EMPOCI
Accelerating sustainable energy-mobility transitions

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Don't punish the pioneers: Winning the automotive innovation race requires credible political commitment

Executive Summary

The European Union in 2023 committed to phasing out the sale of new petrol and diesel cars and vans by 2035, but is currently debating to relax this phase-out policy.

New survey insights with managers in the German automotive industry suggest that watering down the phase-out policy would penalize highly innovative companies – both SMEs and large firms – that have already heavily invested in the orientation of their automotive business activities towards e-mobility. Weakening the phase-out policy would in effect punish precisely the firms that are best positioned to compete in the global innovation race towards net-zero technologies.

These fast transformers prefer the maintenance of the so-called sales ban for internal combustion engine (ICE) vehicles by 2035 and support the EU's CO_2 emission performance standards. In addition, they see the introduction of stronger policies supporting demand for electric vehicles as key for successfully transforming the automotive industry, for instance through EU targets for clean corporate fleets.

This policy brief showcases that Germany's automotive industry is at a crossroads, and offers policy implications for navigating its split industry into a competitive future.

Key Messages

1. **The EU phase-out policies have been effective.** The European CO_2 emission performance standards – culminating in the ICE sales ban by 2035 – are the key policy driver for the transformation of the German automotive industry.
2. **Policy mix credibility is essential for a successful transformation.** Perceptions of weakening political commitments towards e-mobility make phase-out policies less effective.
3. **Germany's automotive industry is divided, expressing competing policy preferences.** Fast transformers want to maintain the CO_2 emission performance standards towards zero by 2035, while slow transformers prefer to end them.
4. **Sustained policy ambition is critical for safeguarding innovation leadership.** Securing competitiveness in future markets requires an ambitious policy mix that sustains and scales up the emerging momentum – otherwise Germany risks failing to attain a leading position in the global innovation race towards e-mobility.

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Introduction

Germany's automotive industry is facing several pressing challenges, ranging from radical technological change – like the transition to battery electric vehicles – to fierce geopolitical competition from emerging economies – like China. Amidst this backdrop, the industry is undergoing an orientation away from internal combustion engine (ICE) vehicles towards an electrified future.

This orientation towards electric mobility – which is unfolding across Europe and globally, not just in Germany – is not free from frictions, with gains and losses distributed unevenly across countries and regions. If not navigated well, this transformation will be highly disruptive for communities living in Europe' s automotive industry hubs, such as in Germany, Spain or Czechia. It may thus come as no surprise that advocacy efforts of some firms and interest groups have intensified, demanding the relaxation or even termination of EU phase-out policies – notably Regulations 2023/851 and 2019/631 setting CO_2 emission performance standards for new passenger cars and vans.

In May 2025, a first flexibilization of the European CO_2 emission performance standards was already approved. In December 2025, the EU Commission also proposed a comprehensive "automotive package" containing a range of policies aimed at safeguarding the future competitiveness of Europe's automotive industry. The package includes reducing the 100% zero-emission vehicle sales standard (often referred to as ICE sales ban) to 90%, subject to compensation measures (e.g., in the European steel sector). At the same time, the package outlines policies to stimulate demand for electric vehicles (e.g., by introducing targets for the electrification of corporate fleets), and industrial policies that aim to support the domestic production of clean technologies (e.g. the so-called battery booster).

