Project SkyPower

Unlocking the e-SAF market in the EU

A proposal for establishing an e-SAF market intermediary

DELIVERY PARTNERS

SYSTEMIQ

Green Finance Institute

June 2025

In 2025, the EU has a window of opportunity to write the first chapter on e-SAF

ENERGY SECURITY

BOLSTERS RESILIENCE OF EU JET FUEL SUPPLY CHAINS

through sovereign production, diversifying sources of supply for both civil aviation and defence

ECONOMIC PROSPERITY

UNLOCKS €50+ BILLION MARKET IN EUROPE BY 2050[1]

creating and securing the future of over 2 million jobs[2] across the EU aviation industry

CLIMATE INNOVATION

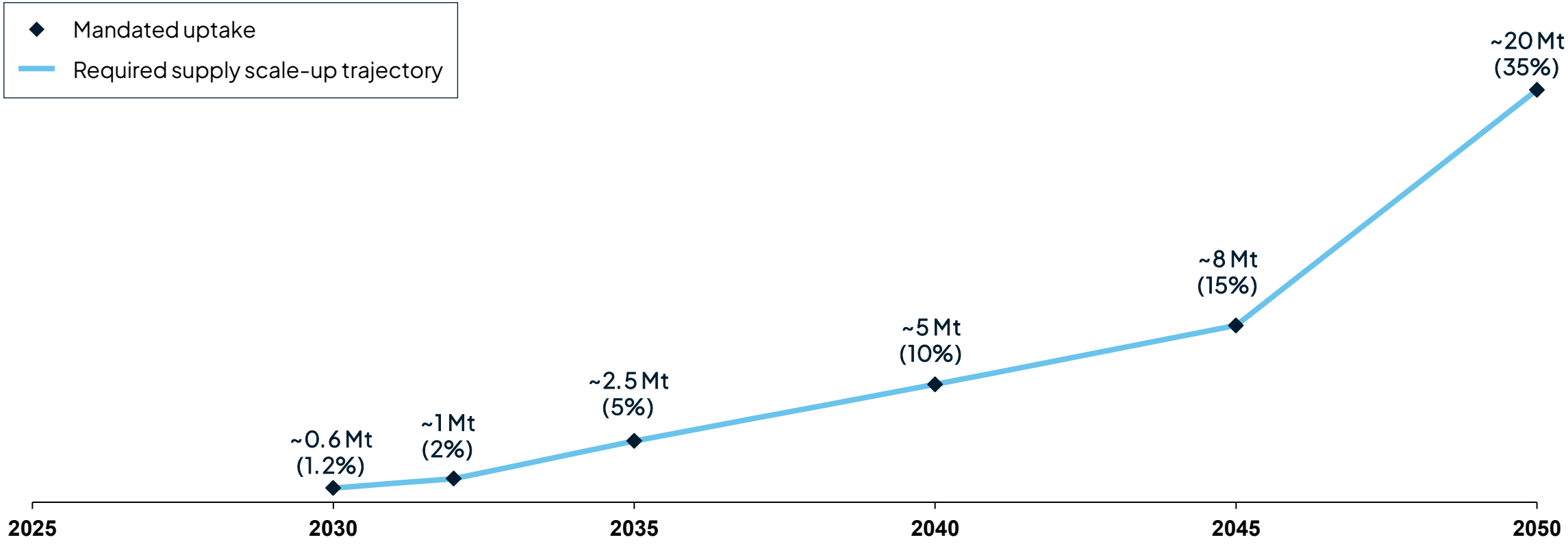
SECURES CLEAN-TECHNOLOGY LEADERSHIP

with 60% of planned global e-SAF capacity in Europe[3], supporting the growth of European technology leaders

Sources: 1) This assumes a European e-SAF demand of ~20 Mt by 2050 and an indicative e-SAF price in the long run of ~€3,000–4,000 per tonne based on SkyPower analysis; 2) Data from the European Commission, supplemented with Project SkyPower analysis based on RMI (2024); 3) SkyPower analysis.

