



OPINION

European Economic and Social Committee

A European Liquid Fuels Strategy

A European Liquid Fuels Strategy for a sustainable, affordable and
resilient low-carbon transition
(own-initiative opinion)

CCMI/234

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1. Conclusions and recommendations

1.1 The EESC calls for an EU strategy on liquid fuels that ensures the transition from fossil fuels to decarbonised and renewable alternatives, addressing sustainability, affordability and reliability across all modes of transport. Such a strategy would help diversify energy sources, improve security of supply, stimulate renewable investments and economic growth, promote circular economy practices, support climate goals, align biofuel production with sustainability, coordinate Member State efforts, standardise biofuel and e-fuel production for cross-border trade, and provide emission reduction options where electrification is challenging.

1.2 The EESC recommends:

- improving the efficiency of decarbonised and renewable liquid fuel supply chains by improving feedstock sourcing, blending and storage, and by optimising logistics through industrial hubs;
- that the need for establishing an EU strategy on liquid fuels be duly acknowledged in the Clean Industrial Deal (CID), in order to ensure the transition from fossil to renewable liquid fuels, addressing sustainability, affordability and reliability across all modes of transport;
- using decarbonised and renewable liquid fuels alongside electrification to minimise the high costs to society of building new infrastructure, since existing pipelines, terminals and distribution sites are able to accommodate sustainable liquid fuels (SLFs) without additional dedicated infrastructure;
- enhancing support for R&D, improving the full management and full development of supply chains to unlock the full potential of sustainable biomass, and ensuring open dialogues with key industries;
- reducing the production costs of decarbonised and renewable fuels by ensuring cost-efficient access to clean electricity and feedstocks, scaling up production plant capacity and ensuring market access, while leveraging EU R&D initiatives, including the EU ETS Innovation Fund, to drive innovation and investments in low-carbon technologies for SLF production;
- ensuring legislative stability and predictability for SLF production projects by maintaining consistent eligibility criteria and targets throughout their 15-20-year lifespan;
- establishing uniform standards for fuel blending capabilities and properties to enable comparability, standard pricing and the commoditisation of fuels;
- using the Just Transition Fund to support the production of SLFs by funding R&D to lower costs, upgrading fuel infrastructure and reskilling workers;
- advancing ongoing projects through comprehensive de-risking strategies to enable swift financial investment decisions;

- developing new risk-mitigation instruments to improve the risk-return profiles of large-scale pioneering projects;
- establishing carbon contracts for difference (CCfD) schemes to provide a stable carbon price signal;
- designing public support mechanisms to address both supply (by incentivising early investments in increasing production capacity and by reducing costs) and demand (by providing sufficient offtake visibility to support investor commitments and to reduce market risks);
- establishing training programmes and educational initiatives through social dialogue, to enhance the skills of the workforce, improve employability and create ‘green decent jobs’ essential for the economy;
- providing targeted support to workers transitioning from traditional fossil fuel industries to new employment opportunities;
- prioritising labour market policies that enhance employability through lifelong learning, flexible education-employment pathways and upskilling initiatives, with a focus on digital skills and on enhancing manual labour;
- improving regulatory harmonisation between the EU and major global markets, and coordination within international organisations like the International Maritime Organization (IMO) and the International Air Transport Association (IATA);
- aligning fuel taxation with the climate impact of each fuel, and introducing EU incentive schemes similar to the US Inflation Reduction Act, offering tax reductions based on production quantity and sustainability to attract investments in sustainable SLFs;
- launching comprehensive public education campaigns to increase awareness and acceptance of SLFs, focusing on their environmental benefits, energy security and job creation potential;
- that the EU institutions standardise technical specifications for biofuels and engage social partners and civil society in transparent dialogues to ensure broad public support and prevent delays or legal uncertainties in SLF projects.

2. Introduction

- 2.1 The EU aims to fully decarbonise the transport sector by 2050, and several pieces of legislation introduced or revised under the 2021 Fit For 55 package (ETS 2 Road and Building, ReFuelEU Aviation, FuelEU Maritime, Alternative Fuels Infrastructure, LDV CO₂ standards, HDV CO₂ standards, Maritime Transport in ETS) will help achieve this objective. The revised Renewable Energy Directive (RED III) sets targets to reduce the greenhouse gas emissions intensity of the transport sector by 14.5% and raise renewable energy use to 29% by 2030. It also introduces blending targets for advanced biofuels, boosting the demand for sustainable liquid fuels.

