

Automotive Insight 2024

A year full of innovations, trends, and significant challenges

Electric cars are dominating the market, autonomous driving is becoming an increasingly widespread topic, and the industry was under immense pressure. Manufacturers and suppliers struggled with supply chain issues, location problems, new regulations, and looming trade conflicts. Our reflection summarizes the most important topics.

Foreword

Dear readers,

A new EU Commission, Donald Trump's second term as US president, and a new government in Germany—the country is currently faced with considerable political changes within its own borders, in Europe, and around the world. The goal now is to provide Germany with clear, sustainable conditions.

While international location competition intensifies and geopolitical pressure increases, the competitiveness of Germany and Europe as locations is eroding. Far too little has been done for too long with regard to policy to counteract this.

The coalition agreement charts an important and proper course. The clear commitment to industry, SMEs, and the future of the automotive industry sends an important signal: The days of policies that unilaterally strain the economy should be over. Everything that can create growth must be considered. This is an important step forward that is also reflected in the coalition agreement.

Words must now be followed by decisive action. However, the coalition agreement still falls short in some major aspects and contains many financing reservations. Many of the projects announced, in particular in the areas of tax reform, dismantling bureaucracy, and funding plug-in hybrid technology, are vague and must be elaborated. Instead of only looking at individual measures, a joint, overarching theme of economic policy is needed: Competitiveness must be the guiding principle, as it decides on investments, jobs, and wealth.



In light of the rapidly changing global situation and many challenges around the world, Berlin must focus on everything that strengthens our international competitiveness. Economic strength is the foundation necessary for overcoming the multifarious global challenges in the long term. On top of this, Europe has not consistently deepened its international cooperation with other regions. We need free trade agreements as well as partnerships for raw materials and energy, and new alliances in all areas. Only then will we be able to remain effective in important future issues. This would be a major contribution not just toward European security, growth, wealth, and jobs, but also toward climate protection.

In Germany in particular, it is clear how closely intertwined economic strength is with societal stability and international competitiveness. The automotive industry plays a major role in this: Our member companies alone employ about 770,000 people. These jobs have secured prospects and wealth in over 50 regions throughout Germany, often for generations.

Economic importance is often associated with open markets: Around 70 percent of jobs and over two thirds of industry profits are due to our strong exports. We are the world's second largest producer of electric cars and our export share is approximately 78 percent and rising. Keeping global markets open and relying on international cooperation are key to staying competitive.

The German automotive industry is ready for climate-neutral mobility, sustainable technology, digital solutions, and long-term added value and employment. Our companies are investing tirelessly in new products, digitalization, electrification, and the circular economy.

In the next four years, our members will invest about 320 billion euros in research, development, and digitalization. 220 billion euros will go toward material investments, such as plant renovations. This means that we are well ahead when it comes to continuously advancing mobility.

This is why it is time for a location agenda that declares growth as a political goal again. Time for European trade policy that forms partnerships on equal footing. And time for a culture of innovation that provides freedom and incentives for investments in the location.

While Germany is preparing for an internal relaunch, the global environment is intensifying. The re-election of Donald Trump is a wake-up call to work together and consider economic and geopolitical interests more decisively in the future. This was made even more clear with the announcement of tariffs on cars, light commercial vehicles, and parts, in addition to the announcement of reciprocal punitive tariffs on large parts of the world. These new tariffs are a fundamental infringement and they are a sign of the USA turning away from the rule-based world order. It is not „America first,“ but rather „America alone.“ For the globally interconnected automotive industry, such tariffs are a major strain. The consequences for closely interlinked supply chains are still difficult to estimate, but it is already clear that significant impediments to growth and jobs as well as major strain on consumers are on the horizon.

The German automotive industry, with over 2,000 locations and approximately 138,000 workers in the USA, is deeply integrated into the US economy. It is living evidence against the claim that wealth can be maximized by going it alone.

Trade conflicts and protectionist measures jeopardize not only individual companies, but European competitiveness as a whole. The answer cannot be isolation, but rather a strategic industrial policy that secures global markets and creates fair conditions for competition. Europe in particular must appear decisive and confident. The EU Commission is now asked to make Europe's investment and innovation power sustainable for the future. This includes the conditions in the automotive industry.

Commission President Ursula von der Leyen made this a top-level issue and pushed for a strategic dialogue. This resulted in the „Action Plan for the Automotive Industry,“ an important and correct first step, but the necessary policy shift has yet to occur. There is also currently no overall strategy. This would be what we—automotive manufacturers, the countless suppliers and manufacturers of commercial vehicles, trailers, structures, and buses—need in this challenging time.

The EU Commission's steps are rather an initial, necessary consequence of the geopolitical developments of the last month. The fact is that competitiveness must urgently be improved, and the necessary conditions must be created for the successful run-up of electromobility. A more pragmatic approach is needed now in order to achieve the goals that have been set. This includes consistent monitoring of the major success factors for the run-up to electromobility, such as expansion of the charging infrastructure, power price development, power grids, raw material supply, semiconductor supply, and battery production.

The great potential of a more technology-friendly approach in the planning for the mobility of the future must be sufficiently considered. This includes expanding the hydrogen fueling infrastructure or renewable energies. In addition, the voice of automotive SMEs is not consistently included in discussions in Brussels on the future of our industry. Overall, there has long been a need to set the political course.

The Action Plan is part of a series of recently introduced European concepts—among them the Clean Industrial Deal and the Omnibus Initiative to simplify reporting—that all share one thing in common: They address important topics, but they are not the big win that is needed. In the face of the many challenges that our industry and the entire European continent are currently facing, these would have to be just that.

Der Action Plan reiht sich ein in eine Serie von kürzlich vorgestellten europäischen Konzepten – das gilt beispielsweise auch für den Clean Industrial Deal und die Omnibus-Initiative zur Vereinfachung von Berichtspflichten –, die alle eines gemeinsam haben: Sie sprechen wichtige Themen an, doch sie sind bisher nicht der große Wurf. Angesichts der vielen Herausforderungen, vor denen nicht nur unsere Industrie, sondern der gesamte europäische Kontinent steht, müssten sie aber eigentlich genau das sein.

To put it clearly, competitiveness and location appeal are open flanks. And with the new EU Commission's initial, more comprehensive measures, Brussels is not exactly distancing itself from the idea of overregulation. Avoiding bureaucracy in the future is not the same as dismantling it. The EU Commission should revisit the report from Mario Draghi, who did not sugar-coat the issue and drew attention to the urgent need for reform in Europe.

Germany and Europe find themselves at a critical juncture: The relevant actors of the future will be decided now. This is why Germany and Europe must respond to the current challenges instead of simply reacting. The course must be set for our country and our continent to once again stand for employment, growth, wealth, and innovation.

This demands a strong EU that faces challenges together, and a strong industry supported by the necessary conditions. We at VDA stand with our member companies in this regard and are playing our part.

You will see this in the following annual report that covers the full spectrum of issues facing the German automotive industry.

I wish you an interesting and informative read!

Sincerely,



Hildegard Müller



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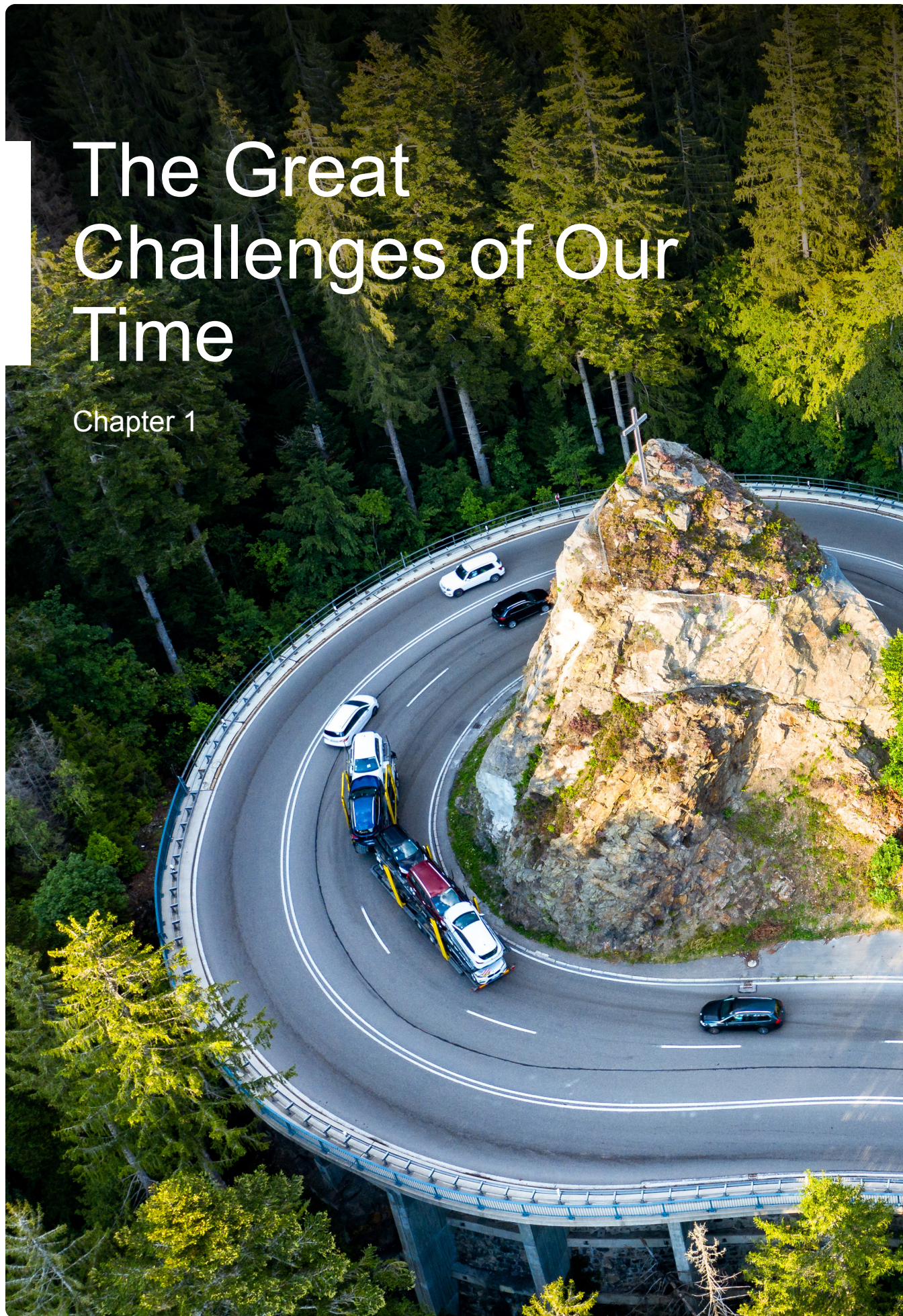
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The Great Challenges of Our Time

