



POLICY PAPER - December 2024

A European Hydrogen Clearing House for green maritime and aviation e-fuels

Introduction: breaking the impasse of the green hydrogen market

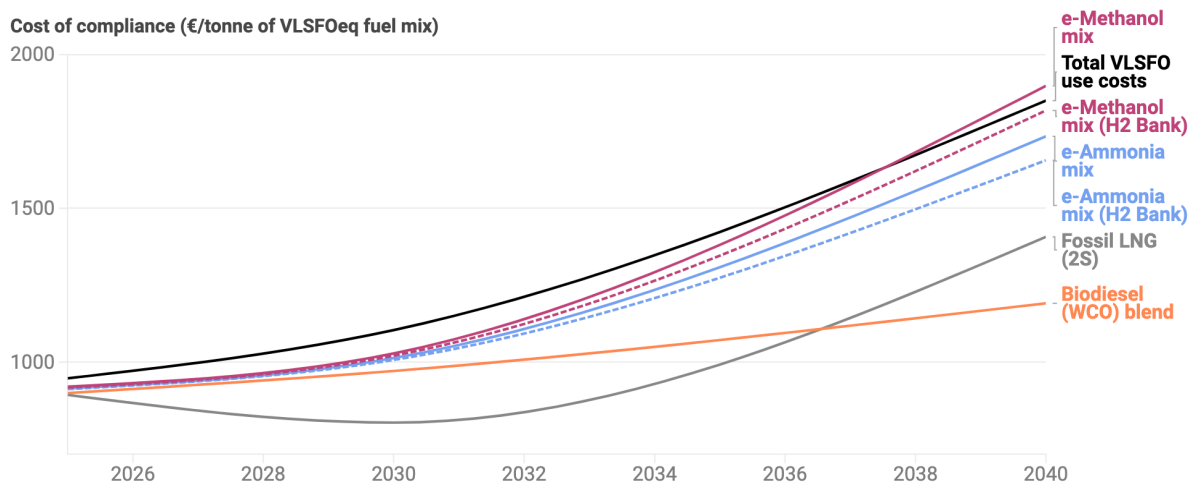
Europe has set itself the goal of decarbonising its economy by 2050. Green hydrogen and its derivatives - e-fuels - are expected to play a key role in decarbonising the aviation and shipping sectors. Scaling up e-fuels will require mass deployment of new technologies, infrastructure and markets at significant costs. This policy paper puts forward the case for a European Hydrogen Clearing House (EHCH), to consolidate and de-risk the market for this fragmented and nascent technology.

FF55 and competitive H2 Bank auctions are not sufficient

Key policies under the EU FF55 package, namely the ETS and FuelEU Maritime aim to price ship sourced carbon and require a progressive switch to alternative lower carbon fuels. While these measures increase costs for emissions-intensive fuels, they fail to make e-fuels competitive in the foreseeable future due to their significantly higher production costs relative to alternatives like fossil LNG and biofuels.

To bridge the cost gap, ships can apply for EU and national subsidies under the Innovation Fund and Hydrogen Bank (H2 Bank). Following the [H2 Bank pilot auction](#), seven European projects secured 10 years of funding for green hydrogen production with subsidies ranging from 0.37 EUR/GJ to 0.48 EUR/GJ. However, as shown below, if these subsidies were allocated to the shipping sector, they would be insufficient to close the “price gap” between e-fuels and other alternatives, risking project delays, cancellations, or a diversion of hydrogen to other sectors that use it in pure form without refining.

Limited impact of Hydrogen Bank subsidies to make RFNBOs cost-competitive in FF55 compliance



Source: Transport & Environment (2024). Fuel prices from H2 Bank pilot auction and DNV CIA (2024). Analysis assumes that ships co-combust/blend only the minimum level of alternative fuels needed to meet the FEUM targets and that this is technically possible with DF engines.



While supply-side competitive bidding auctions can help spread limited public funding across larger RFNBO volumes, the results of the first H2 Bank auction don't provide enough confidence that the resulting support per unit of RFNBO will be sufficient for end users. While shipping

companies have the natural ability to pass through the higher fuel costs, intensive competition and uneven playing field create high risks for the first movers.