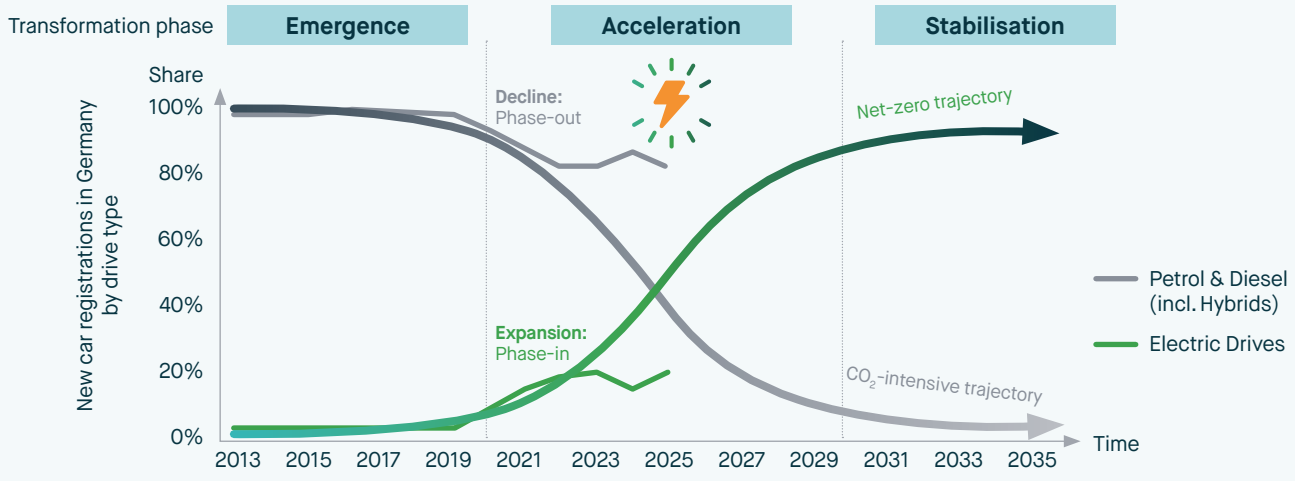
Our research – based on a survey with management executives in the German automotive industry – suggests that reversing the 2035 ICE sales ban is not desired by all players alike in the automotive industry. Rather, Germany's automotive sector is significantly more diverse than typically depicted in public debates, with policy preferences regarding climate and industrial policies differing widely between fast and slow transformers. Great care should therefore be taken when deciding about how to adjust the existing policy mix, in order to succeed in the global innovation race towards e-mobility.

Box 1: Current phase of the transformation of the automotive industry

The global trend towards electrification is clear and driven by a range of factors, including technology developments, cost declines in battery technology, the quest for fossil fuel independence, and demand shifts towards EVs in major markets. Consequently, the unfolding transformation from the CO_2-intensive technological trajectory (i.e. fossil-fuel based internal combustion engine (ICE) vehicles) towards a net-zero one (i.e. electric vehicles (EVs)) can be depicted as an X-curve (see Figure 2).

As the official registration statistics show, Germany has entered the second phase of the transformation towards e-mobility, the so-called acceleration phase. Yet, while EVs have been established as the new dominant design, there are significant uncertainties and frictions in the transformation process, visible in dents in the expansion of the sale of EVs and reverse trends regarding ICE vehicles.

Figure 1: The delayed transformation process seen through the lens of an X-curve



Sources: Rogge (2026) for the X-curve with its phases; Eurostat (2026) and Kraftfahrt-Bundesamt (2026) for new car registration data (2013-2025)

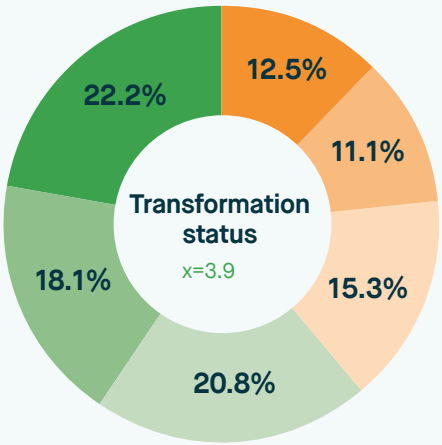
Transformation status is well advanced

Results of a survey of the German automotive industry conducted in 2025 amongst vehicle manufacturers (OEMs), suppliers and automotive eco-system companies (see Box 2) show that most of the 74 companies in the sample have started transforming towards e-mobility (see Figure 2). In fact, the large majority of firms are in the midst of the transformation process, and 20% have even fully oriented their automotive business towards e-mobility. In contrast, less than 15% have not at all started their reorientation to the electrification trajectory.

