Hydrogen Europe

Brussels, March 2026

e-SAF Early Movers Coalition

Industry perspectives on terms and condition of a double-sided auction

The launch in December 2025 of the e-SAF First Movers Coalition is a statement of resilience and unity and sets a path which other member states should follow to supporting the aviation sector's decarbonisation and the meeting of ReFuelEU Regulation targets. Through a joint implementation of the recommendations of the Sustainable Transport Investment Plan (STIP), the eight countries who first joined the Coalition hold the power to contribute to two key challenges: 1/ accelerating sustainable aviation through the **support of aviation fuels with the highest level of sustainability**, and 2/ strengthening Europe's ability to adapt and thrive in the face of global energy challenges, turning innovation into lasting energy resilience leadership.

To turn political support into real action with the launch of double-sided auctions through a market intermediary that can help offtakers sign **durable offtake agreements** and support SAF projects reach final investment decision (FID), this note presents considerations for future auctions, building on the analysis and experience of actors from the field: fuel producers, fuel suppliers, aircraft OEM, investors.

The note aims to scope the objectives pilot auctions through a market intermediary should aim to reach and provide data on the e-SAF projects pipeline which would supply fuels eligible for compliance under ReFuelEU. It also puts forward elements for consideration in the design of future auctions, building on the experience of similar funding mechanisms (eg. Green hydrogen and derivatives such as ammonia from international suppliers for European markets).

1. Objectives of a first double-sided auction in 2026

Whilst already successfully tried in other sectors (eg. ammonia), a mechanism such as a double-sided auction has not yet been implemented in the case of e-SAF amid initial attempts. A first competitive bidding in 2026 or 2027 should seek to reach **five objectives**:

1. Financially de-risk agreements between producers and offtakers and thereby facilitate reaching FID of e-SAF projects in 2026 and build confidence in the e-SAF market.
2. Support compliance to ReFuelEU and REDIII targets.
3. Gather data on the e-SAF market dynamics incl. price discovery, project status.
4. Refine and improve knowledge of such funding mechanism in view of running e-SAF auctions in 2026, 2027 or beyond.
5. Show that e-SAF can achieve cost-effectiveness at scale by enabling the highest possible production volumes at the lowest possible cost.

2. Projects eligibility criteria:

Ahead of a planned competitive bidding on the producers' side targeted in 2026, criteria will have to define which e-SAF producers and projects are eligible to participate. With regards to the projects' **eligibility criteria**, three core areas are explored: project maturity, project location and off-taker profile. Other **necessary auction criteria** are considered such as project size, tender duration and cumulation.

A. <u>Project maturity:</u>

Auction organisers may consider several options to determine the eligibility criteria on the e-SAF producers' side ahead of a potential competitive bidding in 2026.

- Option 1: Eligible projects need to have **finished** Front-End Engineering Design (FEED)
  - *Assessment*: There aren't currently enough projects in e-SAF pipeline (See figure 1). The market is too nascent. Such a stringent condition would narrow down eligible projects to a handful of bidders[1].
- Option 2: Include projects that have **secured financing** for FEED
  - *Assessment*: Includes ~30% of project pipeline (See figure 1 in the Annex). Enough projects existent in Europe & ensures that financial close can be reached. There is a relatively good understanding of their cost structure and performance, as there has been a first screening by the funding agency.
- Option 3: Include projects that are **in pre-FEED, feasibility (or earlier)**
  - *Assessment*: Projects still in the pre-FEED or in feasibility phase or earlier lack a comprehensive understanding of their cost structures, making it challenging to enter into offtake agreements with market intermediaries. Therefore, it is essential to ensure that projects have reached sufficient maturity to clearly assess costs and accurately estimate contract prices.

➔ *Recommendation: Option 2 is preferred and should be considered for a potential future e-SAF auction. Such a condition strikes a balance between sufficiently mature projects (FEED financing secured), but at same time not being too restrictive (eg. post-FEED) which would dramatically reduce the number of eligible projects. It would ensure that projects eligible already have detailed execution plans and delivery timelines and can credibly reach FID. Applying such criteria would yield 10-20 projects.*

B. Project location:

A discussion on project location, framed in light of recent EU industrial and climate legislation—such as the proposed Industrial Accelerator Act—may require alignment, raising the question of whether a 'made-in-Europe' logic could apply to the auction design. A recommendation for the project location is therefore not included in this note, however an overview of three potential options and their implications is detailed below.