This will likely reinforce reliance on fossil LNG and biofuels, which the current FuelEU Maritime positions as economically more attractive options due to their low price and unjustifiably favourable emissions rating. Industry leader [Maersk's recent pivot from e-methanol to fossil LNG](#) newbuild ships illustrates the industry response to current market and policy dynamics that disadvantage e-fuels. Consequently, without a comprehensive solution to financial and operational barriers, e-fuel projects risk struggling to secure investment or begin operations.

High barriers to marine and aviation e-fuel projects

Green hydrogen and hydrogen-based fuels have huge potential to decarbonise the maritime and aviation sectors. However, the market and supply chain for these fuels remains immature. We have identified three major hurdles that need to be overcome as part of the European Clean Industrial Plan. This will ensure that green fuels and energy sources contribute to decarbonising the lion's share of European shipping and aviation emissions.



High production costs. Green fuels are expensive. This disincentivises end users to choose e-fuels over cheaper alternatives for regulatory compliance.



Purchase commitments. E-fuel investors require long-term purchase commitments from off-takers to ensure business viability and project funding. The current ship and airline bunkering practices are based on short-term or spot contracts. These are unsuitable for high-risk, capital-intensive e-fuel projects. This is especially relevant for shipping given route or schedule variability.



Bunkered volumes fluctuate. The variable length and recurrence of individual voyages and flights do not provide the essential volumetric demand certainty for e-fuel producers.

To resolve this, the EU should establish a **European Hydrogen Clearing House (EHCH)**. Building on the [HINTCO initiative](#) of the H2Global Foundation, the EHCH would be an upgrade to the EU Hydrogen Bank hosted under the Innovation Fund, acting as an intermediary between hydrogen/e-fuels producers on one side, and shipping and aviation off-takers on the other through double-sided auctions. The EHCH would offer revenue guarantee contracts to the suppliers through supply-side auctions, fostering trust in the new market and attracting additional investors. It would also organise the marketplace and demand-side auctions, where buyers and sellers would manage the actual purchases and onward re-sale of e-fuels. Initially, the fuels would be delivered to key European bunker ports, including Rotterdam, Antwerp, Algeciras, Piraeus and Marseille.

The EU should complement the EHCH with a centralised **European Hydrogen Platform**. This Platform would provide location-specific information on supply, demand and infrastructure availability, making green e-fuels more accessible across EU ports. It would also facilitate

matchmaking between producers and buyers and indicate the right time to organise e-fuel purchase and sales auctions. The Platform should link directly with the [InvestEU Advisory Hub](#), offering support and technical assistance to e-fuel investors.

A European Hydrogen Clearing House

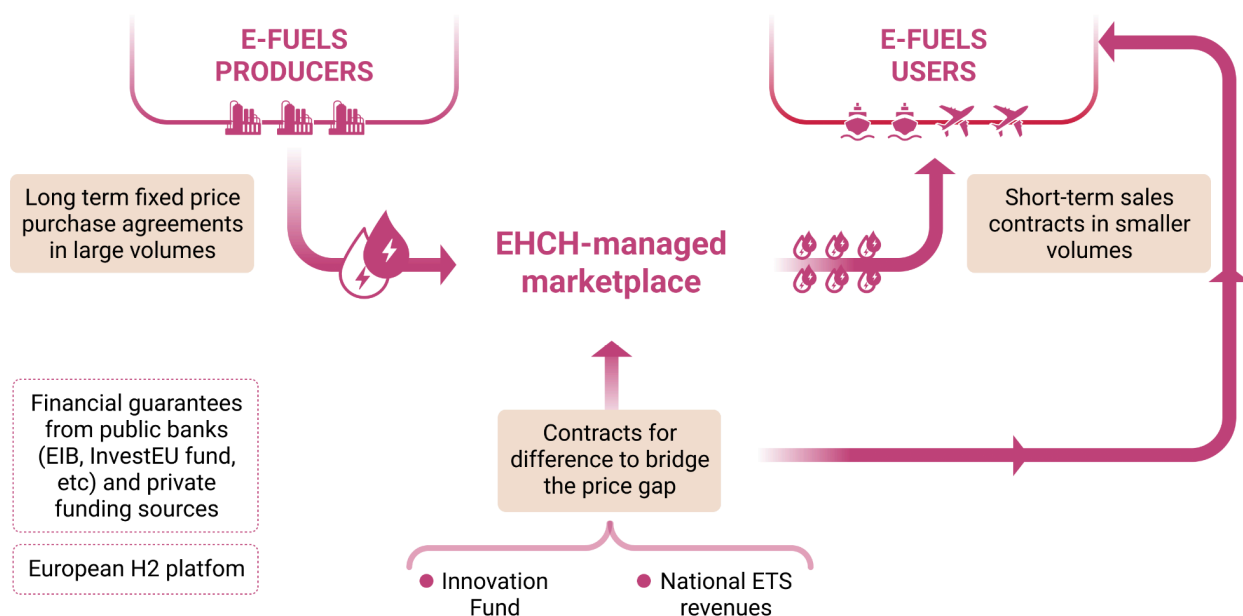
The EHCH would provide a range of services that are missing from the current system:

