Proceedings of CONF-MCEE 2026 Symposium: Geomaterials and Environmental Engineering
DOI: 10.54254/2755-2721/2026.MH29681

To What Extent is Complete Electrification in 2035 Justified in the European Union? An Economic Perspective

Shaoheng Chen

The Governor's Academy, Byfield, USA
Alexchen201809@outlook.com

Abstract. The paper analyzes the EU regulation on banning new ICE vehicle sales from 2035. The policy is part of the EU's "Fit for 55" climate package, which targets the rapid switch to zero-emission modes of transport to reach very strict greenhouse gas reduction targets. However, this required fast transfer is likely to bring up lots of questions when it comes to economic value and possibility. This research evaluates the economic impact of the 2035 phase-out, investigating the readiness of Europe's auto industry and consumers, and the cost-benefit tradeoffs in transform transportation production and supplementary infrastructure. Evidence from market data, public opinion surveys, and corporate strategies suggests that, despite a clear commitment to electrification, the 2035 phase-out is economically premature and likely to be industrially disruptive within the EU. Analysis shows how important economies like Germany and Poland are dependent on older automotive industries, and shows widespread consumer concerns over EVs' costs, durability, and infrastructure. In contrast to China's decisive state intervention and cohesive industrial approach to EV adoption, the EU's complex political landscape has resulted in fragmented incentives and lack of clear public guidance, ultimately undermining the feasibility of its 2035 EV mandate. The paper concludes that the 2035 target is economically premature. Without a delayed timeline and vastly increased support, it risks triggering significant economic disruption, job losses, and a loss of industrial competitiveness.

Keywords: European Union, Automotive Industry, Electrification, Economic Impact, Climate Policy

1. Introduction

Europe has been a frontrunner in global climate action, underpinned by regulations aimed at achieving carbon neutrality by 2050. A central pillar is reducing the environmental impact of transportation, which remains a major source of greenhouse gas emissions [1]. To this end, the European Parliament has passed a regulation (EU 2019/631 as amended by EU 2023/851) to ban the sale of new internal combustion engine (ICE) passenger cars and light commercial vehicles from 2035, effectively shifting the market to battery-electric vehicles (BEVs) and other zero-emission technologies.

While the transition is environmentally motivated, it is less economically justified. The automotive industry is central to Europe's economy, contributing significantly to GDP, employment,

© 2026 The Authors. This is an open access article distributed under the terms of the Creative Commons Attribution License 4.0 (https://creativecommons.org/licenses/by/4.0/).

DOI: 10.54254/2755-2721/2026.MH29681

and innovation across member states. The rapid and sweeping industrial transformation thus entails substantial economic risks, particularly for automotive hubs like Germany and supply chain-dependent countries such as Poland. In response to these concerns, the EU has made a limited concession allowing the future registration of new ICE vehicles after 2035, provided they run exclusively on carbon-neutral e-fuels. However, e-fuels currently remain costly and technologically unscalable.

This paper critically evaluates the economic rationale underlying the 2035 full electrification target and examines its impacts on industries, consumers, and national economies.

2. The current European automotive landscape and emission trends

Europe's shift to electric vehicles is not starting from scratch, yet current fleet composition and market trends reveal significant challenges. Traditionally dominated by petrol and diesel vehicles for over a century, the EU car market remains heavily reliant on conventional powertrains. According to Eurostat, ICE vehicles still constitute the vast majority of operating vehicles.

While battery electric vehicle (BEV) uptake has surged in recent years, their overall share remains modest and highly uneven across EU members. Spurred by strong policy incentives and consumer demand, countries such as Norway, Sweden, and the Netherlands have achieved notable EV penetration (shown in Table 1). In contrast, many Southern and Eastern European countries continued to report single-digit adoption rates. This geographic imbalance highlights a critical flaw in applying a cookie-cutter 2035 phase-out deadline: it overlooked differences in national economic capacity, consumer affordability, and charging infrastructure readiness.