2.2 Sustainable biofuels and e-fuels are key to decarbonising global transport, offering benefits such as enhanced energy security, seamless integration with existing systems and support for the circular economy and local communities. Achieving the EU's 2050 climate neutrality goal requires a coordinated strategy under EU industrial policy to drive investment and transform industrial systems, while addressing the 'energy trilemma' of sustainability, affordability and reliability. A liquid fuels strategy that shifts from fossil fuels to decarbonised and renewable liquid fuels is essential for accelerating affordable and resilient decarbonisation across all modes of transport.

3. **Why is a European liquid fuels transition strategy necessary?**

3.1 Currently, the market growth of alternative fuels is hindered by an unpredictable, inconsistent regulatory framework, as well as by technological and commercial limitations, poor consumer acceptance and inadequate infrastructure. While some EU regulations (such as RED, ReFuelEU Aviation, FuelEU Maritime and ETS2) help create a market for these fuels, they are not enough to unlock the massive investments - up to EUR 650 billion - needed to transition EU fuel production from conventional to renewable sources on a large scale¹.

3.2 A comprehensive framework to support the adoption of renewable fuels is essential to overcome existing value chain barriers and scale up production. Mario Draghi's report on *The Future of European Competitiveness*² (17 September 2024) highlights this gap: it urges the EU to 'start building a supply chain for alternative fuels' or face significant costs in meeting its targets.

3.3 An EU liquid fuels strategy will:

- help diversify energy sources, reducing reliance on external suppliers and enhancing energy security;
- foster investment in renewable energy technologies, creating decent jobs and stimulating economic growth, particularly in rural and underdeveloped areas across the EU;
- promote circular economy practices and a decentralised industrial ecosystem;
- help meet climate goals and commitments;
- ensure that biofuel production is aligned with sustainability goals, preventing negative impacts such as deforestation and food supply shortages;
- coordinate efforts across Member States, ensuring consistent regulation and balancing environmental, economic and social considerations;
- establish common standards for biofuels production and use, enhancing cross-border trade and creating a stable regulatory environment;
- provide solutions for reducing emissions where electrification is less feasible.

3.4 The strategy should integrate regulatory components and cover the entire supply chain, from feedstocks (sustainable biomass, waste, renewable electricity and recycled CO₂) to the logistics

¹ [Clean Fuels for all – FuelsEurope](#).

² [The future of European competitiveness: Report by Mario Draghi](#).

of collection and transport to manufacturing plants, while ensuring the complementarity of liquid fuels with alternatives based on electrification and hydrogen. It should also address production facilities by combining the conversion of existing refineries with new dedicated plants, assess fuel applications across transport modes and identify the regulatory conditions for incentivising investments, ensure access to funding and safeguard the international competitiveness of industry. The Commission's announcement of an upcoming Clean Industrial Deal presents a unique opportunity to acknowledge the need for a strategy for liquid fuels.

4. **The EU's industrial competitiveness and infrastructure development**

- 4.1 Existing liquid fuel supply chains are able to deliver products from the point of production to the final user. However, improvements are needed to connect up and deliver energy, agricultural and industrial feedstocks to the point of production of SLFs. The EESC recommends addressing short-term supply chain challenges by improving sourcing, blending and storage capacities for feedstocks for renewable liquid fuels and optimising logistics. Industrial hubs should play a key role, with stakeholders working together to secure sustainable resources and streamline transport to conversion sites. The Renewable and Low-Carbon Fuels Value Chain Industrial Alliance serves as an excellent example of collaboration, innovation, and efficient and sustainable supply chains. The most important point is to minimise the cost to society.
- 4.2 The development and construction of large-scale industrial projects usually take five to seven years. There is therefore an urgent need to accelerate the project pipeline for sustainable liquid fuels in order to ensure adequate supply and meet the EU's decarbonisation targets for 2030. To expand this pipeline, ongoing projects must be advanced through comprehensive de-risking strategies to facilitate quick financial investment decisions.
- 4.3 Europe has long been a leader in innovation and industrial development across various sectors. The fuel manufacturing industry is deeply integrated into the European value chain and plays a key role in supporting the EU's competitiveness, industrial strength and prosperity. Refineries produce essential co-products for other industries, such as naphtha for the petrochemical sector, LPG and other liquid products for industrial heating, and solvents, bitumen, waxes and lubricant bases for a range of manufacturing processes.
- 4.4 Decarbonising the EU's energy and industrial systems requires significant economic resources for infrastructure development. The EESC recommends deploying decarbonised and renewable liquid fuels alongside electrification in order to reduce the high societal costs of building new infrastructure. This is because existing pipelines, terminals and distribution sites can accommodate these fuels without the need for additional dedicated infrastructure.
- 4.5 Sustainable biomass availability is not considered a barrier. However, utilising its full potential requires further R&D, improved management and full supply chain development, along with moves to address factors such as land use, sector competition and value chain sustainability. The EESC has already concluded that 'a holistic approach and structured dialogue with various industries (agriculture, chemicals, waste management and recycling) are necessary to establish

