European Fuel Taxation in Transition: Comparative Insights 2025

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Fuel taxation across Europe remains one of the most complex elements of transport policy. Despite common objectives such as reducing emissions and securing fiscal revenues, national systems differ widely in both structure and outcome. Some countries apply comprehensive carbon levies, while others continue to rely mainly on traditional excise duties or fixed energy taxes.

A comparison of major European markets — including Germany, France, the United Kingdom, the Netherlands, Italy, Norway, Sweden, Spain, and Poland — reveals how diverse these approaches remain. Tax levels for fossil fuels such as diesel and gasoline continue to vary significantly, while the treatment of electricity, biogas, and hydrogen reflects differing national strategies for promoting low-carbon mobility. Across Europe, the balance between fiscal stability, climate ambition, and energy affordability is still evolving, leading to a wide range of taxation outcomes.

1. Fossil Fuels: Divergent Approaches to Long-Term Reform

Diesel and gasoline remain the backbone of transport taxation in every country

reviewed. Yet the level and structure of these taxes differ markedly.

- **France**, **the Netherlands**, and **Italy** apply comparatively high rates on both fuels, maintaining a strong fiscal contribution from the transport sector.
- **Germany** and **Norway** apply medium-to-high levels but separate parts of their fuel charges to reflect environmental components more transparently.
- **The United Kingdom** has kept rates relatively stable in recent years, with limited indexation.
- **Sweden** applies moderate overall rates, positioned near the European average, combining energy and environmental components within a balanced fiscal framework.
- **Spain** and **Poland** maintain some of the lowest tax burdens on conventional fuels, highlighting the continuing diversity within the European market.

Overall, the picture shows gradual adaptation rather than convergence. While several countries are introducing new elements linked to environmental performance, traditional excise duties remain the primary source of transport fuel taxation.

2. Electricity: Low Nominal Taxes, High System Costs

Electricity used for transport is generally taxed at lower nominal rates than liquid fuels, but overall price structures remain complex.

In **France**, **Italy**, and **Spain**, energy taxes on electricity are minimal, often replaced by regulated network tariffs. In **the Netherlands** and **the United Kingdom**, several layers of levies — including network, renewable, and policy surcharges — contribute significantly to total costs. **Sweden** and **Norway** apply variable or seasonal adjustments to account for power mix and consumption patterns.

This variation means that electricity’s competitiveness as a transport energy carrier depends not only on nominal tax levels but also on how countries allocate network and policy charges. In most cases, these non-tax components represent a larger share of end-user prices than the energy tax itself.

3. Alternative Fuels: Gradual Integration into European Tax Systems

Natural Gas (CNG/LNG)
Compressed and liquefied natural gas continue to play a transitional role in several

European transport markets. Across the countries examined, these fuels are generally taxed at lower rates than diesel or gasoline, reflecting their somewhat lower carbon intensity and historic position as bridge technologies.

- **Germany**, **the Netherlands**, and **Spain** apply moderate energy duties to CNG and LNG, typically below those for conventional fuels.
- **Italy** and **France** maintain relatively low base rates, while **Norway** and **Sweden** include them within broader energy taxation frameworks without explicit differentiation.
- In **Poland** and the **United Kingdom**, taxation levels remain modest, with gradual inclusion into standard excise regimes.

Overall, the treatment of CNG and LNG suggests a cautious transition: preferential rates still exist but are slowly being aligned with the general energy tax system as policy focus shifts toward renewable gases and zero-emission alternatives.

4. Biogas

Biogas occupies a distinct position within European fuel taxation frameworks. Its fiscal treatment depends largely on sustainability certification and national policy design. Most countries apply favourable conditions for biogas produced from renewable or waste-based sources, while non-sustainable variants are increasingly integrated into standard energy taxation systems.

In **Germany**, **France**, and the **United Kingdom**, non-sustainable biogas is subject to regular energy duties, though at generally lower levels than fossil fuels. **Poland** and **Sweden** also apply measurable but moderate charges within their general energy tax frameworks.

