



BRIEFING - May 2025

The fossil fuel car trap: Europe's transport vulnerability risk

Exploring how fossil fuel car dependency of low and middle income households in five European countries can lead to transport vulnerability

Summary

As Europe accelerates its transition towards green mobility, rising fuel prices and limited access to electric vehicles (EVs) threaten to leave vulnerable populations and rural communities behind, highlighting the urgent need for political action to ensure an inclusive and fair transition.

This briefing, based on analysis conducted by Öko-Institut for T&E, explores the transport vulnerability arising from fossil fuel car dependency in five European countries: Germany, Spain, France, Italy, and Poland. It focuses on how current mobility patterns and the uneven electrification of the vehicle fleet risk leaving low- and middle-income households behind in the energy transition. The findings provide the foundation for policy recommendations such as social leasing to support a just transition.

The dominance of private cars in mobility patterns: a call for EV democratisation

Cars are the primary mode of transport across the five countries analysed, with car use accounting for more than 80% of total distance traveled—up to 89% in Germany. Car ownership is widespread, especially in Italy and Poland. Public transport usage remains limited, particularly in rural and peri-urban areas. This entrenched car dependency, particularly among low-income households with limited access to alternative transport modes, increases vulnerability to fuel price volatility. While future mobility will be more diversified, cars remain central to daily life —making the democratisation of electric vehicles essential to ensure an equitable transition.

The unequal EV transition: regional disparities and barriers to EV adoption

The adoption of electric vehicles varies widely across Europe. France and Germany lead with 17% and 14% of new car sales in 2024, while Poland, Italy, and Spain lag behind (3%, 4%, and 6%). The transition is slowed by the long lifespan of vehicles but affordability is the major barrier. With average prices around €40,000–45,000, EVs remain out of reach for many. Subsidies mostly benefit wealthier households and companies, while middle-income households rely on a second hand market with limited volumes of electric cars. Corporate fleets, crucial to feeding this market, are also slow to transition.

The fossil fuel car dependency trap: 20 million vulnerable Europeans

Dependence on private combustion-engine vehicles constitutes, combined with rising fuel prices, a vulnerability factor for people with limited incomes living in rural areas. High and unpredictable fuel prices have become a major source of vulnerability, particularly for the

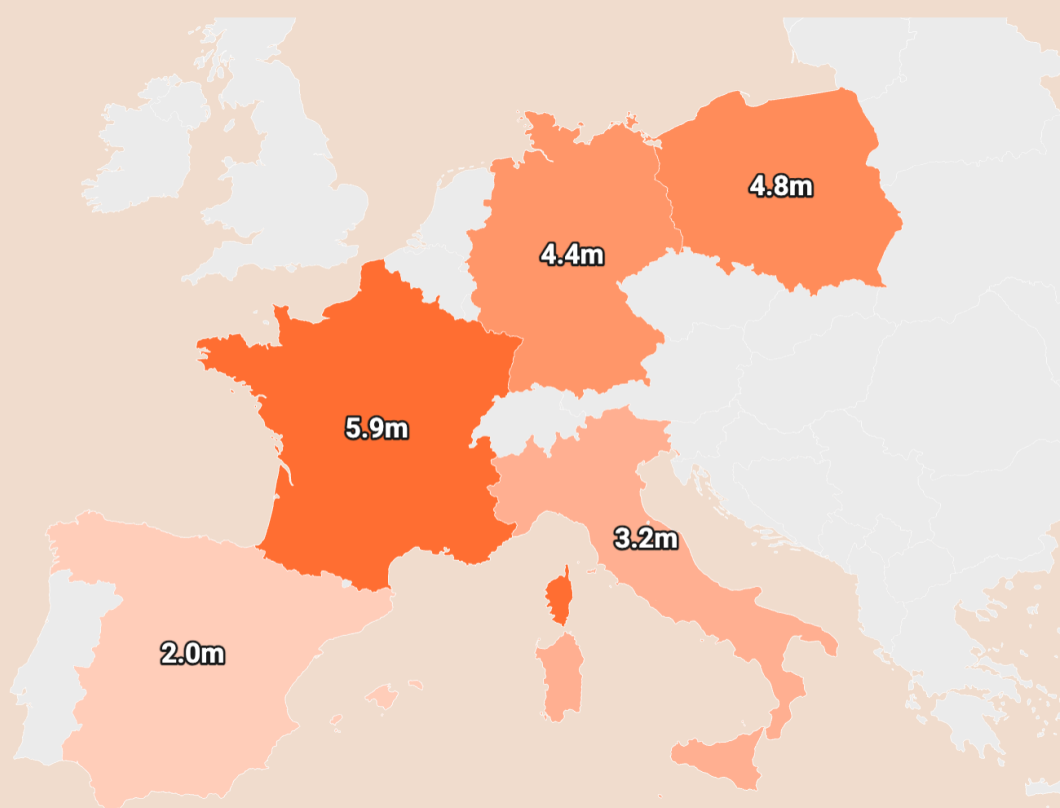
share of the adult population that is forced to rely on older, less fuel-efficient vehicles. Considering these factors (dependency, income, and localisation), a vulnerable group can be clearly identified: in Poland, an estimated 13% of the population are considered vulnerable, compared to 9% in France and 5% in Germany and Italy. In France, the lowest income decile spends up to 12.7% of its budget on fuel.