Chapter 1



Germany: an industrial hub in crisis

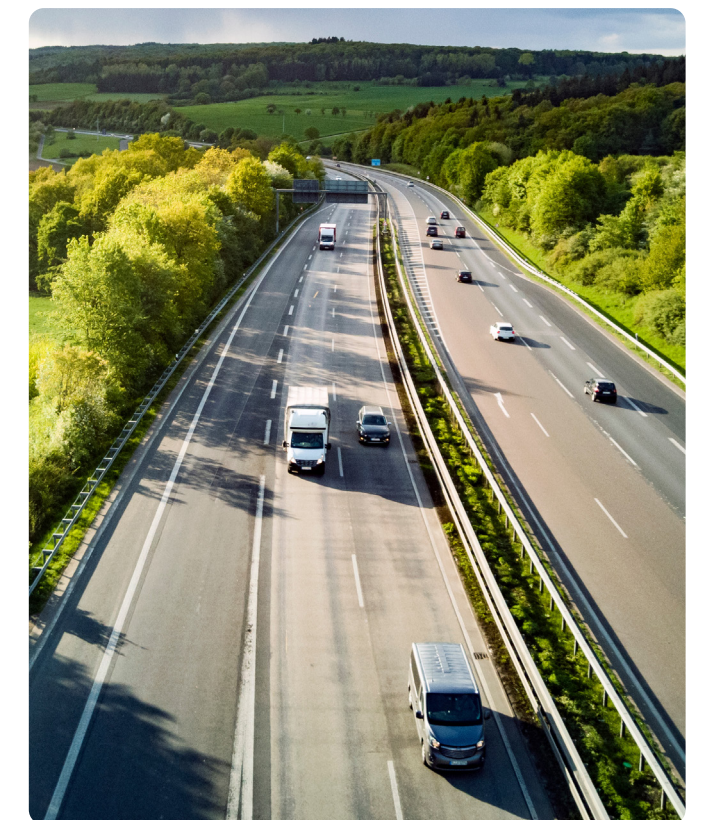
The German economy is in serious crisis. The GDP sank by 0.3 percent and 0.2 percent in 2023 and 2024, respectively. All predictions indicate that the GDP will stagnate or, in the best-case scenario, marginally improve in 2025. This would be the longest ever period of stagnation in the history of the Federal Republic. It is the manufacturing sector hindering the GDP, as its gross added value sank by 5 percent between early 2023 and late 2024. The service sector, traditionally rather geographically bound and thus only slightly exposed to international competition, if at all, grew marginally in the same period. As relocation plays almost no role in this sector, it has been less heavily impacted. As the German Council of Economic Experts reports in its annual assessment for 2024/2025, submitted in late 2024, the current period of stagnation is not an economic but rather a structural problem and, „attributed to Germany-specific factors.“

The council views the high economic uncertainty as one reason for this. The respective index remained synchronized between Germany, Europe, and the rest of the world until 2022. However, it has increased much more in Germany since the beginning of the war in Ukraine. It must be noted that it is sharply moving upward since the decrease in energy prices in 2023, while the index for Europe and the rest of the world has remained largely constant since then. In its economic prognosis presented in late 2024, the IfW Kiel believes it is possible that, „the federal government's non-mutually agreed economic course may contribute to the high uncertainty with regard to economic policy.“

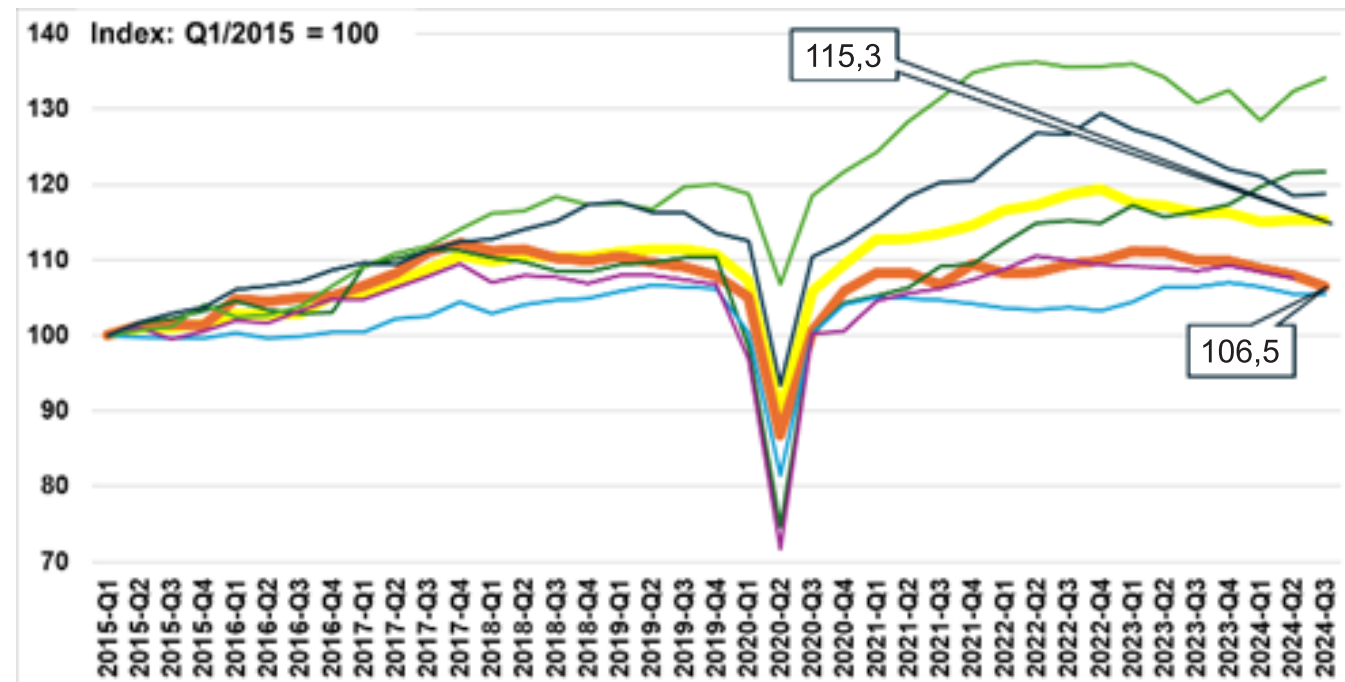
The expert council sees the high power and fossil fuel prices and increased unit labor costs as further reasons for the crisis in the manufacturing sector.

These have worsened in the last two years compared to important competitive countries like France, Italy, and the USA in particular. Cost competitiveness in the global market, especially against China and the USA, has deteriorated accordingly in this period.

However, weak growth in Germany's manufacturing sector did not begin in early 2023. It has been noticeably decreasing compared to the EU average since early 2019, with the gap increasingly widening since the coronavirus pandemic. This illustrates a structural issue as opposed to an economic one. If one considers the image shown on page 11, showing that the line for Germany is covering over 24 percent of the EU data line, the European Union would have performed far better without being weighed down by the German performance, the extent of this development becomes all the more clear.



Gross added value of the manufacturing sector - Germany on the decline since 2018



Source: Eurostat, Season- and calendar-adjusted, price-adjusted/concatenated volume

This weakness in the industry that we have seen since 2018 is also reflective of increasingly poor location quality. This is made apparent in the pertinent location rankings and expert surveys:

- In the „World Competitiveness Ranking“ by the International Institute for Management Development, which compares 67 national economies, Germany slid from 15th place in 2022 to 24th place in 2024.
- In the ZEW Country Index, Germany has slipped from 15th to 17th place since 2018 when compared with the 20 other most important industrial nations.
- Over 70 percent of German experts surveyed on location quality by the ifo-Institut for the „Economic Experts Survey“ in October, 2023 said that Germany has become a less attractive location in the last ten years. They evaluate location attractiveness for national companies with only 60 to 70 out of 100 points, and grade international companies with only 40 to 50 points.

Germany's biggest weaknesses are similar in all these evaluations: Bureaucracy, regulations, high taxation, labor costs, and labor shortages are all seen as problematic. There are also challenges with regard to energy, resources, and digitalization.

SMEs in the automotive industry whom VDA regularly surveys on their economic status share this view. Bureaucracy, taxes, expenditures, and high power costs are listed as the main political strains. In the survey from February, 2025, 90 percent, 75 percent, and 62 percent of companies stated that these factors significantly impede their business, respectively

Investment crisis shows no real transition is expected for the location

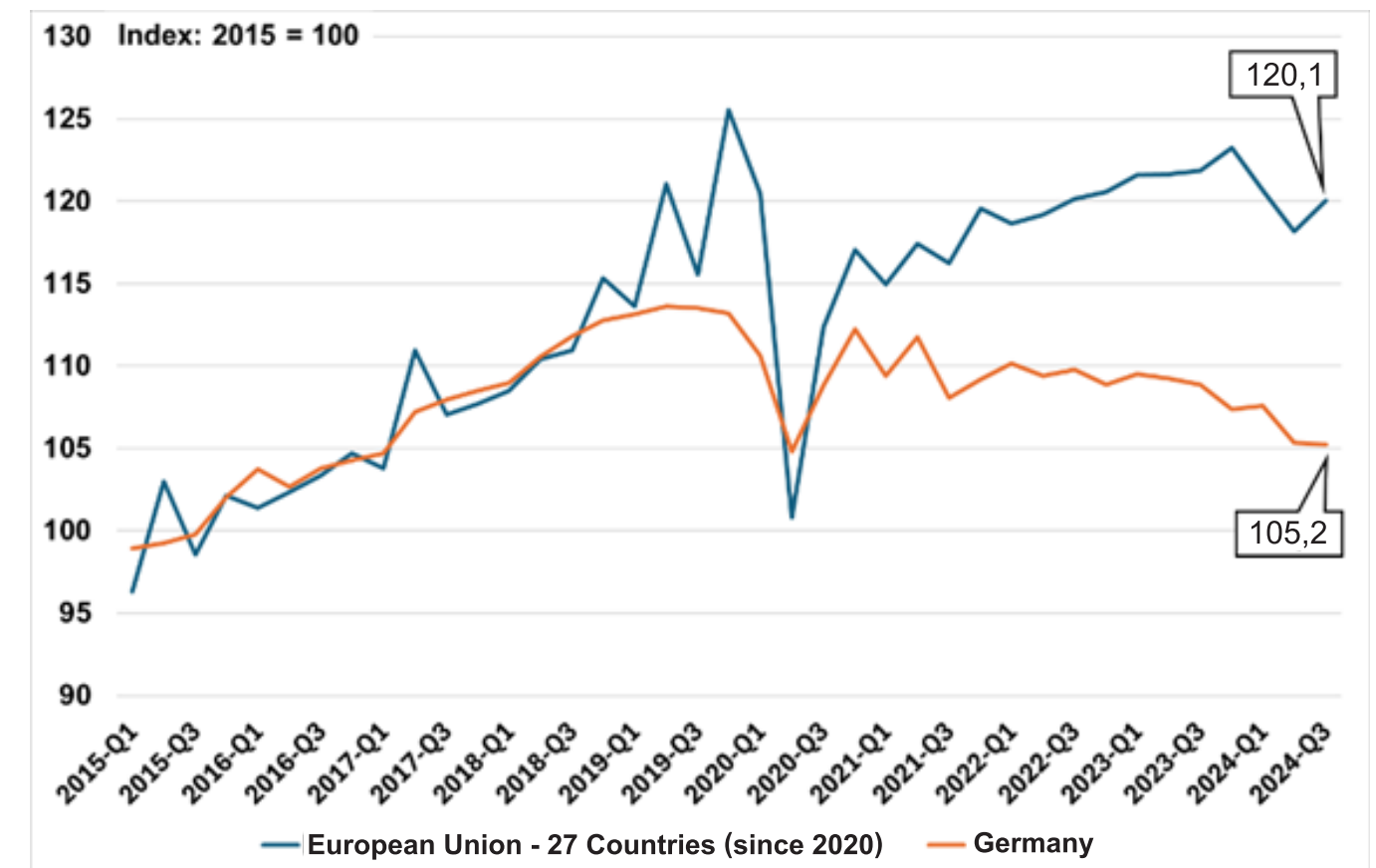
About half of the experts surveyed on location quality by the ifo-Institut for the „Economic Experts Survey“ also believe that Germany will continue to lose appeal in the coming decade. Only 15 percent believe that Germany will become more appealing as a location.