ReFuelEU Aviation is game-changing, setting a clear trajectory for e-SAF scale-up to meet EU climate targets

Mandated e-SAF volumes in the EU, in Mt per annum (% blending in total jet fuel)

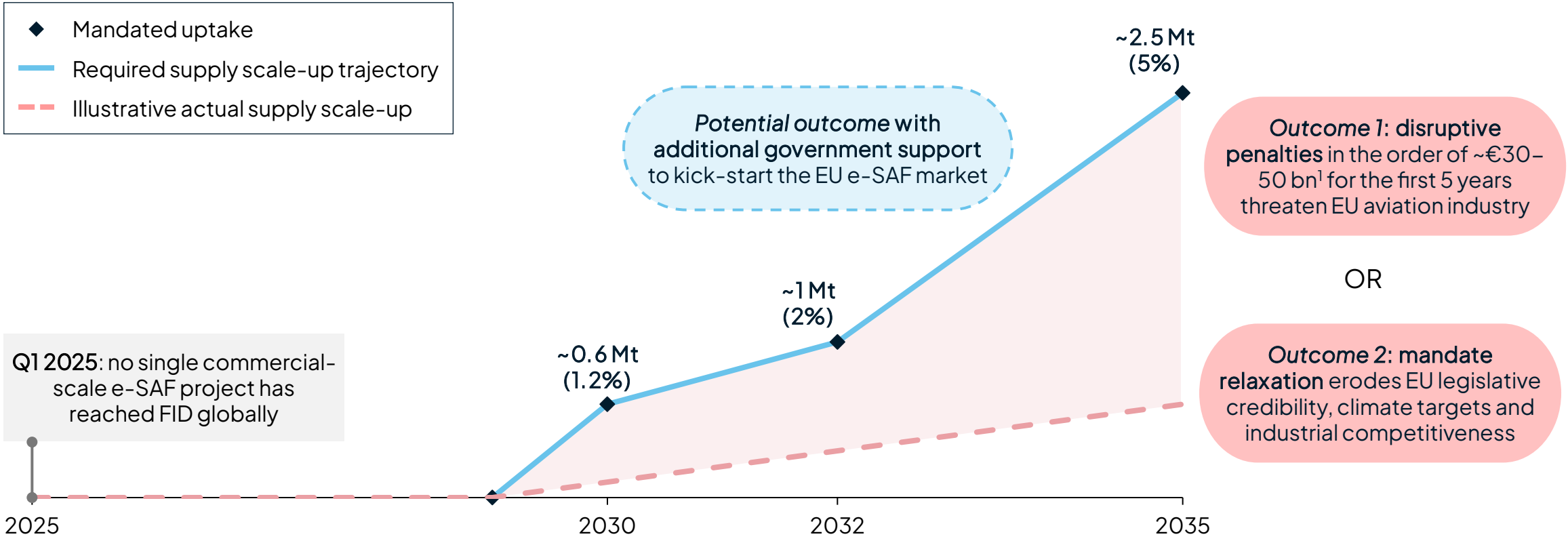


Note: This assumes an EU jet fuel demand of ~50 Mt in 2030 and an annual demand increase of 1% towards 2050.

Source: European Commission.

Without further public support, the EU could risk facing disruptive penalties and missing climate targets

Mandated e-SAF volumes in the EU, in Mt per annum (% blending in total jet fuel)



Note: 1) Total possible penalties incurred if no e-SAF is used between 2030–2034. Assumes the penalty amounts to 2× the price differential between fossil jet fuel and e-SAF, with an illustrative price of ~€7,500 per tonne e-SAF.
Sources: ReFuelEU Aviation (Article 12), EASA (2024), Project SkyPower analysis.