- **Financial support** will reduce the production cost gap between green hydrogen-based fuels and cheaper alternatives. This funding could be delivered through contracts for difference and auctions-as-a-service, financed by the EU Innovation Fund and Hydrogen Bank, as well as and national ETS revenues. We recommend a 25% share for this initiative.¹ Additionally, more than half of the EU's Recovery & Resilience Facility funds - initially agreed to address the COVID-19 recession - [remains largely unspent and could redirect billions to support the EHCH](#).
 - To bring e-fuels to final investment decisions (FID), additional risk mitigation measures might be needed. These measures, while supporting the EHCH, would function separately. They could include guarantees from the European Investment Bank, the InvestEU fund, export credit agencies, and private financiers. For non-EU producers, risk mitigation should come from development banks via loan guarantees, political risk insurance, and project underwriting. Development banks should cooperate with national export credit agencies to cover the risk of non-payment from EU buyers.
- **Hydrogen demand aggregation** will ensure predictability for producers on the committed aviation and maritime offtake quantities, building on [the pilot hydrogen mechanism](#).
- **Contract length visibility** will give producers long-term clarity while allowing the flexibility of short-term purchase contracts for end-users in the maritime and aviation sectors.
- **Fostering EU leadership in Green technology**. The EHCH should begin by only supporting European producers with "*made in Europe*" requirements on electrolysers and other key components. Domestic production will enable Europe to become the frontrunner in the green energy transition, secure near-term clean fuel supply for European shipping and aviation, and help facilitate the development of homegrown strategic technologies and create new high-value jobs.
- **Support for international projects**. Once a domestic market is established, the EHCH could support global hydrogen fuels production. This will build up the global market and allow for competitive hydrogen supplies and associated infrastructure and trade expansion. Non-European industrial-scale production will have to meet [strict sustainability criteria](#).
- **Development of European ports as hydrogen hubs**. Ports will practically manage the trade and accessibility of e-fuels through the EU Hydrogen Platform. The Platform would

¹Based on [previous T&E calculations](#), reinvesting 25% of aviation and shipping ETS revenues into e-fuel support could achieve a 7% e-fuels uptake in these sectors by 2030.

be established at the EU level to act as a digital and logistical enabler connecting fuel suppliers and consumers and reducing transaction costs. It would allow SMEs, like small shipping companies, to access e-fuels at competitive prices, in reasonable quantities and specific locations. By leveraging port infrastructure, the platform would boost the competitiveness of ports and help drive the transition to sustainable shipping.