Population estimated in a situation of transport vulnerability

Adults with one car, live in a rural area and are in income deciles 1-4

— No data

0 6 m



Source: Öko-Institut Estimations & Analysis



The forthcoming **Emissions Trading Scheme for transport and buildings (ETS2)** will increase fuel prices further, and potentially disproportionately affect low-income households. The average additional ETS-2 expenditure as a share of total expenditure varies between 0.3% and 1.0% at a price of EUR 45/tCO₂.

Policy recommendations

To avoid a socially regressive transition, targeted national policies are essential. Öko-Institut identifies four key vulnerability factors:

- High car dependence
- Exposure to rising fuel costs
- Affordability challenges for EVs
- Uneven electrification of national car fleets

To address these risks, three policy directions are recommended:

1. **Inclusive EV support schemes**, such as France's social leasing program, to improve access for low- and middle-income groups.
2. **Mandatory green targets for corporate fleets** to stimulate the second-hand EV market.
3. **Enhanced investment in public and active transport**, particularly in underserved areas, to reduce car dependency.

Only through coordinated action on these fronts can Europe ensure a **just and inclusive transition to clean mobility**.

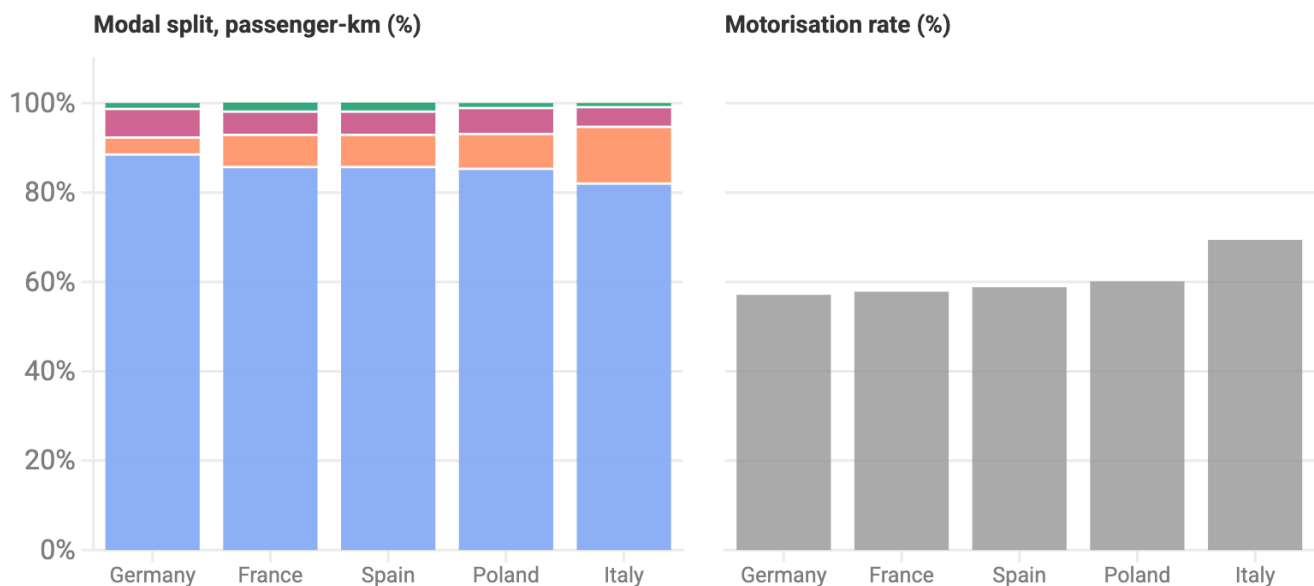
1. Private cars are at the heart of European mobility systems

The car plays a central role in the lifestyles of Europeans, which is reflected in the **high rates of car ownership** in the five countries under consideration: Germany, France, Italy, Poland, and Spain. Italy has the highest car density, with 6.9 cars per 10 inhabitants, followed by Poland with 6 cars per 10 inhabitants. The European average stands at 5.7 cars per 10 inhabitants. In all five countries, **at least 80% of the distance traveled** is by car: 82% in Italy, 85% in France, Spain, and Poland, and 89% in Germany. The number of vehicles on the road has steadily increased, driven by population growth and the expansion of urban and suburban areas.