Companies appear to be losing faith that conditions could change at least in the long term. One indication of this is that not only is the utilized production capacity low (which would speak for a purely economic problem), but manufacturers have themselves reduced their production capacity by 6 percent, according to IfW estimates.

These findings correspond to the increasingly sharp decrease in gross investments in Germany, including equipment (machinery and appliances), structures (residential and non-residential), and other investments (largely research and development, software, and databases). About 86 percent of these investments were made by companies in Germany and 14 percent came from the state. Since their peak in Q₂ 2019, these gross investments have fallen by about 7 percent. As a result, Germany is falling more and more behind the EU average.

The lack of trust in the location's sustainability could become a self-fulfilling prophecy. If existing production plants are not replaced in Germany after their usage life and are instead relocated to another country, production will move with them. Germany's downward spiral would accelerate.

Gross plant investments in Germany continue to fall compared to EU-27



Source: Eurostat, Season- and calendar-adjusted, price-adjusted/concatenated volume

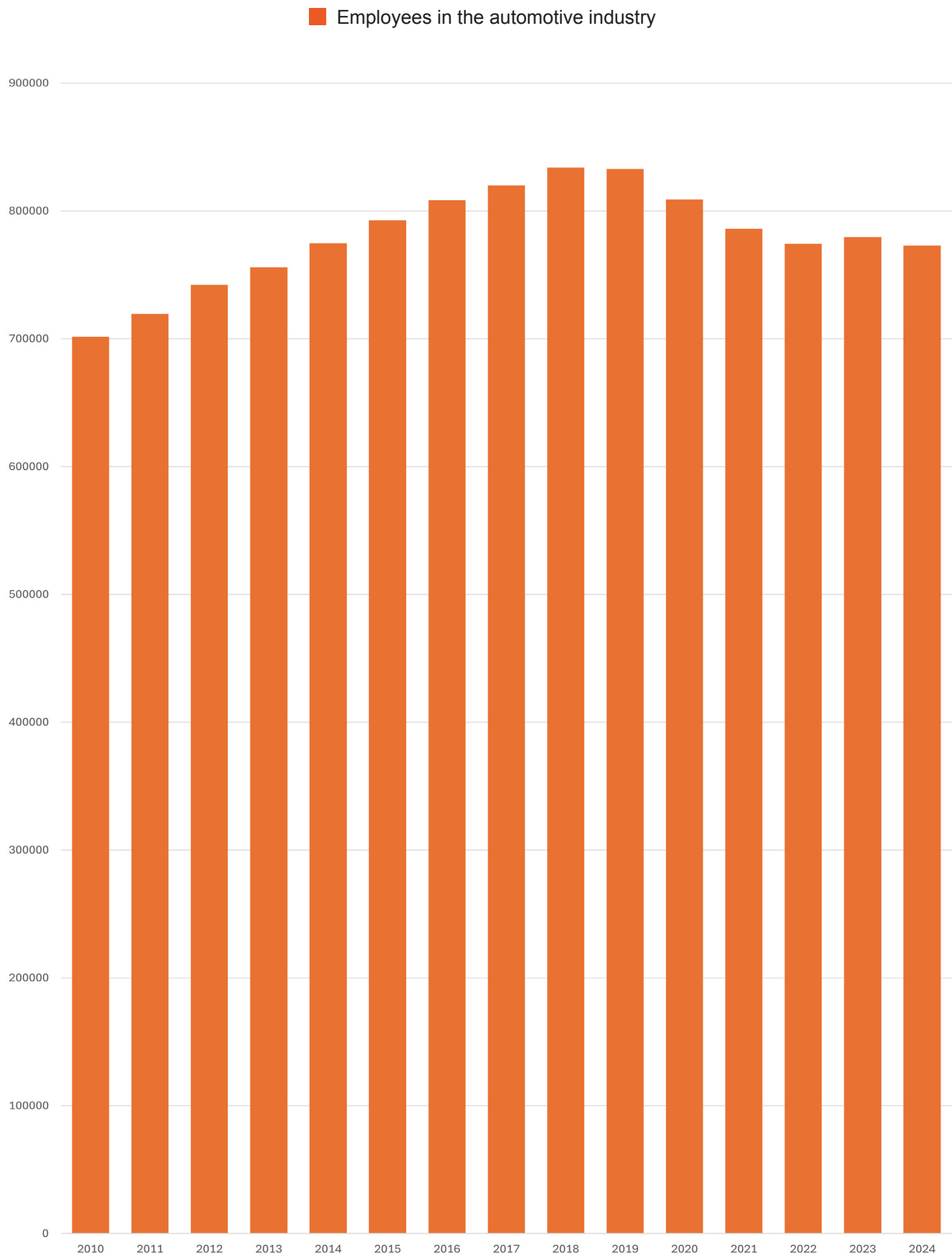
The ecological and digital transformation requires higher investments than ever before. Production systems are not only supposed to produce an increasing number of goods (replacement and expansion investments in production plants), but to do so while consuming less CO₂. Companies have to invest in two goals at once.

The increased flow of investments elsewhere also applies to the automotive industry: Manufacturers and suppliers are facing the challenges of the transformation and will invest 320 billion euros worldwide in research and development, and 220 billion euros in material investments, especially plants. However, it is alarming that over half of these investments come from German companies abroad.

Economic crisis hits the job market

The weak manufacturing sector is impacting employment. The continuous expansion of employment since 2010 ended abruptly in 2019. Since then, the manufacturing sector has reduced its employment figures from 5.7 million to 5.5 million workers (2024).

The decrease in employment is far more serious in the automotive industry. Since the peak in employment in 2018 with 834,000 workers, this number has now sunk by over 7 percent to 773,000. One major reason for this is that the automotive industry is not only suffering from poor location conditions, but it is also impacted more heavily than other sectors by the ecological transition. Compared to combustion engines that consist of up to 1,400 parts, electric engines are less complex with about 200 parts. This reduces the workload for the powertrain of electric cars compared to cars with combustion engines by about one third, which is another reason for the decrease in employment in the automotive industry. According to the study „Employment prospects in the automotive industry,“ that PROGNOS AG presented on behalf of VDA in October, 2024, the decrease in employment is estimated to reach over 140,000 workers by 2035.



What must now be done

Cutting through the red tape

A consensus has been reached that the bureaucratic strain on companies has long since gotten out of control. The National Regulatory Control Council estimates the time expense and direct costs incurred by companies as a result of following legal requirements to be 7.3 billion euros per year. Bureaucratic strain spiked in the years 2023 and 2024 in particular. According to the ifo-Institut, the overall economic costs of bureaucracy are much higher than those reported by the control council. Other factors must be considered when calculating the full economic costs, such as investments being relocated abroad, fewer companies being established, and bureaucracy-induced insolvency. In the year 2022 alone, the ifo-Institut states that unnecessary bureaucracy cost over 200 billion euros in economic expenses in Germany.

Policymakers are aware of the issue, and they are trying to break down the bureaucratic obstacles. The fourth Bureaucracy Reduction Act was passed in late 2024. Unfortunately, it does not meet the needs. The business community had also suggested hundreds of specific measures to reduce bureaucracy. Recommendations, including from VDA, were considered in the legislative process, but the laws do not meet the expectations.

Additional steps must be taken at the policy level. Reporting and information obligations must be reduced, and administrative processes must be simplified, including through digitalization. Promising tools for achieving this include practice and digital checks, which the Federal Ministry for Economic Affairs (BMWK) has been using since 2023. The business community has been urging this for many years. These checks should be used at other federal ministries and departments as well.

Company taxation: pushing instead of strangling investments

In an international comparison of company taxation, Germany charges the most. The average nominal tax rate for corporations is about 30 percent, much higher than the EU average of 21.1 percent (as of 2023). Including taxation on the shareholder level, Germany often reaches total taxation of about 50 percent on business activities.

This high rate of taxation is a handicap in international location competition and aids in the relocation of production to attractive locations abroad. The decrease in profits also reduces the freedom for financing for investments. However, investments are more important than ever, especially for the automotive industry. This industry has been challenged by the green and digital transformation more than any other. In order to remain competitive, research and development must be intensified, plants re-equipped, and entirely new value-added chains established in Germany and integrated into the automotive production system. This includes battery technology, fuel cells, semiconductors, and software for data-based business models. The transformation requires unprecedented investments in a relatively short time. The taxation system should be geared toward encouraging and supporting investments in the location. Various actions must be taken to achieve this:

Firstly, company taxation should be lowered to an internationally competitive maximum of 25 percent as part of a strict overall plan. More flexibility in fiscal loss off-setting is necessary to further improve the companies' urgently needed liquidity for the transformation.

Targeted incentives for investments are also necessary, specifically in research and development as well as in the modernization and transformation of technical production facilities.

For the former, the existing research allowance should be expanded by substantially increasing the funding volume and raising the funding rate to an internationally similar level of at least 30 percent for all companies. The core instrument for encouraging investments in production plants would be a wide-scale investment premium such as that originally suggested but not ultimately implemented by the coalition for climate protection and digital economic goods. Separately from this, it should be possible to plan write-off options for a longer period and make them more attractive, such as through the permanent implementation of a degressive write-off for wear.