4

Final Investment Decisions are hindered by unaddressed risks causing market failures

Key risks

E-SAF project developers and project financiers

- **Revenue risk** given the need to guarantee a certain debt-service-cover-ratio to secure debt financing
- **Counterparty credit risk** given relatively low credit rating of airlines, indicating a risk to meeting offtake agreement obligations
- **Project-on-project and technology performance risk** given novel system integration
- **Regulatory risk** given production criteria for e-SAF could change

NO LONG-TERM OFFTAKE COMMITMENTS

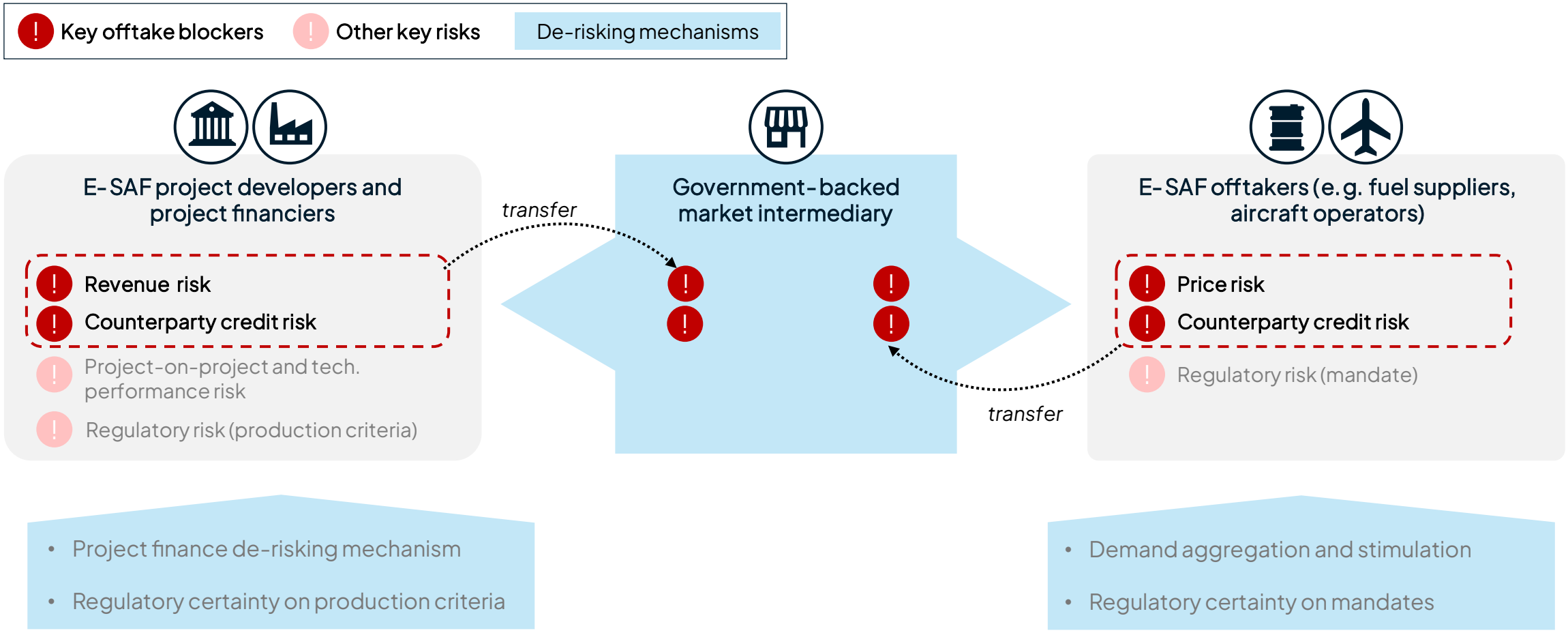
NO FINAL INVESTMENT DECISIONS

E-SAF offtakers (e.g. fuel suppliers, aircraft operators)

- **Price risk** given second/third-of-a-kind projects could potentially produce at lower costs
- **Counterparty credit risk** given producers are often start/scale-ups
- **Regulatory risk** given a perception of uncertainty around the stability of the mandate

Source: Insights report (2024).