The car plays a dominant role in European mobility, particularly as **the use of alternatives remains limited**. Public transport is regularly used by between 21% and 36% of the population, with 36.4% in Spain, 35.4% in Poland, 27.9% in Germany, 25.3% in France, and 20.9% in Italy. These average figures reflect significant regional variations, with densely populated areas well-served by public transport contrasting with more remote and rural regions, where car reliance is much higher.

Modal split of passenger transport on land and motorisation rate

■ Passenger cars ■ Buses and coaches ■ Railways ■ Tram and metro



Öko-Institut's compilation based on European Commission and Eurostat 2023 data



It is important to distinguish between the proportion of the population that is truly dependent on cars—i.e. those with no other choice—and those who use cars due to factors such as speed, comfort, sociability, and social perceptions. Despite this distinction, these statistics highlight

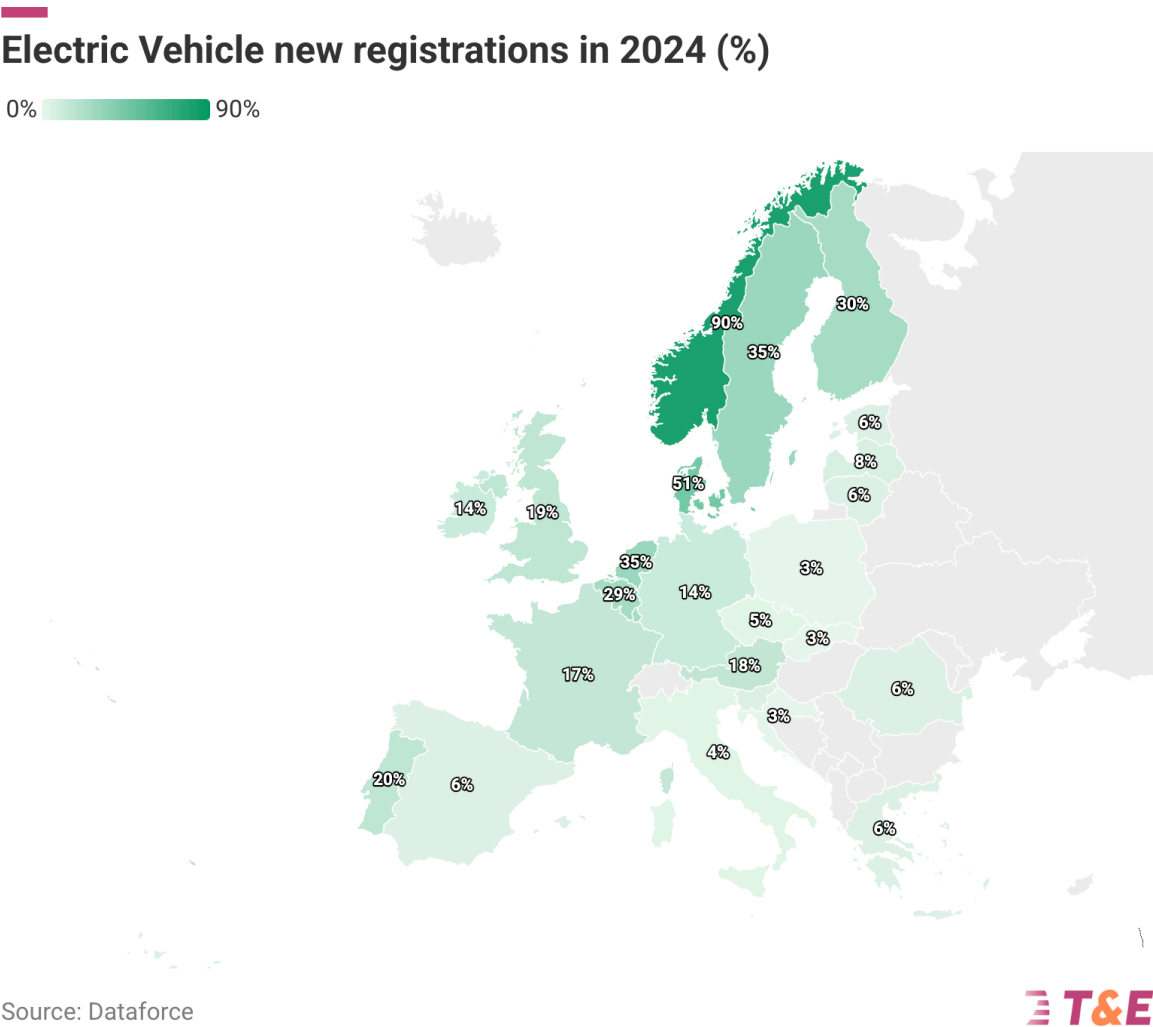


the car’s central role in European countries. While future mobility will become more diversified and vehicle models will evolve, the car will likely remain a central mode of transport, even in the context of the ecological transition – making the democratization of electric vehicles essential to ensure an equitable transition.