Tax bureaucracy must also be dismantled, such as through the consistent breaking down of excessive declaration requirements, in particular with regard to controlled foreign corporation rules, as well as the simplification of contradictory regulations. The digitalization and acceleration of administrative processes, improved instant and cumulative write-offs, and the simplification of the application process for the research allowance are also necessary.

Germany cannot lose any more time and should acknowledge that competitor countries like France and Belgium have recently passed a number of the measures listed here, while for years Germany has made almost no progress in a tax policy that strengthens companies and the location.

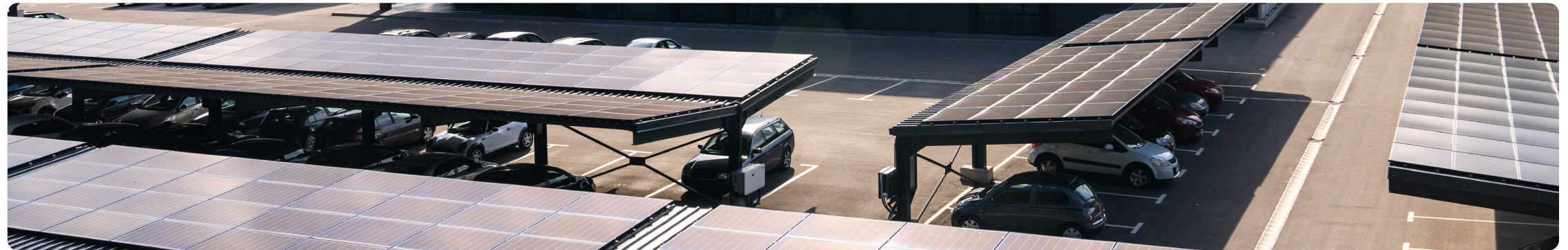


Reducing energy costs to a competitive level

The cost of power for industrial consumers in Germany is currently almost three times as high as it is in the USA or China. This is a massive competitive disadvantage. The financing of the EEG reallocation charge via the federal budget and the reduction of power costs for the manufacturing sector to the minimum EU level, initially scheduled to end in 2025, have improved the situation. Yet the main driver for the cost of power in Germany restructuring and expansion of the grid required for the energy transition, which consumers are financing through the power transmission grid fees. The slashing of the allowance for the fees during the budget negotiations for 2024 was thus counterproductive. A new solution should be found: We need a permanent reduction of the electricity tax to the European minimum and a cap on net fees beyond the year 2025.

The „Path to Transformation“ study by BCG and IW on behalf of BDI predicts that German companies will have to pay higher additional costs than foreign competitors in the future and that the competitive disadvantage for consumer groups, which include the traditional automotive industry, may not only not improve by 2030 but could, in fact, become markedly more pronounced.

In addition to this, future economic growth in Germany will largely depend on how successfully it can establish new, transformation-related value-added industries domestically. These include battery cell or semiconductor production, which are highly cost-intensive in terms of power. This is why an expansion of existing and effective relief measures like the power cost compensation must go beyond the permanent reduction of the electricity tax and cap on grid fees and apply to these new value-added industries as well.



Ensuring the supply of raw materials for the transformation: Investments in the raw materials fund must begin as soon as possible

A guaranteed supply of strategic raw materials is a fundamental requirement for the green and digital transformation. Strategic raw materials are also essential for the run-up to electromobility, including raw materials for batteries like lithium, nickel, cobalt, magnesium, graphite, or rare earth minerals for permanent magnets in the electric traction motor.

A sustainable supply of raw materials is based on three pillars: domestic mining, importing, and recycling. In order to better supply the European economy with raw materials, the EU Commission passed the Critical Raw Materials Act (CRMA). This defines multiple benchmarks for internal supply along the entire raw materials value-added chain. It is becoming clear that Europe must use its own potential for extracting raw materials but will also remain dependent on the import of strategic raw materials for the foreseeable future.

The EU Commission has realized this and positioned itself on the international stage with the MSP Forum and the formation of multiple partnerships geared toward raw materials. VDA welcomes these activities, but believes they are insufficient in light of global developments. The number of export restrictions for raw materials has more than quintupled from 2009 to 2022, according to OECD. This trend continues to this day. For example, China has imposed a strict ban on exporting the strategic raw materials germanium, gallium, and antimony to the USA and implemented export restrictions for other raw materials.

Against this backdrop, the federal government has taken up a suggestion by the German automotive industry and created the German raw materials fund. This has the potential to make a significant contribution to the secure supply of raw materials to the German economy. European cooperation with the French and Italian raw materials funds would be ideal for ensuring a coordinated approach in the EU. This is all the more important as international competitors are also working very hard on their own measures to ensure the supply of raw materials. For example, the USA and Saudi Arabia have announced investments to promote their own mining sectors and ensure the supply of raw materials from abroad. VDA thus urges policymakers to implement the first investments in the raw materials fund as quickly as possible.

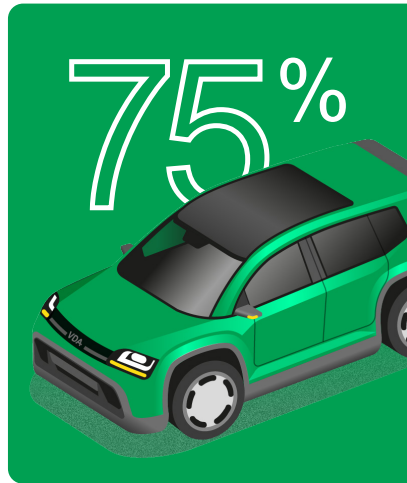
Counteracting the labor shortage

It is no contradiction that the automotive industry is suffering from a labor shortage even though it will majorly reduce the number of jobs in the coming years due to the transformation, as its demand for workers is not sinking consistently across all labor categories. Electrification of powertrains will make some careers more important while others will become less relevant. At the same time, the supply of workers in certain groups is sinking faster than in others. Growth in this supply by 2035 can be determined on the basis of the age make-up of the current workforce in the automotive industry. The PROGNOS study „Employment prospects in the automotive industry“ (see graphic on p. 14) compared the corresponding supply and demand.

According to the study, the labor shortage in the next ten years will primarily manifest in those career groups that will become more important to the automotive industry and in which the labor supply will markedly decrease due to age-induced fluctuation. Examples include machine assembly and engine technology, technical drafting, construction, model assembly, and IT network technology, coordination, administration, and organization. This will not just be a decrease in employment, but also a restructuring—with regard to qualification profile—that will result in new job fields. This development is already fully underway: The cutting of 75,000 jobs since 2019 (including in metal processing) will be met with an increase of 29,000 jobs in other areas, such as vehicle technology.

All tools must thus be used to reduce the labor shortage in these groups. This includes the activation of previously untapped domestic labor resources, increased qualified immigration, and the promotion of internal training and education. These measures will aid employees whose jobs are affected by the transformation in acquiring the qualifications required for the new jobs.

SMEs as a driver of wealth: the measures required to keep our economy afloat



Suppliers in the automotive industry, development service providers, and numerous other service providers throughout the entire automotive value-added chain, and especially automotive SMEs, are a critical pillar of the German economy. Suppliers stand out for their efficiency, creativity, and innovation, and are responsible for up to 75 percent of the added value for vehicles. The numerous medium-sized companies in particular often specialize in their segment of the product and value-added chains and, as essential suppliers for manufacturers, make a considerable contribution to the competitiveness of the German automotive industry.

VDA strengthens the economy: better conditions for automotive suppliers

Automotive suppliers are showing that they have done their homework and are investing in the transformation. However, an ambitious location program is required to promote growth and maintain employment in Germany. VDA has thus worked with the Federal Ministry for Economic Affairs and Energy (BMWK) as part of a structured dialogue to identify areas of action for supporting automotive SMEs in the transformation. In order to strengthen companies' competitiveness in Germany, labor and energy costs must be reduced and access to capital for investments in transformation technology must be simplified. Bureaucracy must also be dismantled, and planning and permit processes must be accelerated..

A holistic European body of regulations must ensure fair competitive conditions as well as ecological, social, and corporate sustainability. The work groups in VDA's SME forum devised and presented additional, specific suggestions in 2024, in particular with regard to dismantling bureaucracy and qualifying workers. The results were included in the BMWK's Expert Group for Transformation of the Automotive Industry and in the federal government's Strategy Platform for Transformation of the Automotive and Mobility Industries. Furthermore, the urgent need for competitive location conditions in Germany and Europe was pushed to policymakers. The HG III manufacturer group assembly also discussed which course Germany must take as an automotive hub. Arnd Franz, chairman of the corporate board for MAHLE GmbH, spoke alongside Bundestag members Tilman Kuban and Dr. Sandra Detzer.





Automotive suppliers under pressure: digitalization and artificial intelligence as the keys to the transformation

The ongoing poor economic situation in large portions of the world as well as difficult structural conditions for industrial SMEs in Germany and Europe are hitting automotive suppliers hard: Unit counts that fall short of expectations, fluctuating customer demand, above-average costs for labor and taxes, and inflationary effects are making the inflation-induced challenges for suppliers even more difficult. Strategies for the continued digitalization of production and administration as well as the use of artificial intelligence (AI) can automate recurring tasks, accelerate process steps, and improve process quality through automation. VDA's SME Day in 2024 was thus all about AI. The SME Day, which is held every spring, is the most important forum for supplier members of VDA. Members shared their experiences and experts presented the current developments.

China's business in transition: furthering certain investments and strategies

Suppliers based in Germany have over 10,000 production facilities worldwide, with new production capacities to be established abroad in the future. China is invaluable to most German suppliers both as a sales market as well as a production and innovation hub. The main motives for establishing international locations are strengthening the resilience of the value-added chain and the increasing erosion of conditions for production in Germany. German companies active in China face a range of challenges, including intensifying competition by Chinese companies, legal uncertainties, the need for greater diversification, and growing geopolitical and trade risks. These issues were addressed in a multi-part webinar series on China for VDA members in 2024, wherein opportunities and challenges for SME suppliers in China were discussed.

Development service providers: key players in the automotive industry on the road to more efficiency and cooperation

In addition to manufacturers and suppliers, development service providers continue to play a crucial role in the development and validation of components and systems. Some of them develop entire vehicles or derivatives. In the face of shorter development times and product life cycles with simultaneously high model variety, these highly specialized companies are taking on increasing responsibility in terms of development. These service providers are always looking for ways to make development and cooperation more efficient.

The use of new technology and cross-company cooperation can have great potential here, too. VDA's working group for development service providers discuss problem areas and solutions. VDA developed a guideline for partnership offers in the working group that provides initial legal orientation for partnerships so that smaller development service providers can also take part in large projects.

