
ECFD

Briefing

The significance of renewable
molecules for tomorrow's
energy supply

The vast majority of final energy consumption in EU member states is covered by molecules, whereas electricity supply accounts for 23 % on average.

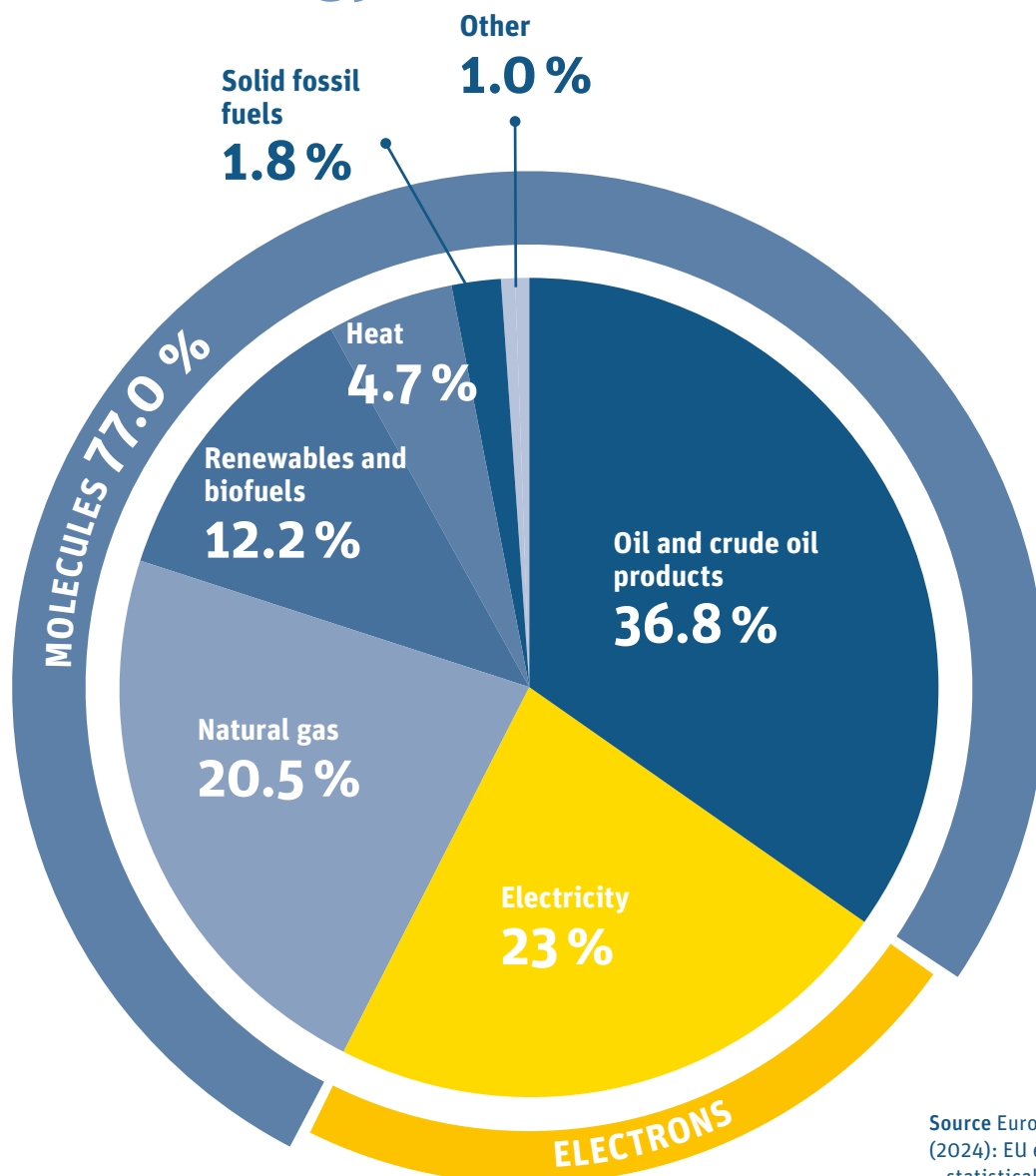
Molecule-based energy sources account for 77 % of final energy consumption in the EU. Molecules are indispensable for a reliable and sustainable energy supply, in particular in transport and in areas where weight and energy density are crucial.

They offer clear advantages:

- Molecules have a **high energy density**
- Molecules are **easy to transport and store**
- Molecules offer **flexible use because they supply energy on demand** regardless of weather and seasonal fluctuations
- In addition, their use is based on a well-developed and reliable infrastructure that **ensures a secure and comprehensive supply**