2. EV sales and subsidies have mostly benefitted high income groups and companies

2.1. The transition to EVs in Europe: a two-speed dynamic

The transition to EVs in Europe is a heterogeneous process. Both between and within countries, this change highlights varying capacities to adapt, and inequalities in access to a sustainable mobility.



The EV uptake is slower in Southern and Eastern countries. The electrification of the European car fleet is still in its infancy, with mass market uptake accelerating from 2025. While France and Germany are amongst the leaders, with EVs accounting for 17% and 14% respectively of new vehicle sales in 2024, the other three countries covered by this report - Italy, Spain and Poland - are still lagging behind, with EVs accounting for 4%, 6% and 3% respectively of new vehicle sales that same year.

A rapid transition to EVs in the selected Member States is hindered by the high purchasing price of EVs as explained in the next sub-section, which leads to passenger cars typically remaining in the national fleet for 10 to 15 years and having **long average lifespans, ranging from 15 to 20 years in Germany, France, Spain, and Italy, to 35 years in Poland.** In Spain, 47 % of the car park is "more than 15 years old" ([Dirección General de Tráfico - DGT](#), 2023). The high figure in Poland can be explained by the large proportion of imported second-hand cars (738,439 imported vehicles compared to 475,032 new registrations in 2023), which dominate the car fleet. This is further compounded by the presence of a substantial number of unused vehicles in the fleet, estimated at [over 7 million](#), with an average age of 37 years. The development of the Polish car fleet and its gradual electrification depend largely on the influx of imported vehicles, most of which are second-hand and over four years old. As a result, Poland has a low EV share of its total passenger car fleet (0.9%).

2.2. The transition to EVs: how premium cars leave the middle and lower classes behind

Electric vehicles are making progress but remain expensive for the middle class. Sales of electric vehicles have grown significantly in the European market since 2020 but have not yet reached mass-market levels. Until now, most EVs sold have been expensive, high-end models purchased by businesses and high-income groups. In Germany, the last purchase bonus - which ended in 2023 - mainly benefited the wealthier sections of the population. Analysis¹ shows that fewer than one in five recipients had a net household income of less than €3,200 per month.

The lack of availability of affordable new EV models (under €25,000) means that EVs remain largely unaffordable for the middle class (the [average price](#) of an EV sold in Europe is around €40,000-45,000). As a result, the electric vehicle subsidies introduced in several countries have mainly benefited businesses and high-income groups, failing to meet the needs of low- and middle-income groups. This unequal access to EVs means that these groups do not benefit as much from the lower running costs of EVs and are more vulnerable to fluctuations in fuel prices.

¹ Federal Ministry for Economic Affairs and Climate Action of Germany / [Bundesministerium für Wirtschaft und Klimaschutz der Bundesrepublik Deutschland](#).

By 2025, the EV market is expected to grow as carmakers launch new affordable EV models to meet the target of reducing CO₂ emissions from cars. However, the vast majority of middle-income drivers purchase their cars from the second-hand market, where EVs are still rare.

Moreover, **company fleets play an important role**, as cars typically remain in the fleet for 3 to 4 years before reaching the second-hand market. However, corporate fleets are currently lagging behind when it comes to electrification, which limits the availability of second-hand EVs. In 2023 for instance, their electrification rate was still lower than the private households' rate (14.1% and 15.6% respectively).²

The Öko-Institut's analysis shows that the current automotive market is not equipped to support a mass shift to electric vehicles. In a scenario where current trends continue—regarding prices, available models, and purchasing power—a majority of households in the countries studied will be unable to afford a transition to electric by 2035 (see Figure Annex 2). As a result, they will remain trapped in fossil fuel dependency. The main reasons are insufficient financial means and a lack of available second-hand electric vehicles.

The arrival of new affordable urban EVs—such as the Renault 5, the electric C3, the Panda, and the R4 —marks a step toward market expansion. However, the pace of change remains too slow. Accelerating industrial rollout and implementing complementary social support measures will be essential to ensure no households are left behind.