VDA promotes dialogue between policy and business at the regional level

With its regular State Dialogues, VDA provides the state ministries responsible for industry as well as regional automotive clusters with a forum to discuss topics that are relevant to state-specific regulations and funding measures. This platform strengthens the dialogue between VDA members, the states, and the regional automotive clusters. Participants use the opportunity to elaborate topics concerning the automotive industry and to coordinate joint initiatives.

With the format „VDA on Site,“ VDA invites its members, interested suppliers, and regional representatives from the areas of policy, unions, clusters, and science to discuss the specific situation in the region. The most recent event was in Wörth am Rhein in autumn of 2024. The goal of this format is to deepen the dialogue with VDA members on site and pick up their ideas directly where they are active. The suppliers' individual concerns and challenges were discussed. Furthermore, this approach allows VDA to make itself personally available to answer its contacts' questions about automotive SMEs, allowing deeper communication.



Competitiveness of the European Union—what is critical now

Competitiveness, security, and cohesion put to the test

The coming years will be decisive for the European Union. Its values and its economic model, shaped by openness, fairness, and freedom, are increasingly under pressure. In addition to security crises like the Russian invasion of Ukraine and an increase in populist forces, economic competition on the international stage is intensifying. Europe as an industrial location often finds itself exposed to competing interests and is having ever more difficulties keeping up with China and the USA. The coming political decisions will determine whether Europe will remain a hub of innovation or fall even further back in the international rankings. Will Europe continue to stand for joint solutions and cooperation? How will future growth be facilitated? Will our continent remain open to the world?

The policymakers in Brussels play a key role in creating the necessary conditions for strengthening the location's competitiveness. This necessity was made clear in the European election campaigns in 2024.

While climate and environmental policy dominated the campaign agenda in 2019, parties across the political spectrum spent 2024 focusing on competitiveness, defense, and the green and digital transformations. The distribution of seats in the European Parliament has also changed. Unlike in the previous legislative period, S&D, Greens, and Renew, who led much of the legislation under the Green Deal, no longer hold a majority. The fractions of the European People's Party (EPP), the Social Democrats (S&D), and Renew Europe are still capable of holding the majority in the European Parliament.

In addition to the parliament, the member states' delegates—the European Council—is equally involved in European legislation. Elections in the member states have a deciding impact on the balance of power in the Council. Slovakia, Belgium, Austria, and Romania held elections in 2024. Overall, the composition of the Council at the time of the European elections was more right-wing conservative. The heads of state and government of the member states, represented in the European Council, also play a major role in staffing leading EU personnel and commissioners.



Europe's competitiveness under pressure: Draghi and Letta demand comprehensive reforms

Mario Draghi, former Prime Minister of Italy and ex-President of the European Central Bank, takes a relentless position on the state of competitiveness in the EU and in individual economic sectors in his report. He emphasizes that Europe is losing global competitiveness in critical areas, in particular against the USA and China. He states with regard to the automotive industry that ambitious climate policy must be coupled with an equally ambitious industrial strategy in order to be successful. Here, he says, the EU must improve: Challenges such as high energy costs, labor shortage, regulatory complexity, and an insufficient infrastructure are making it difficult to transition to electromobility and automated vehicles. Draghi also underlines that the EU can only secure its role as a technological leader in the automotive sector through massive investments and innovations, battery technology, and semiconductors. While Draghi takes a closer look at the EU's competitiveness, Letta's report highlights measures for strengthening the domestic market. Letta emphasizes the significance of providing funding for the transformation and competitiveness as well as deepening the union of capital markets. Investments in road infrastructure and alternative public fuel infrastructures for heavy commercial vehicles are necessary for ensuring the decarbonization of commercial fleets. Industry, energy providers, grid operators, and policymakers must work together, says Letta. These approaches are certainly appropriate, but not fundamentally new.

The conclusions that these reports draw are largely shared by the German automotive industry, especially with regard to competitiveness, the dismantling of bureaucracy, and a comprehensive industrial strategy that supplements the ambitious goals of the transformation. A closer look at these guiding plans is thus essential.

Von der Leyen's second term and setting the course for European competitiveness

These changing political majorities are also reflected in the new European Commission, which came into office under Ursula von der Leyen on December 1, 2024. A majority of the commission members are from the EPP group of parties. The new structure also shows that the commission members' responsibilities deliberately overlap in many ways. For example, multiple commissioners are involved in the Automotive Industry Action Plan. This indicates a concentration of power with the commission president, who can make decision in the event of uncertainties. It must be noted that the commission stepped back from its decision to appoint a high-ranking representative for SMEs. The new commission places special focus on strengthening European competitiveness, which it does not explicitly view as a change in course from the European Green Deal. The basis for the commission's objectives included Mario Draghi's report on the EU's competitiveness as well as Enrico Letta's report on the domestic EU market, both of which were written on behalf of the European Commission and the European Council.

Conditions for a successful transformation and climate-neutral mobility

The automotive industry makes a considerable contribution to employment, growth, and wealth in Europe. As described by Mario Draghi, the climate goals must be supported by an industrial policy in order to create the conditions for a successful transformation. The action plan for the European automotive industry, which the European Commission presented on March 5, 2025 following the strategy dialogues, sets the right course for this, in particular concerning the expansion of the charging infrastructure. However, there is still no overall strategy or necessary shift in policy. The turn away from potential fines by a banking-&-borrowing mechanism over three years is helpful but insufficient. A gradual implementation of stricter caps, known as a phase-in, would be more effective.

A strong domestic market and competitive conditions for Europe's future

A strong domestic market, internationally competitive location factors, and a modern infrastructure are paramount to keeping Europe competitive. Enrico Letta's recommendations to deepen the domestic market and for a real capital market union thus point in the right direction. Further deepening and completion of the domestic market are essential steps toward upholding and strengthening the EU and its economy, and in particular toward securing competitive advantages at the international level.

Location factors include the establishing and expansion of the semiconductor and battery value-added chain in Europe, simplification of legislation, and a dismantling of bureaucracy, which places particular strain on SMEs in the automotive industry. The EU Clean Industrial Deal shows that the commission recognizes a need to make the location more attractive, although there has been no shift away from the excessive regulations. It is thus positive that the commission wishes to address these topics in its compass for competitiveness and with the Omnibus Initiative.

Lean and consistent regulations, as well as practical standards, are also needed in the area of digitalization in order to set the course for autonomous and interconnected driving, among other things. This requires an expansion of the legal framework for high-volume production to position Europe as an attractive market. Furthermore, the EU must create fair and secure conditions for added value from vehicle-generated data so that innovative, data-based business models can flourish. With the VDA-ADAXO concept and interoperable data platforms like the Mobility Data Space or Catena-X, the automotive industry already offers concepts that facilitate fair, secure, and non-discriminatory access.



Ensuring competitiveness: free trade, location strength, and industry policy guideposts for Europe's future

The success of the green and digital transformation in Europe largely depends on its industry's export strength. Securing free trade and tapping new sales markets are crucial to the European business model, especially in times of geopolitical instability. An active free trade agenda that pushes ratification of the agreement with Mercosur and the conclusion of negotiations with India and the ASEAN states would help diversify the supply chains and secure the supply of energy and raw materials. As major trade partners, the USA and China are particularly relevant. Differences should be resolved through dialogue in order to avoid the escalation of a trade conflict. Instruments for protecting trade should also only be used when necessary, and only after consulting with the industry. Protectionist measures must be avoided. Instead, location factors should be strengthened in order to foster competitiveness.

Auch im Dialog mit China sollte eine für beide Seiten akzeptable Lösung gefunden werden, um die eingeführten Zölle auf Elektrofahrzeuge wieder abzubauen.

The year 2024 had a great political and economic impact on the automotive industry in the EU. The challenges in 2025 will not become easier, and additional trailblazing decisions are required, especially with regard to Europe as an industrial location. Germany, as the largest member state and the heart of the automotive industry in Europe, must thus throw more of its weight around at the EU level. Europe requires a clear and reliable voice to drive central issues of industrial policy into the future. The German automotive industry will face the challenges, act competitively, and remain the driver of Europe's economic strength in the future as well.

Globalization under pressure: why free trade agreements and partnerships are now crucial

The German automotive industry stands for success in foreign markets unlike any other industrial sector:

- Over 75 percent of production in Germany goes abroad. This applies both to manufacturers and to suppliers.
- Over 50 percent of exports go to countries outside of the domestic EU market. The exporting companies rely heavily on free and fair market access.
- International production by German car manufacturers numbered 9.7 million cars in 2024, while 4.1 million were produced in Germany.
- In 2024, Germany imported 58 billion euros' worth of parts and equipment. Here, too, there is a close alignment with international supply chains.
- Suppliers exported a total of 82.4 billion euros' worth of goods.

Companies in the German automotive industry rely not only on open markets and fair market access, but also on rules-based trade and investment and stable conditions. The turbulent trade policies caused by the most recent US tariff regulations illustrate the importance of the latter.

The **success of globalization** is challenged by numerous developments: Geopolitical conflicts, global crises like the coronavirus pandemic and the resulting supply bottlenecks, unilateral dependencies, and military conflicts increasingly hamper the economic efficiency of international supply chains. In addition to the economic aspects of globalization, there are questions of economic security, such as with regard to the individual resilience of global value-added chains or political risk precautions. VDA and its members continuously analyze potential risks and actively work to minimize them. While doing so, VDA monitors considerations of economic security at the national and European levels, be it with regard to economic resilience or investment and export controls. It is crucial that the European economic security strategy's pillars „partnering“ and „promoting“ are strengthened and we do not solely rely on the pillar „protect.“ Economic security primarily refers to securing domestic competitiveness in Germany and Europe through attractive location conditions. There is considerable room for improvement in this area.

Concerning globalization, the states and supranational organizations have the important task of contributing to the most secure and efficient conditions possible.

VDA believes that the following are especially crucial in this respect:

- The WTO as a protector of rules-based order.
- Additional multilateral formats like G₇/G20/B20 or the OECD.
- A strong and resilient EU with proactive foreign policy.
- Location-based policy from the federal government.

Protectionism or even the uncertainty over future measures lead to a decrease in the division of labor and increased on-site production, which would greatly weaken export-heavy locations like Germany.

VDA supports rules-based, multilateral trade order: WTO reform remains a priority

The World Trade Organization (WTO, www.wto.org/) protects rules-based order and, with its 166 members, is in dire need of reform. Its arbitration courts must be made effective once more. At the same time, the importance of reliable, rules-based trade for nearly every company in the automotive industry has never been as clear as it was following the beginning of the new administration in the USA.

VDA stands firmly behind the WTO and all who work toward reform in order to maintain functionality. Hardly any other body stands so strongly for international cooperation and the balance of interests. The companies require predictable and stable conditions, especially if they export or invest abroad. For Germany and Europe, as exporters, working toward this stability is especially essential in times of geopolitical uncertainty. The EU must take a leading role in strengthening the multilateral trade system.