By contrast, **the Netherlands**, **Italy**, **Norway**, and **Spain** currently grant full or near-full exemptions for sustainably produced biogas, reflecting stronger policy alignment with circular and renewable energy objectives.

Overall, Europe’s biogas taxation landscape illustrates a gradual move toward differentiation based on production method rather than fuel category. Sustainable biogas benefits from broad fiscal support, while non-renewable forms are being progressively aligned with conventional energy taxation. This dual approach underscores biogas’s transitional role between today’s fossil-based systems and the emerging low-carbon energy mix.

5. Hydrogen

Hydrogen remains at an early stage of fiscal integration across Europe, with taxation levels generally minimal or non-existent. Most countries have chosen not to apply energy duties at this stage, aiming to support early market development and align with long-term decarbonisation goals.

Germany and **the Netherlands** are among the few countries that currently apply small, transitional energy charges on hydrogen, while not maintaining a distinction between renewable and conventional production pathways. In **France**, **Italy**, **Spain**, and **Poland**, hydrogen is not yet formally taxed, reflecting its limited market share.

In **the United Kingdom**, **Norway**, and **Sweden**, policy initiatives actively promote the use and production of renewable hydrogen. These include indirect fiscal incentives — for example, when electricity used for electrolysis benefits from reduced or zero taxation — as well as national programmes aimed at scaling up hydrogen infrastructure and production capacity.

Across Europe, fiscal and regulatory frameworks are therefore designed to facilitate rather than restrict hydrogen deployment.

1. Increasing differentiation by carbon content

Many countries are restructuring fuel taxation to reflect emissions intensity rather than simply fuel volume or energy content. While not all have introduced explicit carbon components, environmental considerations are now embedded in most energy taxation systems. This shift allows for clearer price signals favouring lower-carbon fuels, though implementation remains uneven across member states.

2. Limited alignment with production sustainability and energy efficiency

Most existing taxation frameworks still fail to consider how fuels are produced or how efficiently they are used in transport.
Two key aspects often remain unaddressed:

- **Sustainability of production:**
  Tax incentives frequently apply broadly to entire energy carriers — such as biogas, electricity, or hydrogen — without requiring verifiable links to their origin or carbon intensity. As a result, less sustainable variants, including fossil-

based hydrogen or electricity from coal, can receive the same fiscal treatment as genuinely renewable alternatives.

- **Efficiency of use:**
  The energy consumption per kilometre varies significantly between technologies. For instance, an electric vehicle can travel much farther per kilowatt-hour than a conventional LPG or diesel car. Yet most taxation systems are still based on the energy quantity supplied rather than the actual transport output achieved.

This means that current frameworks reward the type of energy carrier more than its real-world climate performance. Future reforms could integrate lifecycle emissions and efficiency metrics more explicitly to ensure that fiscal policy supports truly sustainable and effective decarbonisation.

Relevance for the Hybrid Alliance

For the Hybrid Alliance, these findings underscore the need for a more holistic and technology-neutral fiscal framework.
The European fuel taxation landscape continues to evolve toward greater environmental differentiation, yet it still overlooks crucial dimensions such as production sustainability and energy efficiency per kilometre driven.
Hybrid technologies — which combine high energy efficiency with the ability to use renewable or low-carbon fuels — are well positioned to contribute to this transition if taxation systems begin to recognise these attributes more explicitly.

A balanced reform approach that considers both carbon content and real-world efficiency would not only improve fairness across energy carriers but also support the broader decarbonisation of transport without compromising affordability or technological diversity. Building on this, a taxation model that focuses on the actual energy transacted throughout the well-to-vehicle chain — measured in kilowatt-hours — would naturally reward technologies that make the most efficient use of each unit of energy. Such an approach would drive much-needed improvements in energy efficiency, reduce emissions more effectively, and ensure better utilisation of energy production and infrastructure investments.