3. Rising fuel prices are deepening vulnerability across Europe

3.1. The disproportionate impact of fuel costs on low and middle income populations

High and volatile fuel prices are a key driver of vulnerability in the five European countries considered, disproportionately impacting the middle and low-income groups. Low-income individuals are more likely to drive older, less fuel-efficient vehicles, which consume more per kilometre and leave them especially exposed to rising fuel prices. At the same time, patterns of suburbanisation have pushed many low-income households to city outskirts, where public transport is often limited or entirely absent.

While the majority of Europeans rely on cars for daily mobility, the cost burden of fuel varies widely between households, depending on factors such as geography, vehicle efficiency, and commuting distance. Öko-Institut analysis shows that households in some countries are hit harder than in others. For example, French households that own a car dedicate an average of

² Transport & Environment. (2024). *Unveiling Europe's corporate car problem*. [Link](#).

6.9% of their total budget to fuel, the highest among the countries analysed. German households spend significantly less, at **4.6%**, while Italy (5.7%), Poland (6.0%), and Spain (5.3%) fall in between.

These figures highlight the **social inequalities exacerbated by fuel costs within each country**. In France, for instance, the four lowest income deciles are particularly affected, with the **poorest 10% of households spending an average of 12.7% of their budget on fuel if they own a car**. Such disparities highlight the urgency of addressing fuel dependency as a social issue – not just an environmental one.

3.2. Assessing the level of *vulnerability* in five countries

T&E, based on the Öko-Institut analysis, uses several indicators to identify groups considered **vulnerable** to rising fossil fuel prices:

- Individuals aged 18 and above
- Dependence on private cars
- Lower income
- Long commuting distances, often associated with living in rural or sparsely populated areas and limited access to alternative transport modes

The map below indicates the share of the population which is considered vulnerable, which T&E has defined as adults who own a car, live in a rural area and are in income deciles 1-4. Ranging from 4% in Spain, 5% in Germany and Italy, to 13% in Poland. France, at 9%, is at an intermediate level. **Vulnerability reflects here a combination of constraints and risks that affect both a household's economic situation and its ability to live well**. For vulnerable households, the non-negotiable costs of fuel often take precedence over other essential or quality-of-life expenditures, such as recreation, healthcare, or social participation. This leads to **renouncement** – the foregoing of essential needs and opportunities, such as medical care, employment, or social activities, due to the financial burden of maintaining mobility.

Another indicator is used by Öko-Institut to illustrate the forced renouncement and impacts of transport vulnerability: the **Forced Car Ownership (FCO)** caused by involuntary car dependence. This situation arises when households, despite financial constraints, are forced to keep a car, cutting back on other critical expenditures like healthcare or leisure in order to preserve basic mobility. As a result, the FCO indicator demonstrates how vulnerability translates into social exclusion, with people sacrificing their well-being to maintain essential mobility.

Since **renouncement** is a subjective experience—felt differently across households—it is difficult to compare this phenomenon between countries. Nevertheless, the FCO indicator offers valuable insight into the **real, lived impact** of car dependency in vulnerable households. For

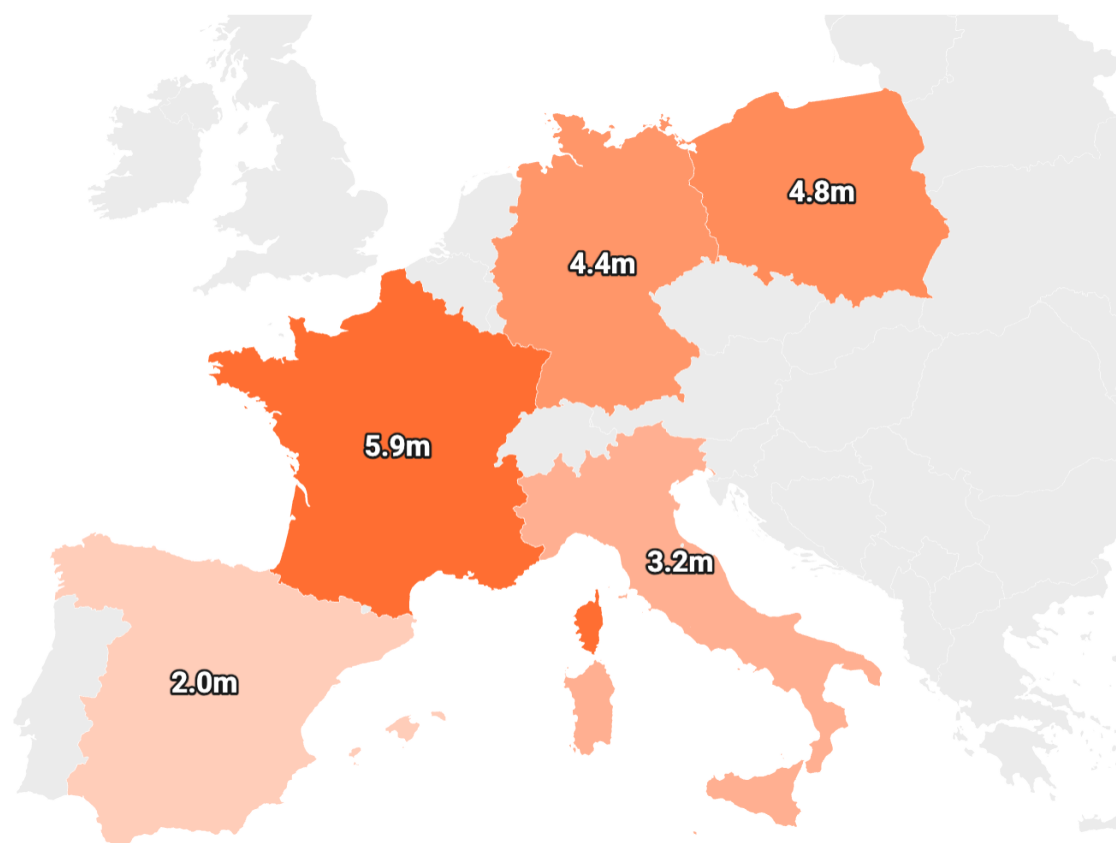
example, in France, one in four people has already given up a job due to mobility constraints ([Wimoov, 2024](#)).