The WTO also offers important information on trade and market access obstacles, such as in the new database of tariffs and trade data.



WTO as an information platform:

The WTO database of tariffs & trade data was launched on March 4, 2025. The online platform offers access to official tariff and trade data for over 150 national economies.

Link: <https://ttd.wto.org/en>

Strengthening free and fair trade: The economy needs a broad network of free trade agreements

In the face of global, protectionist tendencies, the EU must clearly stand for open markets and free and fair trade, a WTO-compliant level playing field, and the dismantling of trade restrictions in order to strengthen Europe as a production hub and continue to guarantee the associated jobs and wealth. In particular, VDA supports the formation and ratification of the agreements with Mercosur, Mexico, India, and the ASEAN states. There are some high tariffs in these important future markets that make exports from Europe nearly impossible. The further development of relations with the United Kingdom is another important issue, especially with regard to the Trade and Cooperation Agreement (TCA). The EU Commission is negotiating over 50 agreements and partnerships. VDA supports this and is pushing for an offensive and more pragmatic EU trade agenda. The German automotive industry expects more flexibility from the European Commission in the negotiations of free trade and investment agreements, including the formation of EU-only agreements in order to accelerate ratification.

These agreements must not be overloaded with other issues. The existing agreements should be implemented efficiently and effectively, with realistic rules of origin and the least amount of bureaucracy on the sides.

The use of unilateral instruments for trade protection, if actually necessary, should be thoroughly thought out and consider the interest of the union. This includes prior consultation with the relevant industry and the conducting of an impact assessment. The European economic security strategy's pillar „partnering“ should be strengthened and we should not rely solely on the pillar „protect“.

Expanding partnerships and forming new alliances and trade, raw materials, and energy agreements are essential to Germany and the EU. Special focus should be placed on raw materials partnerships. In our own European neighborhood, Ukraine could play a crucial role here and it already has an agreement with the EU: the Deep and Comprehensive Free Trade Area (DCFTA) | Access2Markets.

Important free trade agreements for VDA

Little progress in improving market access—EU currently negotiating about 50 agreements.

Free trade agreement with	Start	Current status
1. Mercosur	1988	After additional demands by the EU, agreement on December 6, 2024 with subsequent demands by Mercosur re. BEVs (lower tariff reduction to protect own industry); ratification in EU difficult
2. India	2007	India cautious with market access, difficult negotiations
3. Update Mexico	2016	Text finalized, ratification still sluggish
4. ASEAN	2007	EU-ASEAN agreement priority for automotive industry, only „AGs“
5. Indonesia	2016	18th round July 2024
6. Thailand	2013	Relaunch 2023, 5th round March 2025
7. Australia (luxury tax!)	2018	Dramatic failure to form an agreement in October 2023, potential new attempt in 2025?

These diversification measures can reduce dependencies and make value-added chains more resilient. New partners will also be more important in developing and emerging countries.

VDA actively works to achieve the diversification goals of its members by pushing for free and fair market access in important future markets as well as monitoring the imports of raw materials and manufactured products needed for the transformation, including at the political level. VDA works at the national level with the federal government and at the European level with the European Commission and other stakeholders, as well as with the global business world in multilateral bodies like the B20 (Business 20), the official dialogue forum of the G20.

VDA's bilateral contacts for strengthening members

VDA also maintains close relationships with partner organizations around the world, such as sister associations of the automotive industry and other business associations. VDA supports its members in their international activities through participation in conventions and delegation trips abroad.

In recent years, VDA has further concentrated on relations with Africa and India. The instrument of „association partnerships“ facilitates particularly close and sustainable partnerships with its partners in the automotive industry.

Future markets in Africa / cooperation with the pan-African automotive association AAAM

The association partnership between the African Association of Automotive Manufacturers (AAAM) and VDA aims to support the establishment of the partner association and to work together to improve the conditions for the automotive industry on the African continent.

The project between VDA and AAAM, funded by the Federal Ministry for Economic Cooperation and Development (BMZ), expired in February, 2024 after 3.5 successful years and was then followed by a subsequent project with a duration of 2.5 years as of November, 2024.

VDA President Hildegard Müller visited Rwanda and Tanzania in October, 2024 and gained insight into the local automotive, supplier, and logistics industries there. In addition to various delegation trips for VDA and AAAM members, the focus areas in 2024 included the supervision of initiatives for simplifying trade and production in various African countries, the diversification of value-added chains, matters of manufacturing critical and strategic raw materials on site, and the improvement of fuel qualities on the African continent. Africa's relevance as a production hub continues to grow: According to predictions by the partner association AAAM, the number of vehicles produced will increase from the current 1.1 million vehicles to about 3.3 million new vehicles by 2035. The strengthening of the African automotive sector through strong self-administration is helping to create new jobs at African companies within the sector, to strengthen local added value, to achieve more social and ecological sustainability, and to improve the business and investment climate. The partnership project thus directly supports the German federal government's development policy goals.

In general, VDA supports a stronger connection between development and trade policy, in particular for the strategic implementation of investment projects. This includes bracing the EU Global Gateway Initiative with more specific offers for international partner countries, especially in Africa.

VDA has contacts concerning matters in Africa in Berlin and South Africa, and supports its members by providing data, offering market assessments through local associations and partners, and forming contacts with local companies and other stakeholders, among other things.

Cooperation with India

India is an important partner for the German automotive industry, especially when it comes to diversification, bilateral trade, and cooperation in the areas of electromobility and digitalization. German manufacturers and suppliers currently have over 1,400 locations and production facilities in India. The positive trend in the Indian car market continued in 2024: The Indian market is still booming, with over four million cars sold in India in 2024. India was thus able to retain its position as the world's third largest single market.

VDA thus supports cooperation with India via the „Indo-German Working Group“ with the co-chairs from the German and Indian governments as well as a close partnership with the Indian partner associations ACMA (suppliers) and SIAM (OEMs). In 2024, the partnership was able to host the 15th „IAA India Days“, work in the Indo-German Working Group on Automotive, monitor negotiations on the EU-India free trade agreement, help VDA member companies access the market (such as through quality control regulations), and attend conferences and workshops for increasing the competitiveness of Indian supplier companies. VDA member companies benefit from informational offers, delegation trips, and contacts with relevant stakeholders in India. The formation of a free trade agreement that is beneficial to both India and the EU is an important goal of the German automotive industry, in addition to the dismantling of market obstacles in both regions. After the full council of the EU Commission visited India in late February, 2025, the formation of the agreement is planned for the end of the year.

China: partner and competitor

Even in the midst of a volatile geopolitical environment and increasing differences between the EU and China, VDA supports stability in relations with China as well as a judicious and coherent orientation of the cooperation. During his second visit to China as chancellor in April, 2024, Olaf Scholz highlighted China's importance as a trade and economic partner. The German automotive industry, with its extensive engagement in China, plays a particularly important role here. China is not only an important sales and source market, but also an increasingly major innovation hub. The establishing of new bilateral cooperation formats for automated and interconnected driving as well as for international data traffic shows that Germany and China bank on cooperation even in times of increasing competition.



German-Chinese cooperation in automated and interconnected driving as well as in international data traffic

In the spring of 2024, Germany and China agreed on a new version of the declaration of intent to engage in dialogue and work together in the field of automated and interconnected driving. VDA actively supported this revision of the joint agreement, which expired in 2023. The working groups involved in the dialogue are concerned with the harmonization of regulations and standards for automated driving, market access regulations, and the use of data collected through automated driving, among other things. The revision of the agreement sends an important signal for the German automotive industry that, together with Chinese partners, is blazing the trail toward the development of automated and interconnected driving.

Germany and China also signed a declaration of intent to engage in dialogue on international data traffic in June, 2024. Together with the liberalizations enacted by the Cyberspace Administration of China (CAC) in March, 2024, the declaration of intent has the potential to facilitate the fair and secure transfer of data for both parties. This is especially relevant to automotive manufacturers and suppliers in China, as they regularly transfer large quantities of data from Germany to China and vice versa.

EU tariffs on Chinese-made electric cars jeopardize European competitiveness

Dialogue instead of isolation: This is the condition under which VDA has been supporting the EU Commission's anti-subsidy investigation into Chinese-made electric cars. Yet the countervailing duties imposed by the EU in late October, 2024 are in the interests of neither the European nor the German automotive industry. In fact, German automotive manufacturers in China, or their joint ventures, are disproportionately affected by the countervailing duties. Furthermore, negative impacts of these duties on the run-up to electromobility in Europe, and with it the run-up to the climate goals in the transportation sector, as well as increased prices for consumers who wish to purchase an electric car must not be neglected.

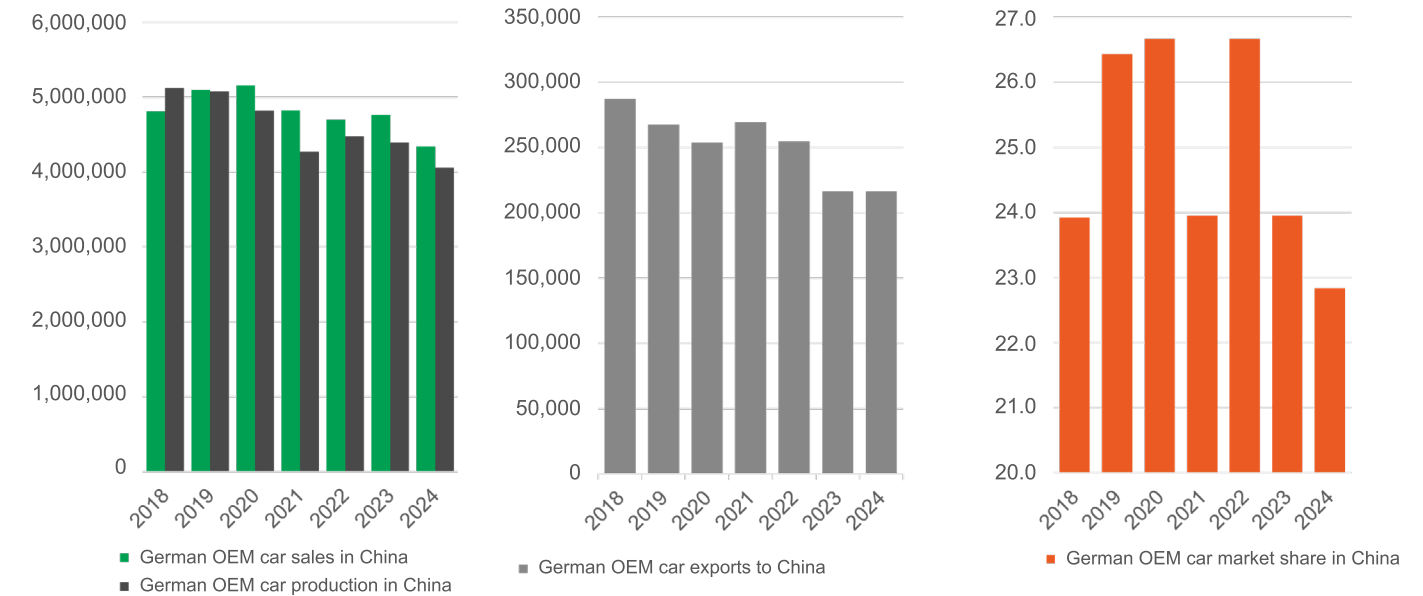
Recommendations for the federal government and the EU Commission: cooperation with China when possible, discuss differences openly when necessary

The new federal government is also urged to openly address differences with China when necessary and to work together when possible. This is especially prudent regarding the German-Chinese governmental consultations that are planned to be held in Beijing in 2025. Intensification of bilateral cooperation is particularly desirable in coordinating climate policy, working together in the areas of electro- and hydro-mobility, and in standardization. The diversification of the raw materials supply chains, a demand in the federal government's China strategy from July, 2023, can only succeed if new sources are tapped (such as in Africa, South America, and the Pacific). In order to support companies' diversification efforts as well as possible, the EU Commission must push the formation of new trade agreements as well as possible, including with India, Thailand, Indonesia, Malaysia, Australia, and the Philippines, and the agreements with Mercosur and Mexico must be swiftly finalized.