- Option 1: Eligible projects only take place **in Member States providing funding**.
  - *Assessment*: Such criteria would increase the visibility of the funding, its political relevance but limits the efficiency of funding whilst at the same time depart from the legal basis of the legislation it aims to support (ie. an EU air transport Regulation applying across the EU Single Market for Air Transport). The e-SAF project pipeline encompasses all projects within the EU27, UK, Norway, Iceland, and Switzerland that aim to produce aviation synthetic fuels using electrolytic hydrogen (produced on site) as a feedstock. Around 30% of the project pipeline capacity is concentrated in France, followed by 18% in Finland, 12% in Sweden and 9% in the Netherlands.

[1] Only around 0.3 Mt/year of e-SAF (equivalent to ~1.2 GW_{el} of electrolysis capacity) has progressed to FEED or beyond and have either secured public funding or/and an offtaker, placing these projects close to reach FID soon.

- Option 2: The project should take place in the **EU/EEA** (see figure 2 in Annex)
    - *Assessment*: Aviation fuel in Europe is distributed through an extensive network of pipelines (eg. CEPS), as well as by rail, road, and marine transport. Consequently, the production site of the fuel is not a major constraint. e-SAF can utilise this existing infrastructure for distribution.
- Option 3: **Worldwide Production**
    - *Assessment*: Eligibility to all projects, independently of location would maximise funding efficiency by allowing support for production where it has the highest comparative advantage. However, such criteria would be at odds with European political priorities of energy resilience.

C. Offtaker profile:

The profile of the offtaker could be defined according to eg. whether it is an obligated party under ReFuelEU, but could also include eg, interest in uplift, willingness to self-supply, creditworthiness. For example, the offtaker's financial health determines the project's revenue stability, influencing lender confidence, financing costs, and overall project bankability, requiring due diligence on their financial strength, market position, and providing guarantees to mitigate risks for producers and investors.

- Option 1: Offtaker can be **either a fuel supplier, an aircraft operator, or any other aviation economic operator** relevant in the sector's energy transition.
    - *Assessment:* Adopting a broad eligibility criterion for the offtaker would enable a wider variety of actors invested in the SAF sector to play a role.
- Option 2: Offtaker is defined as **fuel supplier.**
    - *Assessment*: Fuel suppliers have historically been considered as more creditworthy than airlines. Investors are cautious because many airlines do not have strong enough balance sheets or cannot commit to the long-term, fixed-price contracts typically required to secure financing.

➔ *Recommendation: Whilst option 2 (offtaker = fuel supplier) would align with the ReFuelEU obligations on fuel suppliers, option 1 would significantly widen access to ensure the auction is a success in supporting targets, whilst at the same time open door to new actors and new contracting and supply arrangements. Option 1 should therefore be preferred to include a broad variety of offtakers.*

3. Additional necessary tender criteria:

Organisers should consider additional criteria in designing the auction in order to increase its effectiveness and ensure it is robust.

- **Auction duration:** Funding for the e-fuel producer should at least cover a 10-year period to demonstrate the projects' viability to the bank, lower risk, and give e-SAF producers more financial maturity.
- **Future auctions**: To increase planning certainty for eSAF producers, auctions should take place on a regular basis and be announced well in advance.
- **Project size:** The size of the project should start at 10 kt/year with no cap on the project size to include and encourage different project sizes.

- **Production timeline**: In order to support the first ReFuelEU Regulation compliance year, the project needs to be able to deliver the mandated e-SAF volumes by 2030-2031. Moreover, a narrow time lapse between the supply-side auction and the demand-side auction will allow for optional additional volumes.
- **Production pathway**: All eSAF production pathways that can be certified under RFNBO and/or synthetic low-carbon fuels should be considered for the auction as to not exclude projects.
- **Execution credibility**: Additional proof that the eligible project is credible could include financing, proof of feedstock purchase, evidence of operational permits. Regarding permits, projects selected for the auction ought to be prioritised by Member States and receive additional support to fast-track the permitting process.
- **Cumulation:** Cumulation of aid notably in the case of support for FEED studies, as both funding tools consider different added costs, should be allowed. Similarly, cumulation with ETS SAF Allowances (FEETS) support should be guaranteed.