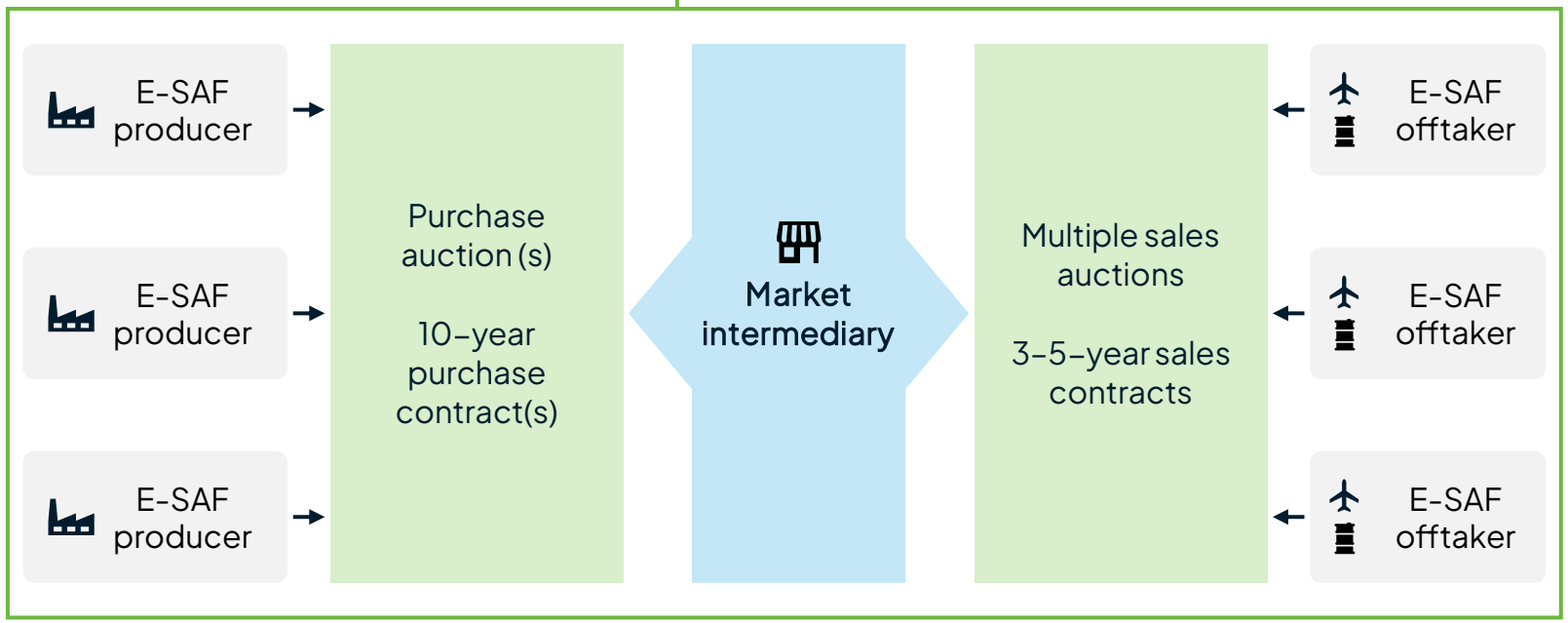
A government-backed market intermediary could warehouse key market risks to unlock FIDs