Overall, the average self-assessed state of transformation is well advanced, with a mean of 3.9 – on a scale from 1 (not started) to 6 (fully oriented towards e-mobility). At the same time, the corporate self-assessments reveal stark differences in transformation status between different firms – which can be differentiated into the larger group of *fast transformers* (over 61% of firms in our sample selected 4-6) and the smaller group of *slow transformers* (nearly 39% selected 1-3). Accordingly, this policy brief aims to unpack which policies were most effective in driving the transformation forward, and whether the variations in corporate transformation status lead to different policy preferences regarding e-mobility.

Figure 2: Transformation status

Overall, how far advanced is your enterprise in orienting its automotive business towards e-mobility?



Fast transformers: 61.2%
- 6 (fully oriented)
- 5
- 4

Slow transformers: 38.9%
- 3
- 2
- 1 (not started)

n=72

Source: EMPOCI survey of automotive industry in Germany in 2025

A closer look at the transformative activities of companies reveals that in 2024 their focus was on research and development efforts, as well as on changes in their respective product portfolios towards e-mobility.

Strong drivers for the orientation of business activities towards e-mobility were, in the opinion of survey respondents, the market pull of European consumers, the growing global demand for electric vehicles (EVs), the necessity to catch up with international competitors, as well as European and German industrial and climate policies.

Box 2: Facts & figures about EMPOCI's company survey in Germany's automotive industry

Following the guidance for a Community Acceleration Survey (Rogge 2025), a pilot study was conducted with managers in the German automotive industry by the SOKO Institute for Social Research and Communication on behalf of the ERC-funded EMPOCI project at the University of Sussex, in cooperation with the Fraunhofer Institute for Systems and Innovation Research ISI. Data was collected through computer assisted telephone interviews (CATI), with respondents also having the option to participate online through computer assisted web interviews (CAWI).

The main field phase lasted from August until November 2025, with 74 companies completing the pilot survey:

- About half of the companies are located in Baden-Württemberg (51.4%), the rest are distributed across Germany.
- Two-thirds are suppliers (64.9%), with the remainder being either OEMs (9.5%) or active in the wider automotive ecosystem (23.0%).
- The majority of firms are small and medium-sized enterprises (89.7% SMEs).
- The average export share in the companies' automotive business is 34.2%.
- The majority of firms are active in both technological domains – ICE vehicles and EVs (66.2%).
- In the EV domain, the majority of companies are active in battery electric vehicles (86.2%) while two-thirds are also active in the fuel cell technology (65.5%).

Key drivers of transformative change

To uncover the most important political drivers of companies' transformative activities, we analysed the survey data with quantitative methods. In the following we highlight three key regression results on the drivers of the transformation of the German automotive industry.

1. Policy mix credibility and phase-out policies stand out as key factors in the transformation of the German automotive industry.

Policy mix credibility strongly shapes the firms' strategic intent towards e-mobility: The firms that perceive stronger political commitment to supporting the transformation of the automotive industry tend to be more advanced in their strategic orientation towards e-mobility.

Phase-out policies (in particular the CO_2 emission performance standards targeting producers) are central for firms' expenditures for innovation and production in the new net-zero technological trajectory of EVs.