4. Indicative timeline and deadlines

Minimum time until commissioning (years)	*>10 MW*
Final investment decision	*2*
Preparatory stage	*3*
Feasibility study	*5*
Concept	*6*

Source: Clean Hydrogen Monitor 2025, Hydrogen Europe.

The above table outlines a timeline for typical hydrogen/hydrogen derivatives projects. e-SAF project timelines are harder to determine due to market immaturity, which can lead to projects delay. Under and optimal timeline, to enable production and supply by 2030, funding should be allocated in 2026 with contracts signed and FID in 2027—assuming projects have completed FEED and are ready for construction.

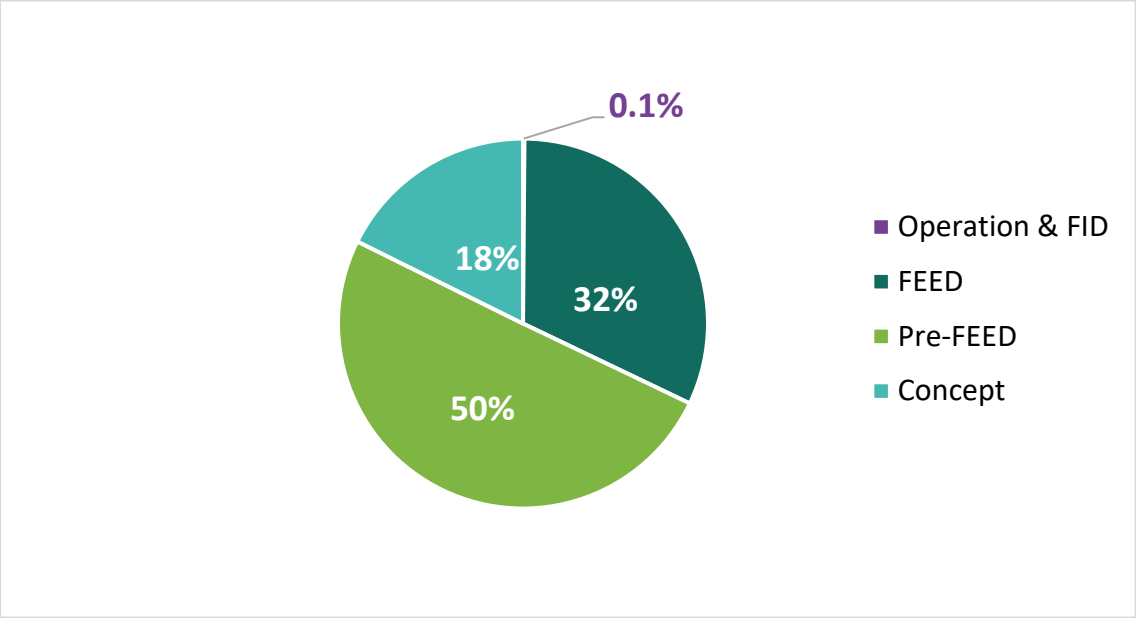
5. Other considerations

- **Reference price:** Double-sided auction are well suited for kickstarting a new market where no reference price currently exists. Indeed, considering the nascent nature of the e-SAF market, it is too premature to include a reference price at this stage. One of the takeaways of a first pilot auction is to create price transparency. The auction will enable the development of a future reference price due to price discovery. Such reference could there subsequently after the first auction as an indication for future auctions.
- **Cost coverage:** Additional consideration should be given to the percentage of the price difference that should be covered by the auction. Eg. 100% of price gap with fossil kerosene. Since the auction takes place in the context of the ReFuelEU Regulation which sets significant penalties for non-compliance by the obligated suppliers, a full (ie. 100%) support does not appear appropriate.

Annex: Pipeline of e-SAF projects in Europe – *source Hydrogen Europe*

As of February 2026, 0.1% of the planned 3.5 Mt/year e-SAF capacity (equivalent to ~14 GW_{el} of electrolyser capacity) is operational or has reached final investment decision (FID). The distribution of the 59 projects in the e-SAF project pipeline by development stage to date is illustrated in Figure 1.

