ECFD
European Confederation of Fuel Distributors

ECFD Briefing

The future price of e-fuels

What will e-fuels cost in the future?

E-fuels (e-petrol and e-diesel) can be blended with conventional (fossil) fuels. The transition to CO_2-neutral fuels can leverage two positive effects:

1. The production cost of e-fuels falls significantly during their production ramp-up (see 1)
2. The share of e-fuels in the fuel mixture increases continuously until 2045, where it reaches at least 90 % and becomes CO_2-neutral (see 2)

Conclusion: Increased blending of e-fuels combined with economies of scale derived from their ramped up production leads to consistently affordable CO_2-neutral fuels for consumers (see 3).

What are the cost-advantages of e-fuels?

- Compared to batteries, e-fuels (power-to-liquids, PtL) have both the comparatively higher energy density and the storage potential of today's liquid fuels.
- This allows for the same efficient application along the entire logistics chain – from production to consumption.
- The ease of transporting e-fuels almost negates any supply chain distances: transport costs PtL = 1/40 of PtG.[1)]
- This means that the import of e-fuels from regions with a strong potential for locally produced renewable energy (e. g. Chile, North Africa) is still highly efficient.
- CO_2-neutral e-fuels can be added to today's conventional liquid fuels and combustibles.

[1)] "PtX Transportkosten aus dem Nicht-EU-Ausland," dena lead study, 2018.

1 Production costs using the example of e-gasoline[2)] for large-scale industrial production in windy and sunny regions:

1 Low cost scenario (e-petrol, euro/litre)

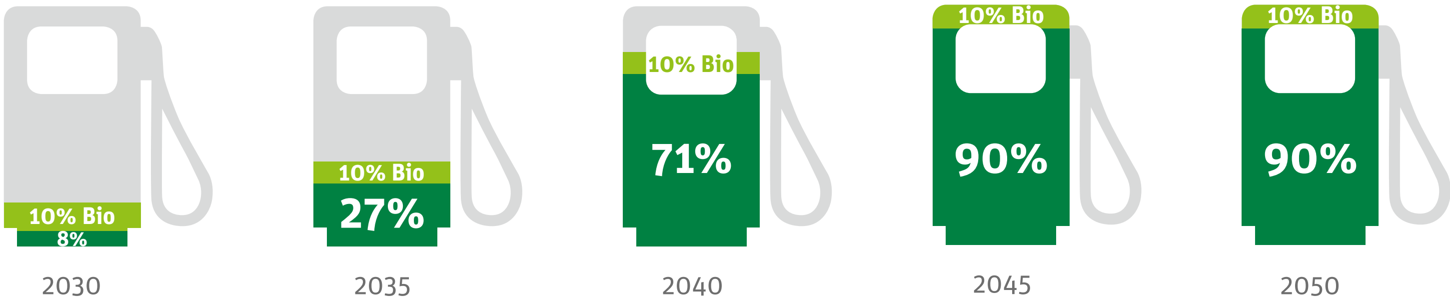
2 Higher cost scenario (e-petrol, cost per litre in euros)

1 Lower cost path of e-petrol: cost-effective international production with optimal site conditions for electricity generation from renewable energies and positive dynamics of learning and economies of scale

2 Higher cost path of e-petrol: lower learning and scale effects and, therefore, lower efficiency progress and only moderate cost degression.

[2)] Development of the production cost of e-diesel at a slightly higher level is similarly dynamic as in the case of e-petrol.

2 Industrial-level ramp-up of e-fuels leads to increased blending until fossil petrol is completely replaced:



Exemplary market ramp-up of e-petrol with continually increasing share in conventional fuels from today until CO_2 neutrality is achieved in 2050. It is assumed that 10 % biofuels are present in the mix at all times. The composition of the diesel fuel mix is almost identical, and differs only in the assumed biofuel share (7 % instead of 10 %).

3 Development of retail fuel prices – What the customer will pay for fuel at the petrol station in the future:

1 Low cost scenario and the revision of the **Energy Taxation Directive** taken into account (price per litre in euros)

	2030	2035	2040	2045	2050
Diesel	1.81	1.81	1.65	1.59	1.59
Petrol	1.87	1.79	1.49	1.37	1.37

2 Higher cost scenario with current level of energy taxation, **without revision of the Energy Taxation Directive** (price per litre in euros)

	2030	2035	2040	2045	2050
Diesel	1.96	2.26	2.84	3.00	2.91
Petrol	2.06	2.31	2.77	2.89	2.81

Fundamental assumption for the calculations:
Transport and distribution costs within Germany, margins and VAT and CO_2 levy on fossil fuel shares are taken into account.

Conclusions:

The EU Institutions should agree as quickly as possible on the revision of the Energy Taxation Directive

E-fuels allow for the global use of electricity from renewables

E-fuels ensure that global and national climate targets can be achieved

In the long term, blending of e-fuels results in affordable fuels through economies of scale

The EU Institutions should leverage e-fuels to facilitate a sustainable, reliable and affordable energy transition in the transport sector

Therefore, an appropriate legislative framework at EU-level will enable e-fuels to make a crucial contribution to the EU and global climate targets for the transport sector

To access the study: Scenarios for the market ramp-up of e-fuels in road transport: https://www.fuel-distributors.eu/news-and-publications/

About ECFD

ECFD is the voice of more than 10,000 distributors of liquid fuels in the EU member states, ensuring that demands of fuel retailers are heard at EU level. ECFD is actively engaged in the low-carbon energy transition via renewable fuel for the mobility and heating sectors. Our members supply sustainable conventional and advanced biofuels and are committed to the rapid market take-off of synthetic fuels in order to achieve the European climate targets. Furthermore, our members own convenience retail outlets and motorway service areas providing a vital service to local communities in cities and rural areas. They also supply fuels used in agricultural machinery and shipping as well as manage direct B2B relationships with road haulage companies.

Editorial status: February 2025

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