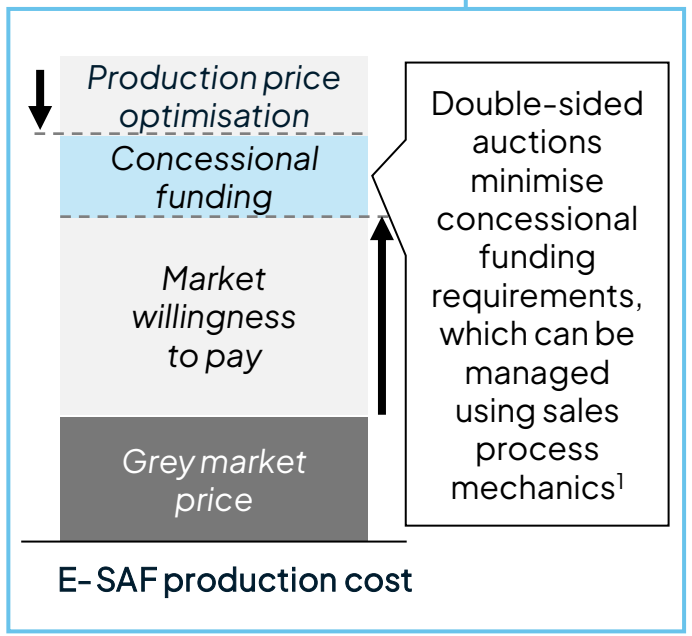


Source: Insights report (2024).

Through five key steps, a government-backed market intermediary could scale e-SAF production in the EU

1. Intermediary signs grant agreement with public fund provider(s)
2. Intermediary designs and holds e-SAF purchase and sales auctions
3. e-SAF plants reach FID, raise capital and get built
4. e-SAF is produced, delivered and paid for via the intermediary
5. Funders cover gap between purchase and sales price





Notes: 1) Sales process mechanics include for example using price collars to set a floor and ceiling price for bids.

Public support should unlock FIDs, optimise capital use, catalyse a self-sustaining EU e-SAF market and be easy to implement

Three types of public support mechanisms evaluated:	**Fixed-level support** e.g. SAF Allowances, tax credits	**Contracts-for-difference** e.g. via a one-sided auction	**Market intermediary** with gov.-backed double-sided auctions

Eight key criteria that best evaluate the different public support mechanisms against the objectives:

Bring **the first wave of e-SAF projects to FID**	1. … by creating **long-term revenue certainty** for producers 2. … by managing **price risk** for offtakers
Protect the EU's interests by **optimising use of EU public capital**	3. … by minimising **subsidy requirement** 4. … by minimising **financial risk exposure**
Catalyse a **self-sustaining EU e-SAF market**	5. … by supporting **market price transparency** 6. … by kickstarting a **dynamic and liquid market of critical mass**
Ensure **quick and easy implementation**	7. … by ensuring **fast** implementation 8. … by ensuring **low complexity** of implementation

A government-backed market intermediary can achieve the objectives more effectively, compared to other mechanisms

