The cost of advanced biofuels

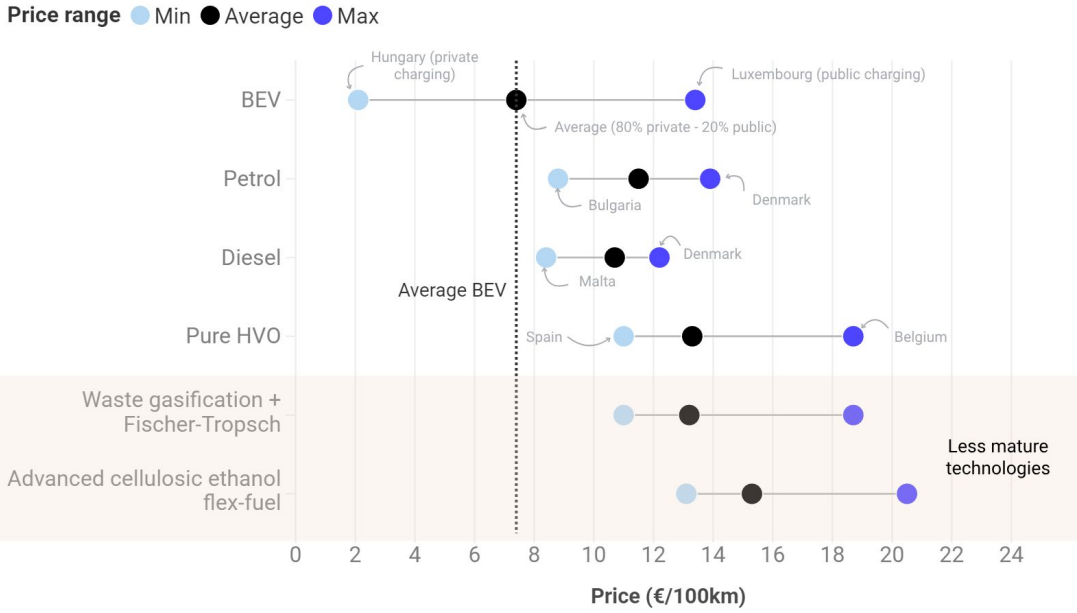
April 2026

T&E

Driving on biofuels is more expensive than BEVs

- On average, existing advanced biofuels such as **HVO are 79%** more costly than driving a fully electric vehicle (BEV).
- The minimum price for **charging a BEV is 81% cheaper** than the cheapest advanced biofuel (HVO in Spain).
- Future advanced biofuels made from sustainable feedstocks (municipal solid waste, cellulosic residues), and processed with **complex and uncertain technologies** (e.g. gasification and Fischer-Tropsch) would be **80% to 110% more costly than driving a BEV** on average.

Fuelling a car with HVO is 79% more expensive than EV charging



Source: T&E analysis; charging prices from EAFO and Eurostat; fuel prices from the European Commision, JRC and IRU. All prices are pre-Iran conflict.

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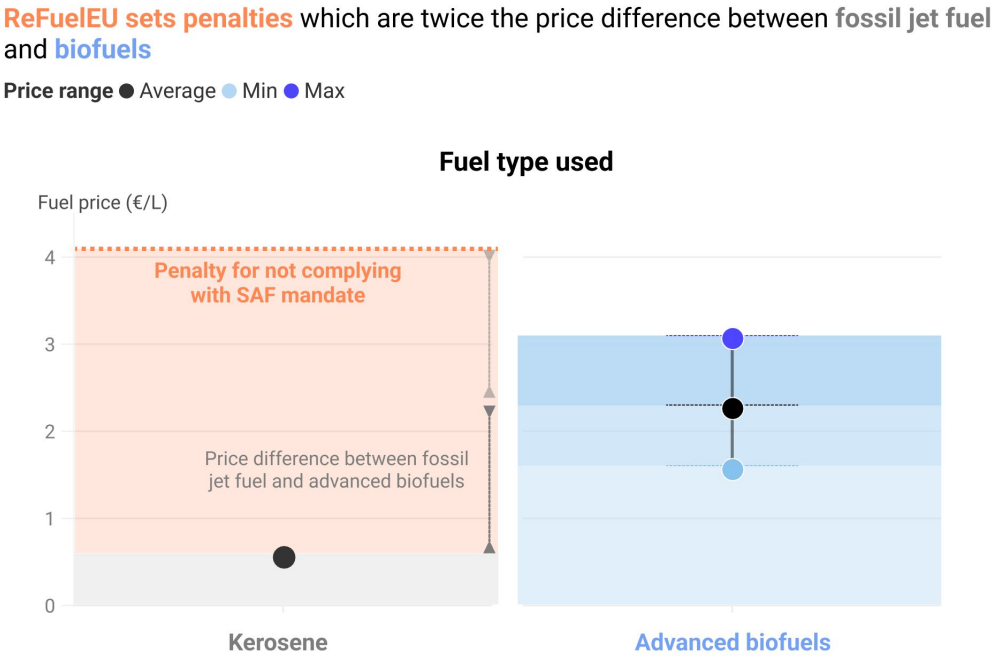
Limited advanced and waste biofuels will primarily be purchased by fuel suppliers to comply with EU mandates

- Jet fuel suppliers will have a high incentive to purchase advanced biofuels as **ReFuelEU penalties are set to be twice the price difference** between fossil jet fuel and bio-SAF.
- Jet fuel suppliers' **high demand** for a limited feedstock will raise advanced biofuels prices at levels that would be **prohibitively expensive for most car drivers**.