Figure 1. Distribution of the project pipeline based on capacity. Source: HE.*



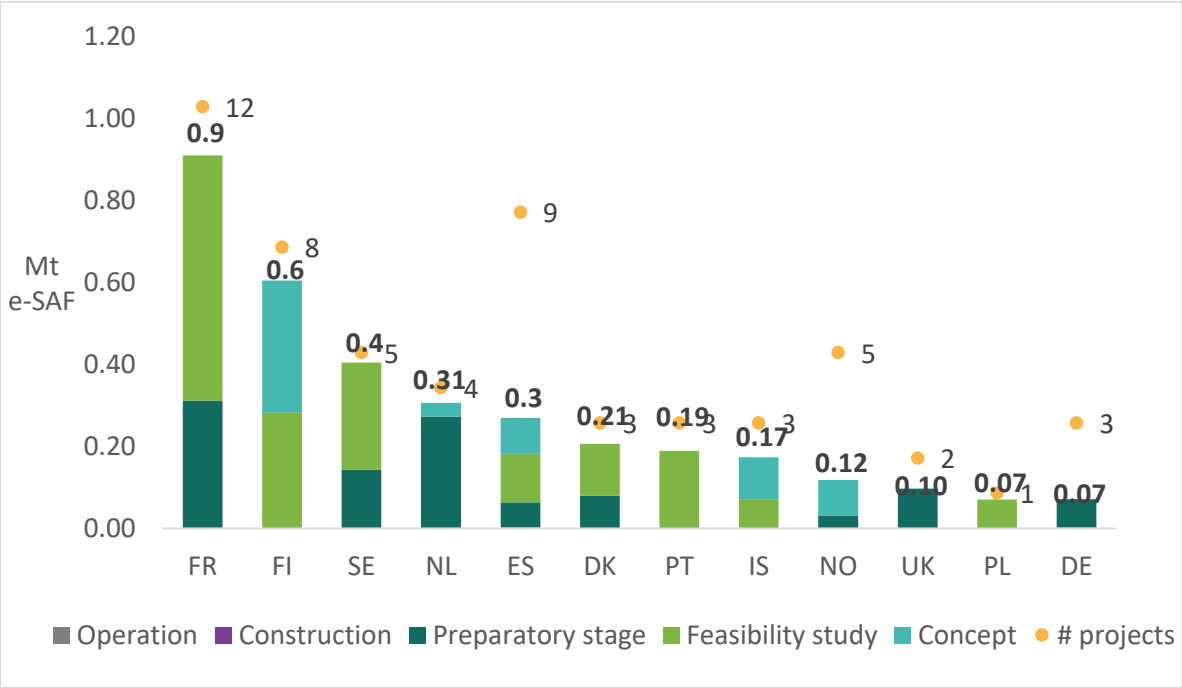
1. ***Number of projects***

- 2 in operation = 2,200 tonnes/y e-SAF
- 1 in FID = 2,000 tonnes/y e-SAF
- 16 in FEED = 1,100,000 tonnes/y e-SAF in total
- 27 in pre-FEED = 1,700,000 tonnes/y e-SAF in total
- 13 in concept = 700,000 tonnes/y e-SAF in total

2. ***Capacity range per projects***

- Operation: 150-2,000 t/y e-SAF
- FID: 2,000 t/y e-SAF
- In FEED: 4,000-260,000 t/y e-SAF
- Pre-FEED: 20,000-140,000 t/y e-SAF
- Concept: 21,000-150,000 t/y e-SAF

*Figure 2. Distribution of e-SAF project pipeline in terms of capacity and number of projects as of December 2025. Source: HE**



*Note: Hydrogen Europe's project pipeline includes only projects within the EU27, UK, Norway, Iceland, and Switzerland that aim to produce synthetic aviation fuels using electrolytic hydrogen as a feedstock. For projects where e-SAF volumes were not available, volumes were calculated based on hydrogen in tonnes/year and a conversion factor from hydrogen to e-SAF of 0.49 for FT and projects that have not disclosed their production pathway. A conversion factor of 0.59 was used for MtJ. Therefore, discrepancies between Hydrogen Europe's data and others may occur if different assumptions are used or if low-carbon or other production pathways are being included under the term.