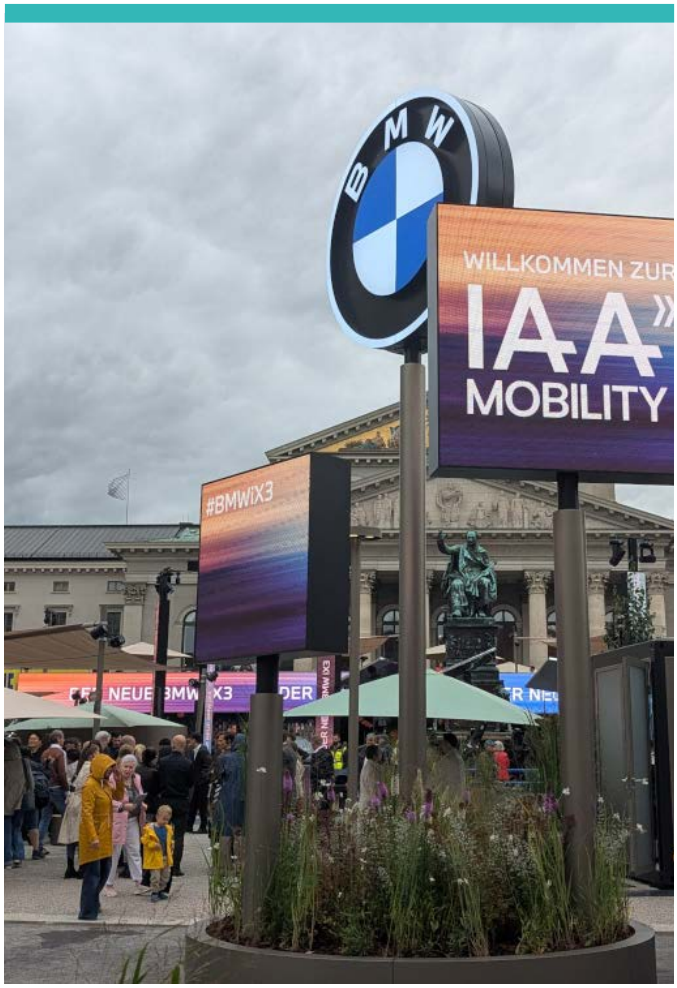
2. The EU's ICE sales ban supports the transformation of automotive firms through four synergistic impact mechanisms.

Attention: The ban draws the attention of corporate decision-makers to business adaptation, increasing the willingness to reallocate resources.

Exclusion: The ban limits future technology trajectories, allowing for the concentration of investments on the most promising net-zero technologies.

Forecast: The ban provides a clear reference point in forecasting, reducing uncertainty about the transformation to the medium term.

Coordination: The ban helps to coordinate the automotive ecosystem on a joint timeline, contributing to avoiding bottlenecks in EV ecosystem uptake.



3. Managers' perception of policy mix credibility and firms' ecosystem position are key factors for the effectiveness of the ICE sales ban as a driver of transformative change.

Credibility supports effectiveness: Phase-out policies have a smaller impact on companies' attention, exclusion, forecast and coordination when corporate decision-makers doubt the strength of the underlying political will to support the transformation of the automotive industry.

OEMs benefit most from the ICE sales ban: While the EU's ICE sales ban provides OEMs with clear, long-term planning visibility, suppliers and other firms in the ecosystem continue to face uncertainty – shaped by OEM decisions and shifting strategies.

Heterogeneity of companies and their policy preferences

While the automotive industry in public debates is often treated as homogeneous – thus implying that the sector shares the same investment decisions and policy preferences – the EMPOCI survey results show that the sector is in fact highly heterogeneous. Firms differ in a range of key dimensions, such as their transformation status and size, but also in terms of their innovativeness, changes in production capacity, and policy preferences for the options laid out in the coalition agreement of the German government. In the following, we therefore show how strikingly firms differ in these aspects – in particular between slow and fast transformers.

Small "fast transformers" (37.3%)

Innovation: of the 88% of firms with automotive innovation activities, 91% were active in R&D for EVs, and 23% for ICE vehicles.

Production: of the 63% of firms with production capacity changes, 100% implemented changes for EVs (thereof 87% upgrades vs 20% reductions) and 33% for ICE vehicles (thereof 60% upgrades vs 60% reductions).

Policy preferences:

- Most desirable were a reduction of electricity prices for all (mean 4.8) and financial support for education and R&D (4.5), followed by support to build up domestic battery production (4.2).
- Lowest preferences are abandoning the EV quota for company fleets (2.8) and the relaxation of CO_2 fleet limits (2.6).

Large "fast transformers" (25.4%)

Innovation: of the 82% of firms with automotive innovation activities, 93% were active in R&D for EVs, and 29% for ICE vehicles.

Production: of the 59% of firms with production capacity changes, 90% implemented changes for EVs (thereof 100% upgrades vs 13% reductions) and 70% for ICE vehicles (17% upgrades vs 100% reductions).