European Hydrogen Clearing House: igniting the e-fuels market

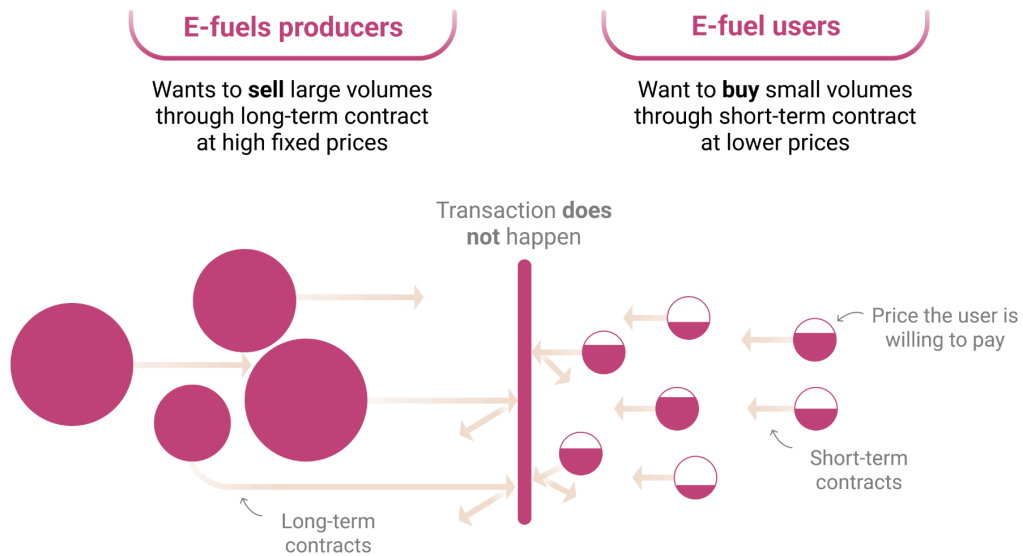


Source: T&E



Establishing the EHCH does not replace the need for regulatory mandates for the supply and uptake of these fuels by the shipping and aviation sectors. The role of the EHCH is to kickstart the supply chain and *grease the wheels* in the near term. In the mid-term, the most reliable diffusion and mass uptake of e-fuels by these respective sectors can only be achieved through quantitative regulatory mandates, i.e. sub-targets and sub-quotas. In that regard, the EHCH should not replace but complement the existing and future requirements of the FuelEU Maritime, ReFuelEU Aviation and RED. Finally, the fuel producers and buyers would still be free to negotiate and sign agreements independently, without involving the EHCH.

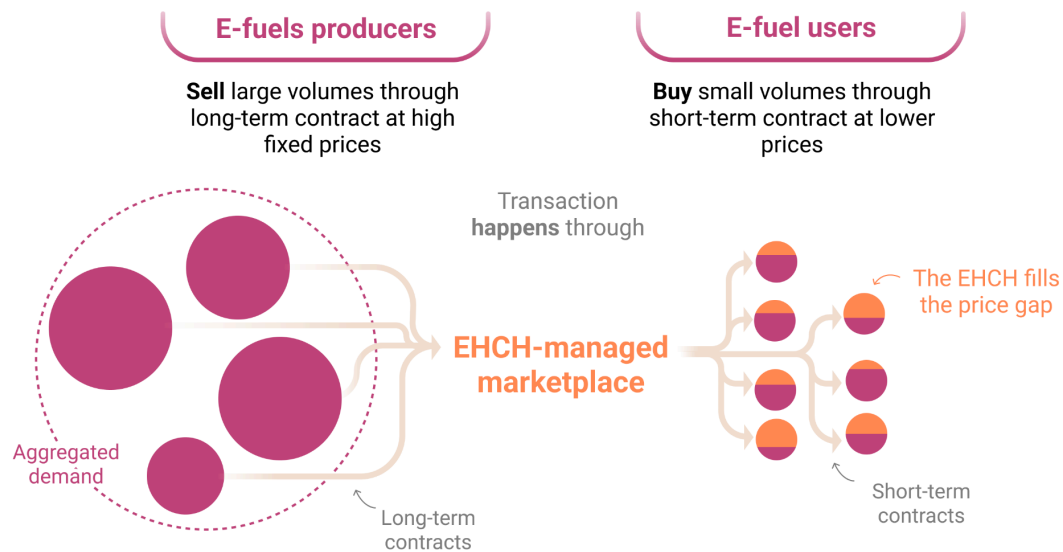
Baseline scenario



Source: T&E



European Hydrogen Clearing House scenario



Source: T&E



Further information



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