The overarching priority on the agenda of the new federal government must include the competitiveness of Europe and Germany as an industrial location. Internationally competitive location conditions are the best safeguard against increasing competition, promote resilience, and secure Germany's and Europe's global opportunities for influence and impact. The debate over China is important but must not supersede the central tasks at home. The federal government must lower the costs of energy, create a competitive tax and expenditure system, improve the professional and labor shortage, dismantle bureaucracy, and drive digitalization forward.

Ten years of VDA China: activities and offers on site

2025 will see the 50th anniversary of the commencement of diplomatic relations between the EU and China. VDA also celebrated an anniversary in 2024: The previous year, VDA monitored and supported its members' activities in China. For ten years now, the VDA China Team has been the eyes, ears, and voice of the German automotive industry in China. The team on site works closely with the council in Berlin to host the twice-annual VDA-CEO Supplier Round Table China, the most important industry meeting of German supplier companies in China. At the same time, VDA has informed its members, in particular supplier SMEs, about opportunities and challenges in the Chinese market through a comprehensive series of webinars. At the manufacturer and supplier convention Auto Shanghai 2025, VDA once again set up a communal German stand to support German SMEs on site.



USA: trans-Atlantic partnership and its challenges

Germany's and the EU's close ties with the USA are an elementary and integral component of modern foreign, security, and economic policy. This is also clear in the automotive industry: In 2024, the USA, the second largest automotive market in the world, was Germany's most important trade partner in the entire automotive sector. Expanding and deepening the trans-Atlantic partnership must be the top priorities. This requires confident, strategic cooperation with the USA as determined by Europe. This is all the more necessary as bilateral challenges intensify. Increasingly protectionist measures, demands for local production, and various steps taken against individual countries are straining the supply chains. The continued technological fragmentation is also leading to higher costs of development and slower innovations.

VDA supports free and fair trade between the EU and the USA

VDA fundamentally supports free, fair, and mutually beneficial trade. The international division of labor and associated trade are not a zero-sum game, but instead offer advantages and opportunities for all parties involved. In this regard, VDA calls for the dismantling of tariffs and non-tariff trade obstacles. It has also called on the EU Commission and the Trump administration to reflect on minimizing the risk of a trade conflict. This also applies to the contract partners of the United States-Mexico-Canada Agreement (US-MCA Agreement). Additional tariffs would have significant impacts on the automotive industry's global supply and production networks, and lead to higher costs for the consumers as well as a loss in growth, wealth, and jobs on both sides of the Atlantic.

VDA supports a continuation of the institutionalized trans-Atlantic dialogue as has been proven in the EU-US Trade and Technology Council (TTC). Another, similar, further developed dialogue forum outside of the TTC is required under the new administration in the USA. It should be used as a platform to identify the shared interests of the USA and the EU and push a positive agenda.

US approach against technology from certain countries for interconnected driving

The Biden administration initiated a regulation in 2024 that prohibits the presence on the American market of components required for interconnected and automated driving that are produced with involvement from the People's Republic of China and Russia. VDA took a position during the consultations and was able to help render narrower definitions, clearer requirements, and more specific transition regulations in the final rule. VDA will actively monitor additional legislative initiatives in this area as well as the possible expansion thereof to other product groups.

Recommendations for the federal government and the EU Commission

In Berlin and Brussels, VDA works toward a proactive approach to the United States government in order to avoid a large-scale conflict. The federal government and European Union should act determinedly and confidently for their own interests and seek collaboration with German and European industry. Negotiations are always preferable to conflict. Looking back on President Trump's first term, it is clear that negotiation can be a highly promising option.

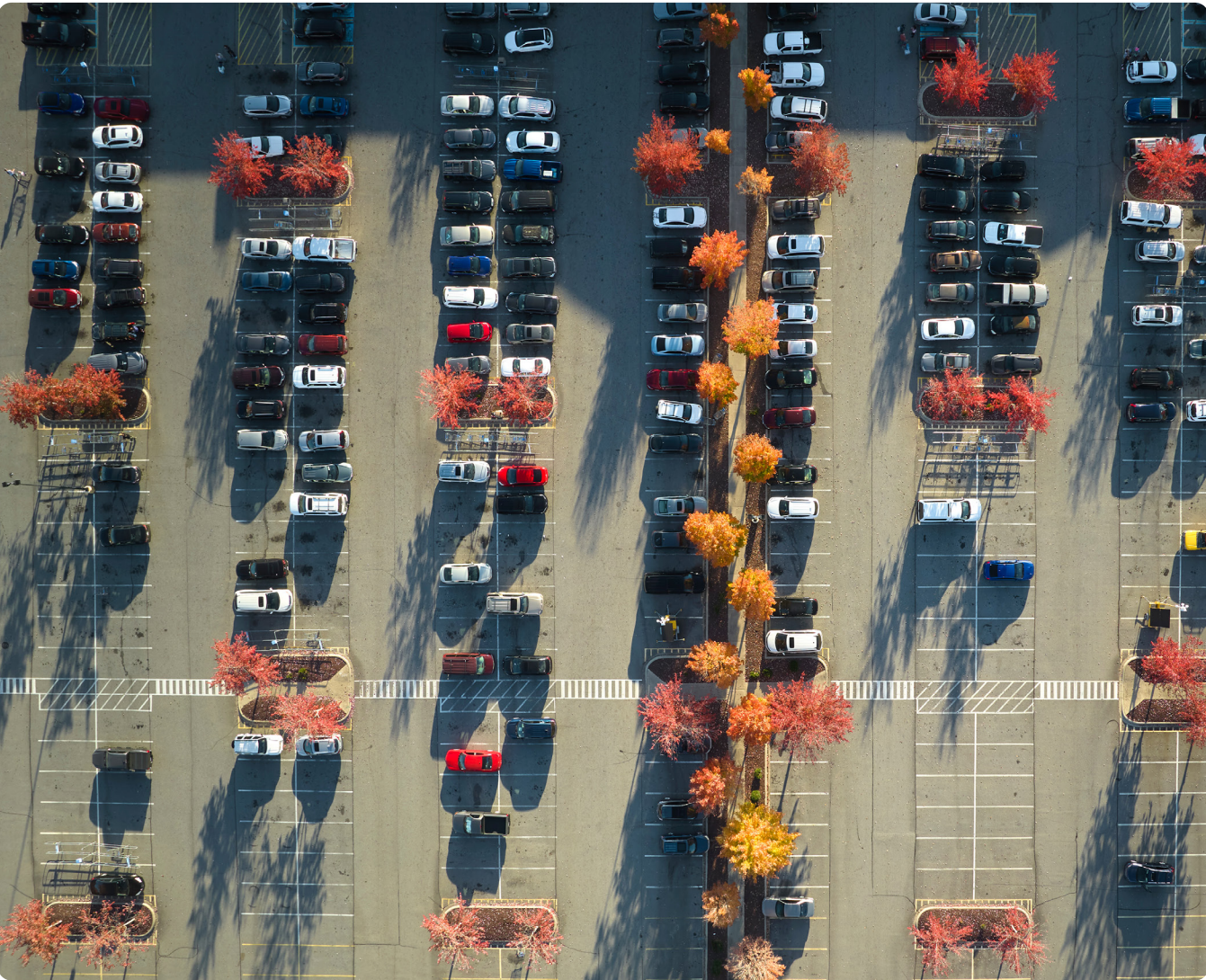
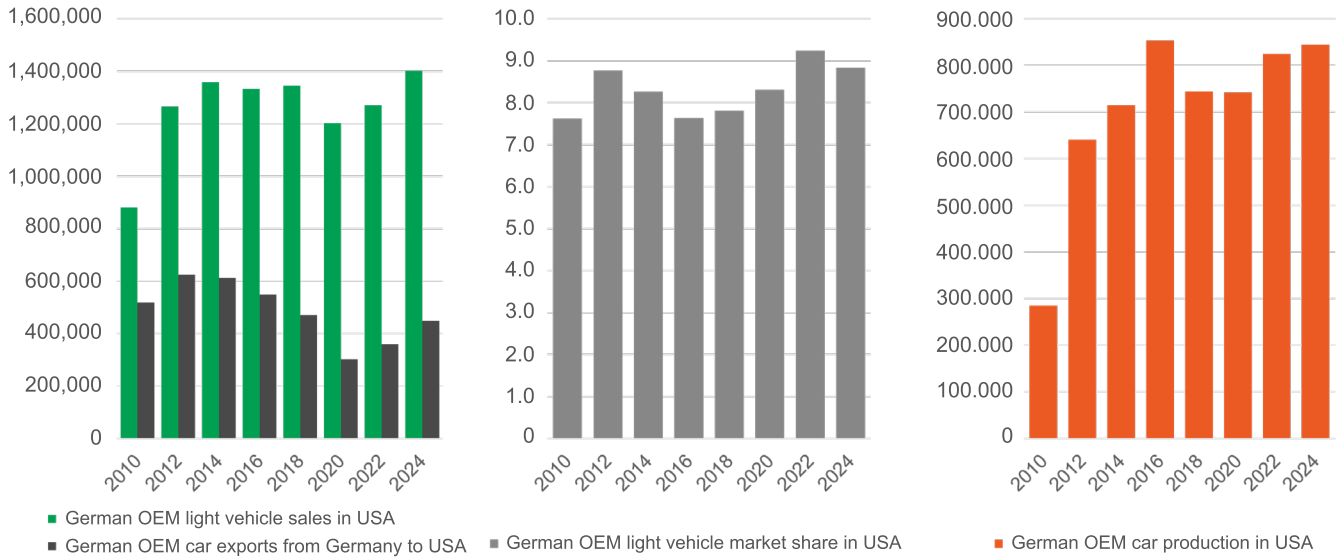
A bilateral agreement such as that considered between the EU and the USA during President Trump's first term could facilitate the breaking down of trade barriers on both sides and include tariffs and regulatory cooperation while proving beneficial to both parties.