Policy preferences:

- Most desirable was financial support for education and R&D (mean 5.1), closely followed by a reduction of electricity prices for all (4.9) and for industry (4.6), and maintaining the ICE sales ban (4.3).
- The lowest preferences are abandoning the EV quota for company fleets (3.0) and the relaxation of CO_2 fleet limits (2.1).

FIRM SIZE

TRANSFORMATION STATUS

Small "slow transformers" (17.9%)

Innovation: of the 50% of firms with automotive innovation activities, 50% were active in R&D for EVs, and 83% for ICE vehicles.

Production: of the 8% of firms with production capacity changes, 0% implemented changes for EVs and 100% for ICE vehicles (thereof 100% upgrades vs 0% reductions).

Policy preferences:

- Most desirable was technology openness of policies (mean 4.6), closely followed by financial support for education and R&D (mean 4.5) and a reduction of electricity prices for all (4.5).
- Lowest preferences are for maintaining the ICE sales ban (2.5) and EV support for low-income households (2.3).

Large "slow transformers" (19.4%)

Innovation: of the 39% of firms with automotive innovation activities, 60% were active in R&D for EVs, and 60% for ICE vehicles.

Production: of the 54% of firms with production capacity changes, 57% implemented changes for EVs (thereof 100% upgrades vs 25% reductions) and 100% for ICE vehicles (thereof 86% upgrades vs 43% reductions).

Policy preferences:

- Most desirable where financial support for education and R&D (mean 4.9) and a reduction of electricity prices for the industry (4.9) and for all (4.5).
- Lowest preferences are for maintaining the ICE sales ban (2.8) and tax incentives for EVs (2.8).

Transformation status: Slow transformers assessed their transformation status between 1 and 3, and fast transformers between 4 and 6 (on a scale from 1 (not started) to 6 (fully oriented towards e-mobility)) – see Box 2.

Firm size: Small means fewer than 150 employees, and large 150 or more employees.

Note: Companies were asked to which extent they would prefer 15 policy options mentioned in the coalition agreement of the current federal government to support the transformation of the German automotive industry. The matrix above mentions only the most and least preferred options.

Comparing fast and slow transformers' policy preferences: Survey responses show common ground on cost reductions, but significantly different policy preferences for phasing in EVs and phasing out ICE vehicles.

- **Common ground:** All firms expressed a strong preference for policies that reduce their costs, such as lowering electricity prices and providing external resources, including support for education and R&D.
- **Striking differences:** Policies that strongly affect the transformation of the automotive industry – both regarding the the phase-out of ICE vehicles and the phase-in of EVs – are more contested, as reflected in marked and significant (at the 5% level) differences in policy preferences between fast and slow transformers.

1. **Stimulate EV demand:** Slow and fast transformers show significant differences in their preferences for EV demand pull policies, such as linking taxes to CO_2 intensity (3.1 vs. 4) and tax incentives for EVs (2.7 vs. 3.9) – with fast transformers having higher preferences for EV market uptake support.
2. **Keep phase-out policies:** Fast transformers show a moderate preference for maintaining the ICE phase-out by 2035 (3.9), and rank the relaxation of CO_2 fleet limits lowest in their preferences (2.4). In contrast, slow transformers have a moderate preference for the relaxation of CO_2 fleet limits (3.7) and rank maintaining the ICE phase-out by 2035 as their least preferred policy (2.6).

To slow down or not to slow down the transformation: Fast transformers expressed a preference to maintain a high pace of the transformation of the automotive industry, suggesting that this group of progressive firms is less tolerant of a slow market uptake of EVs and weakened phase-out policies. In contrast, the slow transformers lean to the opposite, hoping the speed of the transformation will be reduced. Faced with the global innovation race towards e-mobility, the German automotive industry is thus at a crossroads.