essential value chains³. Investing in biomass production and collection implies a commitment to long-term sustainability. The EESC fully supports the cascading principle for biomass use, and insists that the future EU liquid fuels strategy must not compromise food security.

5. **R&D and reducing production costs**

5.1 There are several technologies for producing low-carbon and climate-neutral liquid fuels from a wide range of feedstocks, including agricultural, forestry and industrial waste, captured carbon, clean hydrogen and renewable electricity. Refineries can serve as hubs for many of these technologies, transitioning into ‘bio-refineries’ or ‘synthetic fuel refineries’. While FAME and HEFA technologies are well-established, other methods for producing sustainable liquid fuels need to be developed further and to be validated at commercial level.

5.2 The key to reducing the production costs of decarbonised and renewable fuels lies mainly in:

- ensuring cost-efficient access to clean electricity, sustainable biomass and other feedstocks;
- scaling up the capacity of production plants in order to achieve economies of scale;
- giving all production outputs (including all fuels and co-products for the industrial value chain) access to the market; and
- enhancing the energy efficiency of the production of both biofuels and e-fuels.

5.3 The EESC calls for clarification on whether the stringent regulatory framework, particularly the increasing mandates for sustainable aviation fuel blending, will remain in place if the supply of sustainable liquid fuels becomes inadequate due to underinvestment in production capacity. This could result in low offtake prices and stranded assets for early adopters.

6. **Funding and investment – accelerating the transition**

6.1 By 2035, over EUR 50 billion will be needed for new production facilities for biofuels and e-fuels. Additionally, investments in hydrogen production, carbon capture and renewable electricity for e-fuels will raise the total required investment to between EUR 200 billion and EUR 300 billion by 2035⁴. Taking into account the fact that SLF production projects typically have lifespans of 15 to 20 years, the EESC calls for legislative stability for investors to justify making investments in a new technology.

6.2 EU R&D initiatives, including the newly established EU Innovation Fund, should stimulate progress and investment in low-carbon technologies. Furthermore, the Committee recommends that the Just Transition Fund be used to promote low-carbon liquid fuel production by supporting R&D to reduce costs, upgrade fuel infrastructure and reskill workers. Compiling the EU’s experiences in implementing the Just Transition Fund and creating a database of best practices will be crucial for ensuring effective and efficient transitions across regions.

³ OJ C, C/2024/6019, 23.10.2024, ELI: <http://data.europa.eu/eli/C/2024/6019/oj>.

⁴ [EIB – Financing sustainable liquid fuel projects in Europe](#).

- 6.3 Given the current risk profile of sustainable liquid fuel projects, a comprehensive de-risking framework is essential in order to attract commercial lenders. Financial investors have highlighted that credit enhancement mechanisms are vital for improving the risk-return profiles of large-scale, pioneering projects. Therefore, the EESC recommends developing new risk mitigation instruments, such as first-loss guarantees and subordinated loans, which the EIB could issue with the support of the European Commission in order to boost private financing.
- 6.4 For example, CCfDs schemes should be established to provide a strong and stable carbon price signal for low-carbon investments, thereby supporting the scaling up of sustainable liquid fuel production. As noted in the Draghi report, ‘the EU should de-risk investment in sustainable renewable and low-carbon fuels through schemes based on Contracts for Difference and auctions as a service similar to those designed for the Hydrogen Bank’.
- 6.5 Public support mechanisms for reducing cost gaps help sustainable liquid fuel promoters access financing by providing long-term visibility and financial incentives for investment decisions, while mitigating market risks for lenders. The EESC considers that these mechanisms should address both supply and demand: supply-side measures are needed to incentivise early investments in scaling and cost reductions, while demand-side mechanisms are necessary to offer investors adequate offtake visibility for project commitments.
- 6.6 Equally important, private investors must receive clear signals about the enduring role of decarbonised and renewable liquid fuels in the EU economy. A European liquid fuels strategy can provide the necessary guidance. Furthermore, the EESC ‘proposes aligning taxation with the climate impact of each fuel and supports a Europe-wide proposal for robust incentive mechanisms, including very low or zero taxation on low-carbon fuels’⁵.