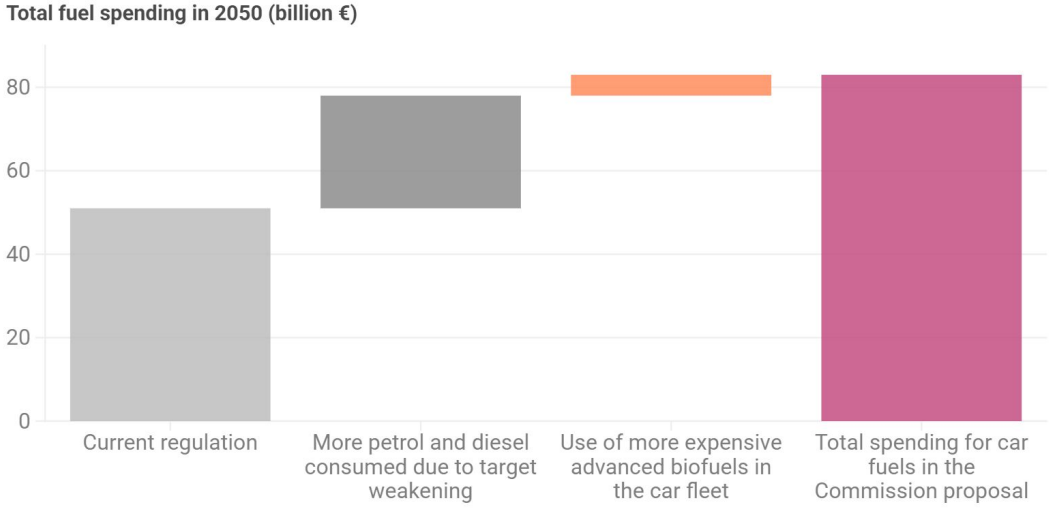


The fuel credit system for cars will increase EU fuel spending

- Relying on advanced biofuels and weakening the CO2 regulation with fuel credits will lead to a **60% increase in fuel spending in 2050** compared to the current regulation. Between 2025 and 2050, an additional **€500 billion will need to be spent on fuel**.
- The optimal pathway to reducing fuel spending is to **cancel fuel credits** and accelerate the shift to e-mobility. This will **reduce our reliance on imported fossil fuels and on the potentially fraudulent feedstocks** needed for advanced biofuels.

The European Commission proposal will increase fuel spending by 60% in 2050

Reducing CO2 targets and using expensive advanced biofuels (cellulosic ethanol and gasification of waste) will increase the total cost of fuel for cars



Source: T&E forecast based on historical fuel prices

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Annex

Methodology and data source (1/2)

BEV use price:

- The average electricity consumption of a BEV, including charging losses, is assumed to be 20 kWh/100 km (ICCT LCA, 2025).
- The average electricity price is based on the ICCT's EV Transition Check, which assumes 80% private and 20% public charging.
- The lowest electricity prices observed in the EU market are in Hungary for 100% private charging (Eurostat, H1 2025, typical market conditions).
- The maximum public charging price (EAFO newsletter, FY 2025) is observed in Luxembourg, assuming an 80% fast-charging rate and a 20% standard charging rate.

ICE use price:

- Real-world petrol and diesel fuel consumption for vehicles registered in 2023: 7.1 L/100 km and 6.9 L/100 km, respectively (EEA OBFCM).
- It is assumed that flex-fuel cars (E100) consume 40% more than European gasoline cars.
- Fossil fuel prices are calculated using the European Commission's Weekly Oil Bulletin (FY 2025, pre-war prices representing typical market conditions).
- HVO100 prices are taken from the IRU's 'Driving Profitability' report (September 2025).
- The production costs of 'cellulosic ethanol', 'FT liquids – waste' and HVO are taken from the JRC's Clean Energy Technology Observatory (2024). The cost-to-price markup is calculated based on the JRC-IRU HVO cost–price difference.

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Methodology and data source (2/2)

SAF cost and penalty:

- Kerosene, waste-oil biofuels (low end) and advanced biofuels (high end) are taken from EASA's 2024 Aviation Fuels Reference Prices for ReFuelEU Aviation.
- Biofuels SAF penalty calculated based on ReFuelEU rules, see T&E's Implementing the EU's e-SAF mandate, 2024.

Total fuel spending:

- ICE fleet fuel consumption from T&E analysis of the European Commission proposal for the revision of the car CO2 regulation.
- We expect fuel credits to be sufficient to weaken the 2035 CO2 target by 3%.

Price assumptions:

- Due to the uncertainty surrounding fuel price developments, all fuel prices are assumed to remain at the average level in 2025 (conservative estimate of minimum fuel spending).
- From 2035, based on advanced biofuel feedstock available (T&E), we expect the advanced biofuel mix to consist of 48.5% cellulosic ethanol, 48.5% advanced biofuel from waste gasification + Fischer-Tropsch, and 3% HVO.

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