Box 3: Decline in credibility and little progress in building it up again

The credibility of the policy mix is a key determinant of the transformation activities of the companies participating in the pilot survey of the German automotive industry. However, the survey shows that since its peak in 2022, when Tesla opened its Gigafactory in Berlin-Brandenburg, policy mix credibility has significantly dropped, with its low point in 2023 when unexpected cuts were made by the previous German government to e-mobility funding programs (see Figure 3).

The new coalition government, which took office in 2025, has yet not made large progress in rebuilding policy mix credibility. Furthermore, when asked about their assessment of the strength of the political will of the German national government to support the transformation of the automotive industry in Germany for today, companies reported a high degree of uncertainty (mean of 3.5).

Figure 3: Credibility is essential but can be easily lost and is hard to build back

All in all: How strong do you think the political will of the German national government was to support the transformation of the automotive industry in Germany at the following points in time?

Policy implications

The transformation of Germany's automotive industry is at a crossroads: secure a place at the forefront of the global innovation race, or fall behind as a laggard? Our company survey enables new insights by differentiating corporate activities between legacy and new technology trajectories. Based on this novel evidence base, we propose the following policy implications for navigating the transformation process for Germany's split automotive industry.

Listen more closely to the fast transformers

The German automotive industry is heterogeneous, with many highly innovative firms well advanced in the orientation towards e-mobility. These *fast transformers* are favouring a fast pace towards EVs, whereas firms less advanced in this orientation – *the slow transformers* – prefer a reduction in transformation speed. Yet, slowing down the transformation, e.g., by weakening the ICE phase-out policies, punishes firms which are in fact the ones best-positioned to compete in the global innovation race towards net-zero technologies. Therefore, policy makers interested in innovation and competitiveness should pay more attention to the policy needs of the fast transformers – many of them highly innovative SMEs. Policy mix road mapping workshops could facilitate the identification of differentiated policy options for fast and slow transformers, identifying policy mix improvements which do not penalise the former and motivate the latter to get on board.

Ensure competitiveness by maintaining the ICE sales ban

The EU phase-out policies leading to an ICE sales ban by 2035 are a cornerstone of the transformation of the German automotive industry, driving change within firms. Weakening these policies through frequent amendments or reversals undermines planning certainty and disrupts coordination across the automotive ecosystem. Therefore, policy makers interested in regaining the international competitiveness of their domestic automotive industry are advised to maintain the ambition level of the EU's CO_2 emission performance standards, and further bolster the policy mix – particularly through stimulating the demand for EVs.

Policy mix credibility is central for a successful transformation

Whether and how much firms invest in the new net-zero technological trajectory significantly depends on how credible they view the policy mix. Yet, the perceived strength of the political will to support the transformation of the German automotive industry has declined and remains low (see Box 3). Policymakers interested in Germany's automotive industry to be well positioned to successfully compete in the global innovation race towards e-mobility should thus strive to regain policy mix credibility. This could be achieved, for example, by seriously tackling current acceleration challenges, e.g. through improved policy making processes, better communication offering clear guidance, and the adoption of additional policies. A high-level transformation task force coordinating policy efforts across Germany could be equally effective for rebuilding policy mix credibility. Sticking to the highly effective EU phase-out policies rather than weakening them would also increase policy mix credibility, as would terminating policies supporting polluting legacy technologies.

Collect differentiated company data for evidenced-based policymaking

Our pilot study of the German automotive industry has for the first time collected differentiated firm-level survey evidence on the transformation process towards e-mobility. It demonstrates that a distinction between investments in the polluting legacy trajectory and the novel net-zero trajectory is possible, offering new insights that can help policymakers to better navigate the transformation process in the automotive industry. Ideally, such a survey would be set up as a panel, to be repeated on an annual basis, thereby allowing more advanced analyses. Rather than pursuing such a data collection effort only for Germany, we recommend rolling out a Community Acceleration Survey (CAS) in all EU Member States undergoing the transformation of their automotive industry to e-mobility, such as Spain, the Czech Republic, Slovakia, France, and others. This would ensure that policy makers have up to date data on transformation status, policy effectiveness, and pressing challenges to be tackled to support the automotive industry in regaining global competitiveness in a transforming world.

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