Table 1. Prevalence of passenger cars by motor energy type in selected European countries (2022)

Country	Electric (%)	Petrol (%)	Diesel (%)	Other (%)
Norway (NO)	20.9	29.5	37.1	12.5
Sweden (SE)	8.0	45.1	38.6	8.3
Netherlands (NL)	4.4	69.3	20.1	6.2
Germany (DE)	2.0	63.9	29.4	4.7
EU Average	1.2	50.6	41.9	6.3
Italy (IT)	0.4	51.5	39.8	8.3
Poland (PL)	0.3	46.1	43.5	10.1
Czechia (CZ)	0.2	65.1	30.6	4.1

Source: Adapted from Eurostat, 2023.

Note: "Other" includes hybrid, natural gas, and other alternative fuels.

Furthermore, despite rising EV registrations, the road to the 2035 target remains steep. The market share of electric vehicles in the EU surged impressively from 1% in 2013 to over 15% in 2022 [2], driven by technological advances, expanded model availability, and policy support [2]. However, petrol cars slowly recaptured the market as diesel lost ground due to emission scandals and urban restrictions, suggesting that many consumers remain ambivalent about electric alternatives.

The core challenge lies in both scale and speed: completely phasing out new ICE vehicles within little over a decade. This requires coaxing even hesitant or low-income consumers into more expensive alternatives. This transition must occur in a sector where emissions remain stubbornly

DOI: 10.54254/2755-2721/2026.MH29681

high, dropped significantly only during COVID-19 lockdowns. Despite the powerful environmental case for the ban, socioeconomic difficulties remain daunting.

Table 2. Comparison of new passenger car registrations by motor energy type in the EU (2013 vs. 2022)

Year	Electric (%)	Petrol (%)	Diesel (%)	Other (%)
2013	1.1	44.5	52.9	1.5
2022	15.1	59.8	23.2	1.9

Source: Adapted from Eurostat, 2023.

3. Economic dislocation in Europe's automotive heartland

The ambitious 2035 electrification target assumes sustained industrial transformation and broad consumer acceptance – both uncertain. Support for climate policies often erodes when measures directly impact consumer costs and convenience, as seen in Germany, the EU's largest auto market. Surveys indicate significant resistance to abrupt bans: over 80% of Germans opposed a phase-out of new gas and oil heating systems, reflecting similar concerns regarding an ICE ban. In mobility, while 67% supported or were neutral about ending ICE sales by 2040 or later, there was clear preference for incentive-based policies over punitive measures like bans or taxes [3]. The gap suggests the 2035 deadline may face substantial public and political pushback, challenging its feasibility.

Corporations echo this tension, caught between endorsing the need for an electric future and managing its practical challenges involved. Major German manufacturers exemplify this dilemma. Mercedes-Benz, for instance, has announced ambitious electrification targets to align with climate goals and shift market perception. This requires an overhaul: either completely replacing suppliers or collaborating with them to reduce emissions [4], underscoring the extensive overhaul needed in production and supply chains.

However, this transition is constrained by profitability concerns and workforce stability. As BMW noted, transitioning inevitably involves opening new business areas that initially raise costs and may lead to staff reductions, while still needing to secure alternatives for affected employees [4]. This highlights a key economic issue: the high cost of shifting to EVs may not be offset by new job creation, particularly with losses in the conventional ICE sector.

Consequently, some manufacturers have adopted a more cautious, dual-track strategy. BMW now advocates prolonging ICE production as long as it remains profitable, using those revenues to fund the electric transition. Similarly, Mercedes recently scaled back its all-electric 2030 target due to weaker-than-expected EV demand. Such retreat highlights clashes between corporate readiness and regulatory timelines, casting doubt on the feasibility of 2035 phase-out.