7. **Impact on jobs (workers, transition, upskilling)**

- 7.1 The development and expansion of new facilities for liquid fuel production can lead to the creation of a substantial number of jobs. Skilled labour will be needed in areas such as chemical engineering, process technology and equipment maintenance. The EESC considers that training programmes and educational initiatives through social dialogue must be set up to enhance the labour force’s skill set, improve employability and help create ‘green decent jobs’ that will be vital for the economy and for meeting the EU’s environmental goals.
- 7.2 While it is anticipated that jobs will be created in the new liquid fuels sector, some jobs in traditional fossil fuel industries may be lost. This transition requires targeted support for a smooth shift to new employment opportunities. A positive example is the repurposing of conventional refineries into biorefineries, as shown by the pioneering conversion of the Venezia Refinery in Italy. Many direct, indirect and induced jobs have been saved, preventing the deterioration of the local economy that typically occurs when a refinery is shut down or converted into a terminal.
- 7.3 Labour market policies should prioritise enhancing workforce employability through lifelong learning and by establishing flexible pathways that bridge education and employment, such as

⁵ OJ C, C/2024/6019, 23.10.2024, ELI: <http://data.europa.eu/eli/C/2024/6019/oj>.

dual learning systems and effective apprenticeship programmes. Additionally, promoting internal mobility within companies through upskilling and reskilling initiatives is essential to prepare workers for future demands, while doing so through social dialogue as an important factor of this process. This will involve enhancing manual labour by significantly increasing digital skills, in a human-centred work organisation.

8. Ensuring predictable rules and a technology level playing field to unlock investments

8.1 EU legislative procedures are complex and slow. They lack clear timelines for adopting essential regulations and there are inconsistent eligibility criteria for bio-feedstocks across ReFuelEU Aviation, FuelEU Maritime and RED III. While there are long-term targets for the first two, RED III does not specify targets beyond 2030. Furthermore, the regulations on CO₂ emission performance standards for light and heavy-duty vehicles are based on a ‘tank-to-wheel’ approach. This limited approach prevents sustainable biofuels and e-fuels from contributing to decarbonising road transport.

8.2 Current projects are economically uncompetitive due to strict regulatory hurdles, high interest rates and an uncertain economic outlook. This has delayed most investment decisions. Therefore, the EESC recommends streamlining regulations and enhancing support mechanisms to improve project viability and attract investment.

8.3 The EESC is concerned about the lack of regulatory harmonisation with major global markets outside the EU, particularly in sectors that operate internationally such as aviation and shipping. This misalignment could place European companies at an economic disadvantage compared to their global competitors. Greater coordination of European regulations and policies is essential with key jurisdictions like the United States, as well as with international organisations such as the IMO and the IATA.

8.4 The American Inflation Reduction Act has enhanced the cost competitiveness of renewable fuels by providing tax reductions based on production quantity and sustainability. This has prompted many sustainable liquid fuel producers to set up their projects in the US instead of Europe. To counter this trend, the EU should implement similar incentive schemes to attract project promoters and encourage investment in sustainable liquid fuel projects.

9. Consumer awareness

9.1 Consumer acceptance of biofuels is hindered by uncoordinated efforts among Member States to introduce new fuel blends, the absence of standardised technical specifications and insufficient information regarding the compatibility of these fuels with vehicles. The EESC considers that social acceptance of liquid fuels in the EU is crucial, as it is essential for citizens to support the policies regarding the energy sources made available to them.

9.2 EU institutions, including the European Commission and the EIB, have developed significant expertise in the technical and economic aspects of sustainable liquid fuels and project development. The EESC calls for comprehensive campaigns to educate the public about the

benefits of sustainable liquid fuels, including their environmental impact, energy security and potential for decent job creation.

- 9.3 Some people consider that SLFs are incompatible with climate neutrality. This prejudice should be dispelled by demonstrating that decarbonised and renewable fuels do not lead to a net increase in atmospheric CO₂ concentration and are as sustainable as other solutions, if not more so. In order to ensure public acceptance, it is essential to engage the social partners and civil society in extensive, open and transparent dialogue. This will prevent potential delays, legal uncertainties and costs, while guaranteeing the social acceptability of sustainable fuel projects.

Brussels, 27 March 2025.

The President of the European Economic and Social Committee
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