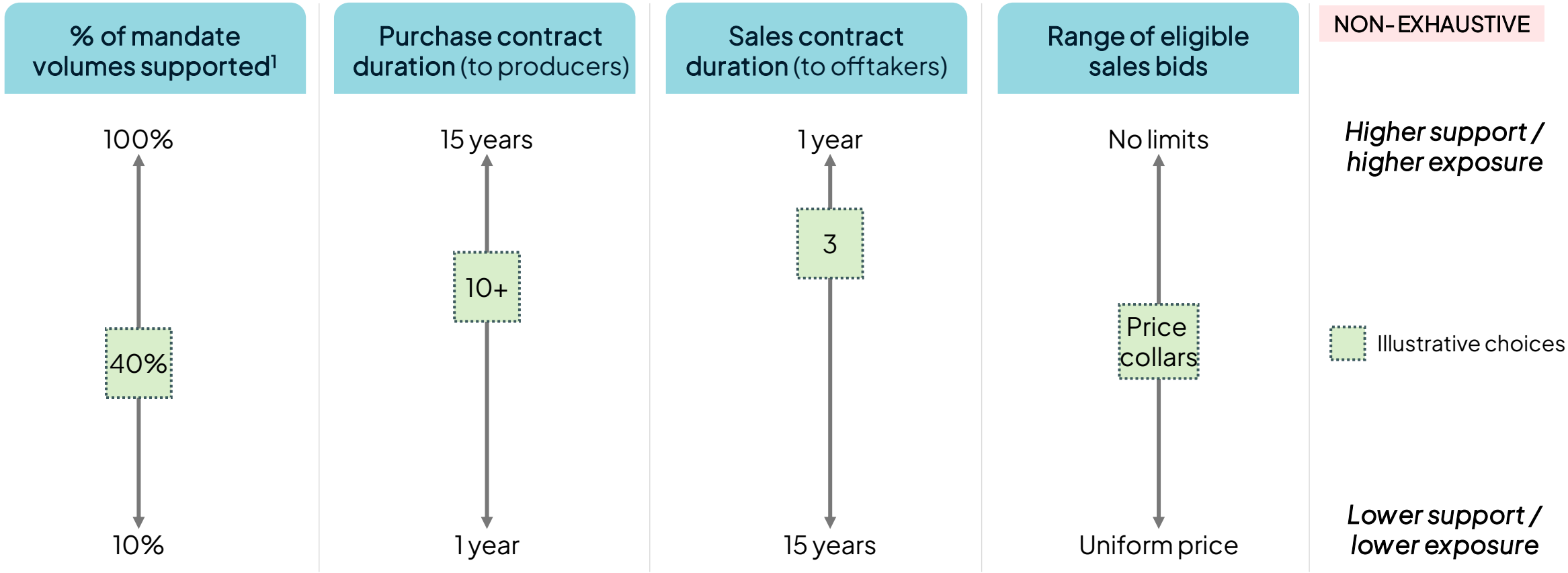
Meets criterium
Partially meets criterium
Does not meet criterium

		Fixed-level support e.g. SAF Allowances, tax credits	Contracts-for-difference e.g. via a one-sided auction	Market intermediary with gov.-backed double-sided auctions
Bring projects to FID	1. Creates long-term revenue certainty	*Only covers share of revenues*[1]	*Ensures required revenues*	
	2. Manages price risk	*Does not eliminate the need for long-term contracts but could lower premium*	*Does not eliminate the need for long-term volume commitments*	*Enables short term contracts and could lower premium*
Optimise public capital	3. Minimises EU subsidy requirement	*No competitive bidding process*	*No incentive for demand competition*	*Optimises production and sales prices*
	4. Minimises EU risk exposure	*Risk exposure limited to total subsidy envelope*	*Liable for full strike price, but tools exist to manage*	*Liable for full purchase price, but tools exist to manage*
Catalyse liquid market	5. Supports price transparency	*No publication of production nor sales price*	*Publication of average strike price for producers*	*Publication of both purchase price and sales price*
	6. Creates dynamic liquid market	*Prohibitively large funds needed for critical mass*[2]	*Potential lock-in of dependence on artificial price (strike price)*	*Phase-out of support is possible after critical mass is reached*
Ensure ease of implem-entation	7. Is quick to implement	*SAF Allowances in place; restructuring dependent on revision of ETS Directive*	*National government-funded pilot possible in 2025/26; EU-level roll-out dependent on allocation of funds*	
	8. Is easy to implement	*Existing instrument, low complexity*	*Tested instruments that could be rolled out for e-SAF; careful design of auctions necessary*	
Summary assessment		✓ **Easy to implement** ○ **Risk of significant over-subsidisation** if too high, but can fail to get projects to FID if too low	✓ **Adequate revenue support to most cost competitive producers** ○ **Risk of market stalling** given dependence on high subsidies	✓ **Tackles market failures on both sides in a capital-efficient manner** ○ **Risk exposure** but tools exist to manage it

Notes: 1) Currently, SAF Allowances can be claimed on an annual and ex-poste basis only; 2) The share of the price differential between e-SAF and fossil jet fuel covered by SAF Allowances would need to be adjusted downwards to optimise for effectiveness and volumes supported with the available funds.

A market intermediary allows for flexible tender design, allowing support levels to be matched to funding envelope

Examples of flexible design choices in control of funder, to trade off between level of support and risk exposure



Note: 1) Share of estimated volumes required to fulfil the 2035 e-SAF sub-mandate .