4. Public opinion and consumer adoption hurdles

While an economically successful transition to the 2035 target depends on a steady, guided approach, the widespread public anxiety documented in opinion surveys indicates a far rockier path to electrification than policy models assume. Public support for climate action, though ideologically robust, often fractures when policies directly impact their personal mobility and finance there’s a much less positive reception. Surveys in Germany, the EU's biggest car market, capture such sentiment. One poll indicates strong opposition completely prohibiting new gas and oil heating

DOI: 10.54254/2755-2721/2026.MH29681

systems, a more direct restriction than the ICE ban for households. Specifically, 68% of those surveyed oppose this ban, with only 14% in favor.This signifies a broad resistance to what is perceived as heavy-handed environmental regulation. Another study looking exclusively at vehicles found that although a majority (67%) could either feel okay with or simply be fine about an ICE being removed some time after 2020 - for example, 2040 - they much preferred encouraging approaches to discouraging ones; so things like providing money-offs for EVs or public-transport would have been better choices than putting additional charges such as taxes or outright bans being placed upon them [5]. This evidence implies that enforcing the phase-out will risks triggering significant political and social backlash, further jeopardizing its success [5].

Table 3. Public opinion in Germany on phasing out carbon-intensive technologies

Policy Approach	Support / Approval (%)	Opposition (%)	Indifferent / Unsure (%)
Subsidies for EVs	75	15	10
Investment in Public Transport	82	10	8
Higher Taxes on ICE Vehicles	35	55	10
Complete Ban on ICE Sales by 2040	45	33	22
Complete Ban on Gas/Oil Heating	14	68	18

Source: Synthesized from Hoppe et al., 2023 and RTL "Habeck-Pläne zu Gas," 2023.

Public hesitation toward electric cars results from many real economic and practical concerns that present major barriers to EV acceptance. Research identified some “anxiety factors” for the potential consumer of a future electric car. Foremost among these is purchase price: Even if there are subsidies in many member state, EV prices remain much higher than their ICE counterparts, making less appealing to most consumers, especially in low-income countries. Another concern is “range anxiety” – the fear of a vehicle's charge depleting before reaching a destination or charger – which is precisely the third factor, inadequate public charging infrastructure.

While expanding, this network is not yet as widespread or convenient as the established system of petrol stations, with most notable gaps rural areas and residential blocks. Lastly, a lack of confidence in the technology persists, predominantly fear of fast battery degradation and high replacement costs. Together, these factors form a strong headwind against rapid mass-market acceptance A forced transition by 2035 without properly addressing consumer concerns – through lowering vehicle and battery prices, developing dense and reliable charging networks, and improving battery longevity – could create a two-tiered scenario where only the rich can afford new vehicles, while others are left with an aging, increasingly costly fleet of used combustion-engine vehicles.

5. The Chinese model: a contrasting path to electrification

Any analysis on vehicle electrification would not omit China. China has emerged as a global leader in both production and public adoption of EVs, accounting for nearly 60% of global new EV sales, with its domestic market revenue projected to lead the world. This success was not a product of market forces alone but a mix of government-led deliberate, long-term industrial strategy [3]. The strategy provided a powerful system of "carrot and stick" system to stimulate both consumer demand and corporate production. On the demand side, sustained and generous subsidies made EVs financially accessible. In megacities like Shanghai, it was even more direct: EVs got unique “green

DOI: 10.54254/2755-2721/2026.MH29681

plates" which allowed them to pass the costly and strict license plate auction system that was necessary for ICE cars, where a single plate's cost could be as much as €12,000. This created a mass non-monetary incentive that made EVs the obvious choice for new car buyers.