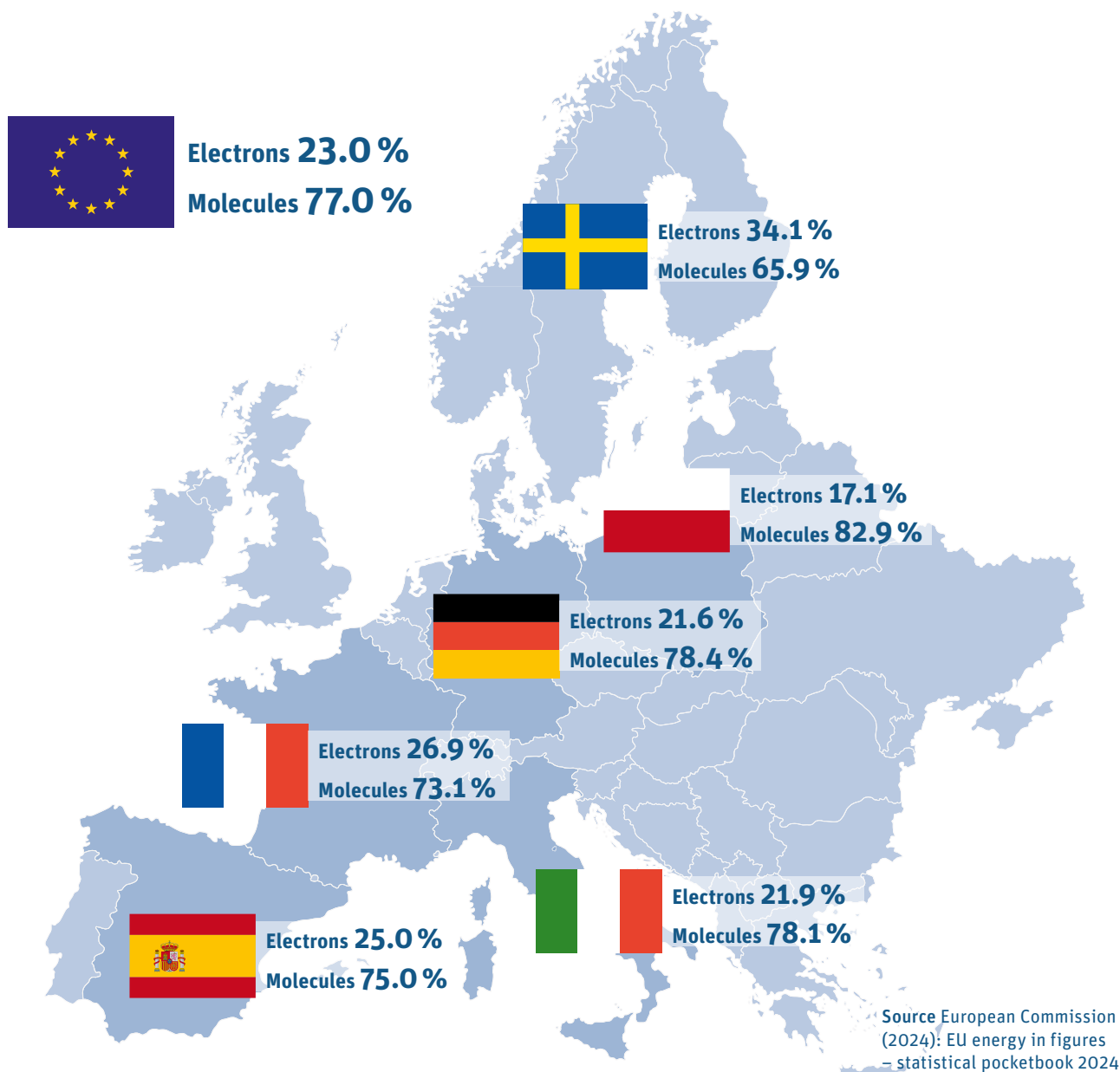
Despite the recent heavy regulatory emphasis on electrification and its associated high use of resources, molecules remain paramount for meeting EU energy demand.

Energy sources in the EU



Source European Commission (2024): EU energy in figures – statistical pocketbook 2024

Electrons versus molecules in EU final energy consumption



The high share of molecules in the European energy mix cannot be completely substituted by electrons. Fossil molecules should therefore be replaced by renewable molecules, rather than relying exclusively on electrification. The molecular transition needs a dedicated strategy.

A complete substitution of molecules with electrons would involve a disproportionately high economic cost. Renewable molecules, produced with renewable electricity, will be key for meeting Europe's future energy needs and deliver on the ambitious EU-level CO₂ reduction targets. Europe therefore needs renewable energy sources that can be transported, stored and used in molecular form. **In this regard, imported renewable liquid fuels will need to play a major role** by unlocking the formidable production potential of countries where renewable energy production is most efficient.

Conclusion: Molecules have many advantages as an energy source.

- ▶ Molecules have a high energy density
- ▶ Molecules are easy to transport and use
- ▶ Molecules are easy to store
- ▶ An excellent infrastructure is already in place, ensuring Europe's security of supply

ECFD's political demands:

The energy transition is more than just an electricity transition and must be considered from a broader perspective. A relatively small share of European energy demand is met by electrons. The EU's energy system is essentially based on molecules as energy sources. This situation is likely to persist in the future and, therefore, requires the transition from fossil molecules to molecules produced on a renewable basis. The successful defossilisation of molecules depends on the uptake of renewable liquid fuels, such as e-fuels produced with renewable electricity.

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.

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