Population estimated in a situation of transport vulnerability

Adults with one car, live in a rural area and are in income deciles 1-4

— No data

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Source: Öko-Institut Estimations & Analysis



The high number of vulnerable individuals and the perceived experience of forgoing among households are likely to fuel **resistance to change**. The implementation of low-emission zones (LEZs) clearly illustrates this challenge.

In 2022, 320 LEZs were already in place across Europe,³ with more expected to be established by the end of the decade. When mobility restrictions are not accompanied by a deployment plan for alternatives, they are often perceived as limiting access to the affected areas — and to their services — for those driving older, more polluting vehicles, who cannot afford to replace them.

³ Clean Cities Campaign. (2022). *The development trends of low-emission zones*. [Link](#).



If, in the future, only electric vehicles are allowed to circulate in urban areas, such policies may be seen as unfair, since electric vehicles remain financially inaccessible to many drivers today – particularly those on lower incomes. This situation risks reinforcing a **sense of inequality in the face of transition**.

3.3. The potential impact of ETS2 prices on household budget

Market fluctuations and the geopolitical context are major factors in the variation of fuel prices in Europe. While it would be risky to predict prices precisely for the coming years, it is important to consider that energy prices are generally rising, particularly for motorists. Moreover, the extension of the European carbon market to the transport sector from 2027 will have an impact on fuel prices.

The Emissions Trading Scheme for the transport sector (ETS2)

A new emissions trading scheme, ETS2, has been established as part of the 2023 revisions to the ETS Directive, and will apply to the transport and building sectors. The European Emissions Trading Scheme (ETS) operates on a 'cap and trade' basis: a limit is imposed on the total greenhouse gas (GHG) emissions allowed from installations and operators falling within the scope. In the case of ETS2, fuels and heating will be indirectly affected - fuel suppliers, and not final consumers such as households or car users, will be responsible for monitoring and reporting emissions. All ETS2 emission allowances will be auctioned. The cap is reduced each year to align with the EU's climate targets, giving the signal for a gradual reduction in the EU's overall emissions.

The Social Climate Fund

Part of the revenues from ETS2 will be allocated to the Social Climate Fund (SCF) to help vulnerable households and micro-enterprises. Member States will have to use the remaining ETS2 revenues for climate action and social measures, and will have to report on the allocation of these funds.