A series of e-SAF tenders could support the scale-up of production and offtake towards a liquid e-SAF market

Stage gate: if market supply is still insufficient, further support would be required

		First e-SAF tender	Second e-SAF tender	Third e-SAF tender
Proposed set-up	Purchase auction	2025/26 (pilot)	2027/28	2031/32
	Potential funding source	Co-funding from national governments[1]	EU ETS Aviation revenues (a share of ~€15 bn expected revenue from 2030–2039[2])	ReFuelEU penalties (a share of up to ~€16 bn in fines for missing the 2030/31 mandate[3])
	Executing entity	Existing provider e.g. Hintco by H2Global	TBD e.g. Hintco or EU institution	TBD e.g. Hintco or EU institution
Illustrative impact	Intended outcome	Enables first-of-a-kind plants & price discovery	Builds momentum to a liquid market	Reinforces market only if not on track
	Number of e-SAF plants unlocked[4]	1–2 plants operational by 2030	~6 plants operational by 2032	~12 plants operational by 2035
	E-SAF production capacity unlocked[5]	~50 ktpa	~300 ktpa	~600 ktpa

Notes: 1) € 100+ bn of public funding for clean technology in EU Member States has not yet been disbursed, of which a share could be available for e-SAF; 2) Expected cumulative EU ETS Aviation revenues in the years 2030 to 2039, assuming a carbon price of €80 per tCO_2; 3) This assumes a penalty price of ~€13,500 per tonne e-SAF not tanked in both 2030 and 2031; 4) 50 ktpa plants. 5) Market liquidity could appear after 5% of mandated volume by 2050 is reached (i.e. ~1 Mtpa production capacity), in line with development of similar markets; however, further auctions can be scheduled as required until the market is self-sustaining.

Sources: Project SkyPower modelling, EEA ETS Inventory (2025), Auquan (2025), Bruegel (2022), European Commission (2025), Dutch Parliament (2024).

Project SkyPower

Key takeaways

- The e-SAF mandate is game-changing, but **without further public support there is a risk of the market stalling**, resulting in either penalties or erosion of EU legislative credibility and jeopardising climate targets and industrial competitiveness.

- **A government-backed market intermediary warehouses key market failures to bring the first wave of e-SAF projects in the EU to FID, activating both the supply and demand side of the market** and building confidence in the e-SAF value chain to unlock private capital.

- In addition, **a market intermediary best optimises the use of public capital in the short term to efficiently catalyse a self-sustaining EU e-SAF market over the long term**. It can be advantageous over other instruments, e.g.:
  - **Fixed-level support**, which is easy to implement but generally only supports one side of the market and carries a risk of inefficient use of public funds with significant over-subsidisation;
  - **Contracts-for-difference**, which supports the supply side but does not protect the demand side against price risk, with the risk of the market becoming dependent on high subsidies.

- **The market intermediary is a flexible instrument, enabling funders to control the level of support versus risk exposure**, to align with the funders' strategic objectives while limiting financial exposure.

- **Three purchase auctions could catalyse the e-SAF market, before phasing out public support**:
  1) a **joint member state pilot auction in 2025/26** (e.g. via Hintco by H2Global) to build the first-of-a-kind e-SAF plants and create price transparency;
  2) an **EU ETS funded auction in 2027/28** to drive confidence and scale;
  3) **one or more auctions funded by penalties from 2031** to reinforce the market *if needed.*

Over 50 companies have co-signed an open letter asking for governments to fund a pilot e-SAF tender

This work was developed with support and input from Project SkyPower's Steering Committee. However, the views of individual organisations may differ regarding certain findings and recommendations.

For more details on design choices, cashflows, timelines and such, please reach out to Secretariat@Project-Skypower.org

Project SkyPower

SYSTEMIQ

For more information, visit our website: Project-SkyPower.org