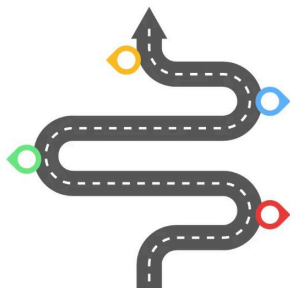
- Potential jet fuel volumes of major Initiatives.

Italy

- ENI main actor, which converted Porto Marghera (Venice) and Gela (Sicily) to bio refining:
 - Cumulated feedstock capacity at 2020: approx 1 Mt/y.
 - Future plans: doubling installed capacity by 2024, 5 times by 2050
- Other major stakeholders preparing new initiatives on SAF

Maritime is next....

Roadmaps needed



- **Beyond setting targets, roadmaps to achieve these decarbonization goals are needed.**
- These paths must be **industrially doable in the set timeframe**, as well as economically doable
- As an example, NL proposed roadmap distinguishing Goals and Actions for the following terms
 - ✓ *Track 1 - Short term (2021-2024)*
 - ✓ *Track 2- Medium term (2024-2028)*
- Indeed, 2030 is the main focus, but also post 2030-35 to 2050 needs roadmap definition

- **€25 million** awarded by EC to the TULIPS consortium of **29 partners (H2020)**.
 - *This funding is part of the European Green Deal, to develop innovations that facilitate the transition to low-carbon mobility and enhance sustainability at airports.*
- To realize these challenges in the hard to abate aviation sector, commitment from the entire chain is needed.
 - *The collaboration of airports, airlines, knowledge institutes and industrial partners in this unique European consortium makes it possible to contribute significantly to sustainable aviation.*
 - *PoliTO supports the decarbonisation pathways of Torino Airports + Larnaka/Schipol*
- In TULIPS, a very focused action target the possibility to set up an **EU Clearinghouse**. *This work is complementary to the action carried out by other stakeholders (e.g. EASA)*
- EU-CH will likely have similarities but also a different structure and organization than the US-CH



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Biochar : Spain (BIO4A) & Italy/Larnaka (TULIPS) trials



→ Biochar as Offsetting for Aviation

Biochar use in soils - The EU Soil Strategy for 2030 was published in 2021*. The following elements potentially relate to biochar production or use, although biochar is not explicitly mentioned.

The new EU **“fertilizers regulation”** covers fertilizing products and soil improvers. It **contains a provision to add biochar as soil improver** after a positive biochemical and health risks assessment.

Regulation EU 2019/1009** allows for several feedstocks, such as biochar, to be used as soil amendment.

Biochar use in agriculture: the **“organic production regulation”** + **Implementing regulation*****.

→ **Biochar** can be considered as a mean to **stably Sequester&Use Carbon**. This possibility **fit under the term e_sca**, as per the **REDIIA**, just voted by MS

→ **Biochar as PyCCS (or BioCCS/U)**: to be discussed in ICAO FTG

→ **Innovation deal on Biochar in ETS**: under preparation



* <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021DC0699>

**Regulation (EU) 2019/1009 of the European Parliament and of the Council of 5 June 2019 laying down rules on the making available on the market of EU fertilising products

*** http://data.europa.eu/eli/reg_impl/2019/2164/oj and https://eur-lex.europa.eu/eli/reg_impl/2021/1165/oj

Conclusions

- It is a unique historical moment: both sides of the Atlantic are taking strong policy action on SAF
- We should consider **strengthening the international dialogue** (Europe/US, as well as Multi/Bilateral cooperation) to address common approaches, to deal with the implementation challenges we are identifying, such as
 - ✓ *Coexistence of Sustainability schemes and regulatory documentary requirements*
 - ✓ *Claiming emissions under different regimes.*
 - ✓ *Developing the EU Clearinghouse*
 - ✓ *Developing the value chains*
- This could also drive to bring common approaches to the global community at the 2023 ICAO Conference on SAF.
- It would be very interesting to organize a **joint workshop** to share ideas (as we have done with European stakeholders).

Thanks for your attention!

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