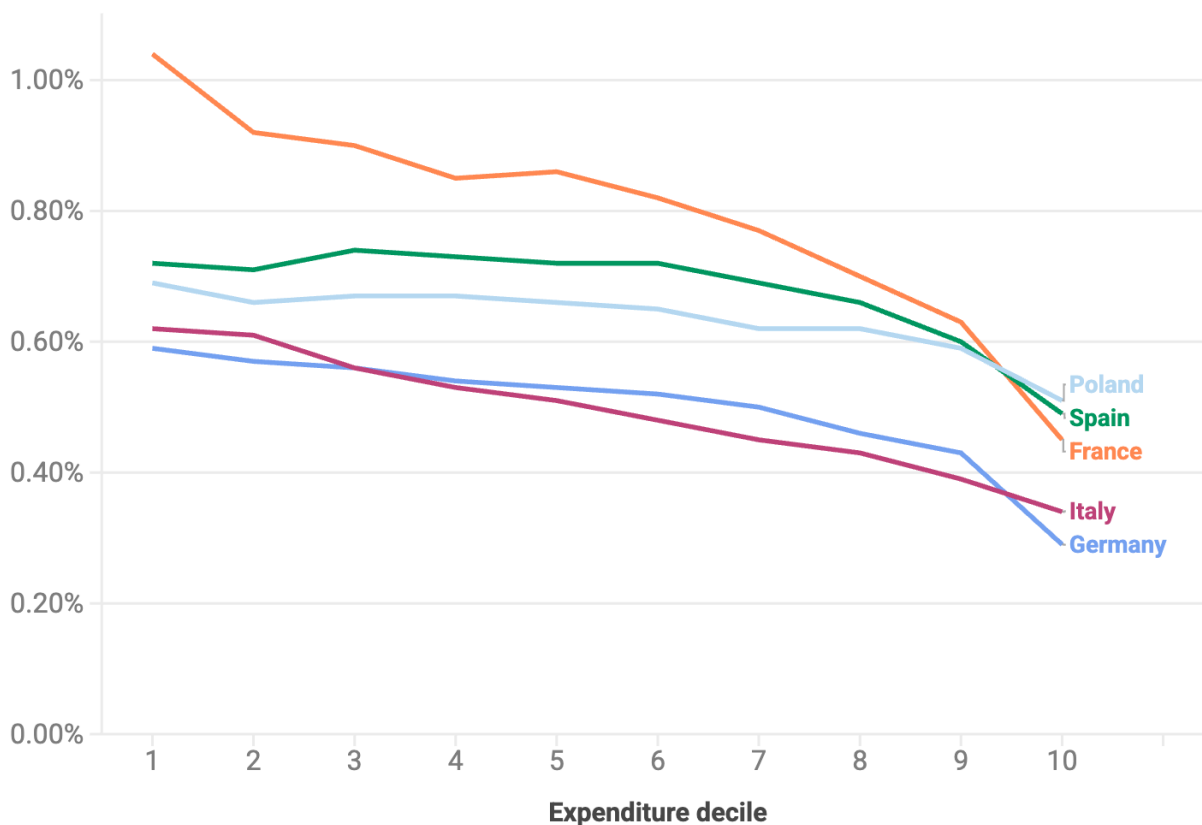
According to scenario-based analyses, the share of average additional household expenditures related to ETS2, at a carbon price of €45 per ton of CO₂, ranges from 0.3% to 1.0%. At €100/tCO₂, it ranges from 0.7% to 2.3%, and at €140/tCO₂, from 0.9% to 3.2%. These additional costs for households depend on fuel consumption levels, which in turn are driven by both the number of kilometers driven and the vehicle's energy efficiency.

Country-level differences can be explained by factors such as household composition, socio-economic context, and how the automotive market functions. When comparing the

distributional impacts across income deciles and countries, lower-income groups are systematically more affected. France stands out as the country with the highest level of inequality in this regard.

Transport carbon pricing impact on household budgets

Share of total expenditure of an ETS2 price of €45/t CO₂ per expenditure decile



Source: Öko-Institut



France is the country where the risk is particularly high due to the high cost of fuel, followed by Spain and Poland. The figure below shows the impact on fuel prices and the respective weighting according to population income (by deciles): the lower the income, the greater the relative weight of the fuel budget. In this context, the use of petrol or diesel cars will become more expensive, and the additional cost will be even greater for the most vulnerable sections of the population.

Using comparable data across countries for 2015, extrapolated for the period 2027-2032 helps to highlight a trend common to all five countries analysed. However, a more detailed country-level analysis would reveal more specific results that may vary compared to the graph above. In the case of Italy, for instance, the share of fuel expenditure in household budgets is likely underestimated here, suggesting a higher level of social vulnerability than indicated here.



4. Conclusion and recommendations

The Öko-Institut's analysis identifies four important social risk factors in the transition to electric mobility, summarised in the table below:

- Dependence on private cars,
- The pace of electrification,
- the affordability of EVs (lower prices)
- The level of transport vulnerability to rising fuel prices.

From ICEs to EVs: overview of social risks factors in 5 EU countries

Social risks factors	Germany	Spain	France	Italy	Poland
Car dependency	Medium	Medium	Medium	Medium	Medium
Speed of electrification	Low	Medium	Low	Medium	High
EV affordability	Low	Medium	Low	High	Medium
Level of transport vulnerability	Low	Medium	High	Medium	Medium

Source: Öko-Institut



These risks are present in all countries but manifest differently depending on national contexts.