Table 4. Key policy drivers of EV adoption: EU vs. China

Policy Area	European Union Approach	China Approach
Primary Driver	Regulatory Mandate (2035 Ban)	State-led Industrial Policy
Consumer Incentives	Varied national subsidies (being phased out in some cases)	Strong, long-term subsidies (now being phased out), license plate advantages, low charging costs
Manufacturer Compliance	Fleet-wide CO2 emission targets, fines for non-compliance	Dual-credit system (fines and tradable credits for EV production), production quotas
Infrastructure	Market-driven rollout with some public investment support	State-directed, massive rollout of public charging infrastructure
Industrial Strategy	Focus on maintaining competitiveness through regulation	Focus on dominating the global supply chain (e.g., batteries, rare earths)

On the supply side, the Chinese government forced its automakers to sell a certain percentage of "New Energy Vehicles" (NEVs). Failure to meet these targets compelled manufacturers to purchase expensive regulatory credits from leaders like Tesla and BYD. This policy effectively forced both domestic and foreign automakers operating in China to heavily invest in local electric vehicle production to avoid financial penalties.

This top-down industrial strategy, combined with massive state investment in charging infrastructure and secure control of global battery supply created a self-reinforcing ecosystem of EV dominance. This model stands in stark contrast to the EU model. While the EU has set a firm legislative endpoint with its 2035 ban on new internal combustion engine cars, its policy toolkit has been less direct and cohesive. Incentives are mostly set at the national level and are highly inconsistent. Large auto markets like Germany are discontinuing incentives.

The EU's reckless regulatory ban, without the same degree of direct industrial policy and consumer engineering seen in China, obscure its ultimate efficacy. China's rapid transformation highlighted the significance of state intervention that is difficult to replicate within the EU's multi-national, market-oriented political framework. Consequently, the European transition is likely to be a slower and more politically contentious process.

6. Conclusion

Europe's Union decision to completely ban the sale of new internal combustion engine vehicles by 2035 represents an environmentally bold and significant commitment to its climate goals. While the ecological imperative for this policy is undeniable, its economic rationale remains tenuous, given the uncompromising speed of the transition. This paper suggests that full electrification of the new car market over just a little more than ten years would cause major economic disruption, social inequality, and erosion of industrial competitiveness across Europe. Fundamentally, the policy fails to account for the deep-seated economic reliance of key auto-producing nations on the ICE value chain. Its mandated obsolescence threatens mass job losses and demands a system-wide reallocation of resources, which industry is plainly struggling to achieve within the timeline.

The demand side is equally challenging. widespread public skepticism persists, with consumer anxieties over cost, range, and charging availability remain major barriers to adoption. The EU might possibly be creating laws before society and economies are ready. Without a major drop in EV

DOI: 10.54254/2755-2721/2026.MH29681

costs and a large, publicly backed up spread of charge points, the 2035 ban would make new cars into a privilege for the rich and restrict mobility for a huge slice of the population. In conclusion, while the strategic direction towards electrification is preemptive, the 2035 target serves more as a political statement than an economically viable roadmap. Compared to China's top-down model ensured cohesive policy and rapid EV uptake, the EU's more market-led approach was hampered by fragmented incentives and guidance, thereby proven less effective. Without an extended timeframe, targeted measures to address regional disparities, and robust industrial and social support frameworks, the policy's implementation risks will likely entail economic disruption and political instability. A more reasonable approach would be an evidence-based, phased transition. By prioritizing investment in EV infrastructure, innovation to improve EV features, and clear guidance for supply chains restricting and workforce reskilling over abrupt change, this path would allow industries and citizens to adapt to a greener future.

References

[1] Fortune, May, 2024, fortune.com/europe/2024/05/08/mercedes-electric-vehicle-target-2030-sales-slow/. Accessed 24 July 2024.
[2] European Parliament. "EU ban on the sale of new petrol and diesel cars from 2035 explained." European Parliament, 11 mar 2022.
[3] Hoppe, Janna, et al. "Public Support for Phasing Out Carbon-Intensive Technologies: The End of the Road for Conventional Cars in Germany?" Climate Policy, vol. 23, no. 7, 2023, pp. 813–28, https://doi.org/10.1080/14693062.2023.2211042.
[4] Automobile industry in Germany - statistics & facts. Statista, 17 July 2024.
[5] www.rsm.global/poland/en/insights/doing-business-poland/key-characteristics-polish-automotive-sector. Accessed 24 July 2024.