Addressing them through targeted national policies will be essential to ensure a just transition. To do so, policies should be based on a combination of measures:

1. Accelerating electrification through inclusive support schemes, such as social leasing

Improving access to EVs for middle- and low-income households is crucial. Large-scale electrification of the vehicle fleet must be achieved by 2030 to avoid leaving significant segments of the population behind. The “social leasing” scheme initiated in France may serve as a model. It targets households excluded from the EV market and most vulnerable to fuel price volatility. Based on public subsidies, the scheme aims to remove financial barriers to access by offering EVs at affordable rental prices. Member States should include social leasing schemes in their National Climate Plans targeting most vulnerable groups.

2. Complementary measures to boost the second-hand EV market

Support schemes such as social leasing should be combined with mandatory targets for the greening of company car fleets across Europe. Since most new cars are bought for corporate



fleets, and these vehicles typically enter the second-hand market within 3–4 years, this measure would more largely accelerate the availability of used EVs, making them more accessible to a broader population.

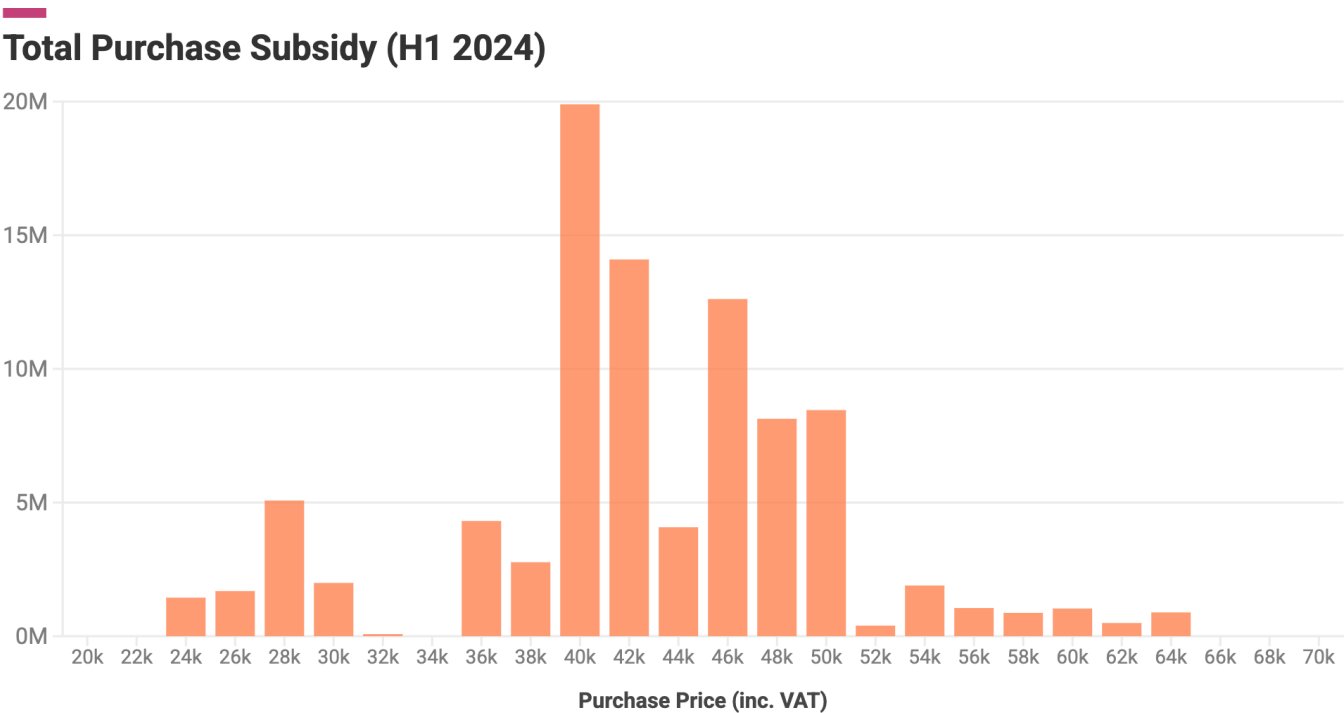
3. Reducing reliance on private cars through alternative mobility options

Policies must also strengthen the availability of public transport and active mobility. The reduction of car kilometres travelled should be a key performance indicator for policies. It will ensure effective savings for households and improved control over mobility-related expenses.

To evaluate the potential of social leasing in the EU, T&E quantified available revenue from ETS2 and Social Climate Fund (SCF) revenues in an upcoming briefing.

Annex 1 : Total EV purchase subsidy per EV price category

The analysis of new car prices in the five countries considered during the first half of 2024 shows that most vehicles are sold between €36,000 and €50,000, making them unaffordable for the middle class.



Germany, Italy, Spain, France, Poland only
Currently only includes Company Cars for H1 2024