However, the EU's trade protection instruments that have been built up over the years should only be used as a last resort and under strict conditions in order to prevent collateral damage for German and European industry.

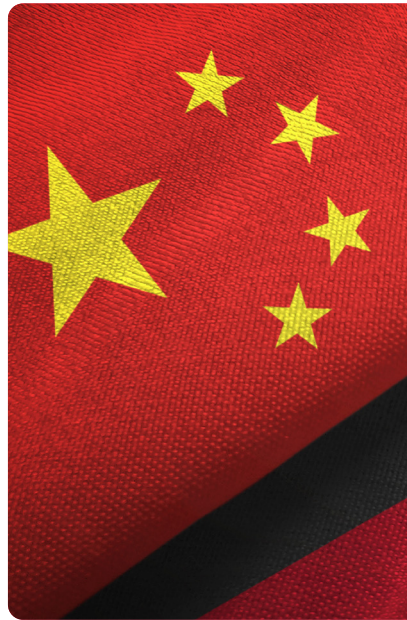
German automotive industry creates wealth, jobs, and added value in the USA

German automotive manufacturers have markedly increased production in the USA in recent years, and stabilized at a high level after reaching a record peak in 2023 (2024: 844,000 cars). About one out of every 11 light vehicles produced in the USA bears the logo of a German maker. The German automotive industry employs around 138,000 workers in the USA, over 90,000 of whom work for German suppliers. German manufacturers are increasingly taking a leading role in the run-up to e-production in the USA and have already announced billions in investments in production capacities.

It is thus clear that companies in the German automotive industry are an integral part of the US economy and local communities where their employees live. They create wealth, jobs, and added value in the USA.



China: partner and competitor



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Recommendations for the federal government and the EU Commission: cooperation with China when possible, discuss differences openly when necessary

The new federal government is also urged to openly address differences with China when necessary and to work together when possible. This is especially prudent regarding the German-Chinese governmental consultations that are planned to be held in Beijing in 2025. Intensification of bilateral cooperation is particularly desirable in coordinating climate policy, working together in the areas of electro- and hydro-mobility, and in standardization.

The diversification of the raw materials supply chains, a demand in the federal government's China strategy from July, 2023, can only succeed if new sources are tapped (such as in Africa, South America, and the Pacific). In order to support companies' diversification efforts as well as possible, the EU Commission must push the formation of new trade agreements as well as possible, including with India, Thailand, Indonesia, Malaysia, Australia, and the Philippines, and the agreements with Mercosur and Mexico must be swiftly finalized.

The overarching priority on the agenda of the new federal government must include the competitiveness of Europe and Germany as an industrial location. Internationally competitive location conditions are the best safeguard against increasing competition, promote resilience, and secure Germany's and Europe's global opportunities for influence and impact. The debate over China is important but must not supersede the central tasks at home. The federal government must lower the costs of energy, create a competitive tax and expenditure system, improve the professional and labor shortage, dismantle bureaucracy, and drive digitalization forward.

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VDA supports free and fair trade between the EU and the USA

VDA fundamentally supports free, fair, and mutually beneficial trade. The international division of labor and associated trade are not a zero-sum game, but instead offer advantages and opportunities for all parties involved. In this regard, VDA calls for the dismantling of tariffs and non-tariff trade obstacles. It has also called on the EU Commission and the Trump administration to reflect on minimizing the risk of a trade conflict. This also applies to the contract partners of the United States-Mexico-Canada Agreement (US-MCA Agreement). Additional tariffs would have significant impacts on the automotive industry's global supply and production networks, and lead to higher costs for the consumers as well as a loss in growth, wealth, and jobs on both sides of the Atlantic.

VDA supports a continuation of the institutionalized trans-Atlantic dialogue as has been proven in the EU-US Trade and Technology Council (TTC). Another, similar, further developed dialogue forum outside of the TTC is required under the new administration in the USA. It should be used as a platform to identify the shared interests of the USA and the EU and push a positive agenda.

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Trade instead of confrontation: why a new trans-Atlantic dialogue is now crucial

In Berlin and Brussels, VDA works toward a proactive approach to the United States government in order to avoid a large-scale conflict. The federal government and European Union should act determinedly and confidently for their own interests and seek collaboration with German and European industry. Negotiations are always preferable to conflict. Looking back on President Trump's first term, it is clear that negotiation can be a highly promising option.

A bilateral agreement such as that considered between the EU and the USA during President Trump's first term could facilitate the breaking down of trade barriers on both sides and include tariffs and regulatory cooperation while proving beneficial to both parties.

However, the EU's trade protection instruments that have been built up over the years should only be used as a last resort and under strict conditions in order to prevent collateral damage for German and European industry.



German automotive industry creates wealth, jobs, and added value in the USA

German automotive manufacturers have markedly increased production in the USA in recent years, and stabilized at a high level after reaching a record peak in 2023 (2024: 844,000 cars). About one out of every 11 light vehicles produced in the USA bears the logo of a German maker. The German automotive industry employs around 138,000 workers in the USA, over 90,000 of whom work for German suppliers. German manufacturers are increasingly taking a leading role in the run-up to e-production in the USA and have already announced billions in investments in production capacities.

It is thus clear that companies in the German automotive industry are an integral part of the US economy and local communities where their employees live. They create wealth, jobs, and added value in the USA.

How climate-neutral mobility can succeed—success story for economy, climate, and people



The German automotive industry supports the Paris climate goals and EU-wide climate-neutral road traffic by 2050 at the latest. German suppliers and manufacturers are investing around 320 billion euros worldwide in research and development between 2025 and 2029. In that same time period, about 220 billion will be invested for material purposes, in particular the construction of new factories and the repurposing of plants and their equipment.



Germany is the world's second largest production hub for electric cars. Last year, a record number of electric cars were manufactured. About one in every three cars manufactured in Germany was electric. This year, it will likely be over 40 percent. Thanks to a model offensive by the manufacturers, a rapidly growing supply of electric cars will make it easier to transition: Consumers around the world can now choose from 130 electric car models from German makers. The cars are very high-tech and lead in terms of charge output, driving distance, efficiency and sustainability. In the future, electric cars will even help balance our fluctuations in power grids and integrate more forms of renewable energy. Bidirectional charging is on the verge of being brought to market. Production capacities for a significantly accelerated run-up have also been expanded.



In terms of commercial vehicles, climate-friendly engines are also ready for serial production: Electric trucks that can travel over 300 miles (500 kilometers) on one charge and can be used for long-distance travel are being delivered and tested by couriers. Electric city buses have been in daily use for several years now. In the coming years, electric commercial vehicles will successively be supplemented by fuel cell electric trucks so that climate-neutral alternatives are available for all use cases of road cargo traffic.

E-mobility is and remains the core technology for achieving the climate goals

The German automotive industry is and remains competitive on international markets with its products. Its supply of electric vehicles now meets all customer requirements and vehicle categories, including light and heavy commercial vehicles. However, the markets the electric vehicles are sold in and where they are built depends on the respective framework and location conditions. Germany has room for improvement in two areas in particular: Firstly, the success of electromobility is made or broken by the expansion of the charging infrastructure. People need the certainty of being able to charge anywhere and at any time with ease. However, this is where there is still much to be done according to the Allensbach poll conducted on behalf of VDA: The charging infrastructure remains the largest obstacle preventing consumers from switching to electric vehicles. Secondly, electromobility must be made financially appealing once more after the purchasing premium expires. Competitive power prices are required for this above all else. Based on the extremely high charging prices compared to other countries, there is much to be done with the state power price components and the grid fees in particular.

With expiry of the purchasing premium and the sluggish expansion of the charging and the hydrogen fueling infrastructure, consumers have lost faith in electromobility. The run-up to electromobility as the major step in achieving the climate goals in the traffic sector thus falls short of expectations in all vehicle categories, from cars to light and heavy commercial vehicles. In 2024, sales of BEV in Germany fell by nearly 30 percent. Sales all throughout the European Economic Area were also lower in 2024 than in the previous year.

Loss of trust in e-mobility makes it harder to achieve CO₂ goals

Alongside a weak market environment and decreased demand in Europe, extremely high competition on the Chinese market and the EU Commission's tariffs for European companies cause additional strain that directly pulls financial resources from the companies that are needed for market activities in Europe. In addition to this are the trade policy challenges that also place further strain on the companies.

With regard to the CO₂ fleet targets, there is the central problem that the ambitious climate policy goals are not supported by sufficient political measures for the transformation and cannot currently be achieved: This includes an EU-wide, comprehensive expansion of the charging and hydrogen infrastructures as well as other central factors like reduction of the charging power prices, such as through more competition and the decrease in taxes and expenses, as well as the robust supply of raw materials and precursor products, including the corresponding agreements and partnerships.



Achieving the CO₂ targets requires better conditions and new flexibilities

The CO₂ fleet regulation is not supported by sufficient political measures and thus cannot yet be met. Swift improvement of the conditions will be crucial in order for consumers to want to and be able to switch to climate-neutral engines as quickly as possible. At the same time, short-term measures are required in order to prevent further harm to the European automotive industry: In light of the acute challenges and lacking conditions, additional looming strains for the automotive industry must be avoided. Fines would result in loss of financial resources urgently required for further investments, and must thus be avoided.

Against the backdrop of the global crisis and currently sluggish demand for electric cars, the reviews for cars and commercial vehicles (with the exception of trailers, for which the results of the monitoring data have not yet been evaluated) must be preponed to 2025 and progress regularly politically assessed. Only on this basis can it be ensured that the urgently required adjustments of the conditions will be made, without which the targets cannot be reached.

In order to prevent further strain on the industry and not further restrict companies' investment capabilities in this current crisis, the EU Commission must act soon and send a clear signal that it will supplement the current regulation with the necessary room for flexibility. There is urgent need for action with regard to the current demand situation concerning the new level of the CO₂ fleet targets in 2025. Specifically, a phase-in of the parameters that proved effective during the last tightening of the fleet regulation in 2020 is necessary. This would make it possible for manufacturers to achieve the increased fleet targets.



Openness to technology as a requirement for climate-neutral mobility

Openness to technology necessitates further adjustments of the regulation. This primarily concerns stronger consideration of the role of plug-in hybrids beyond 2035 and consideration of the average CO₂ reduction of renewable fuels in the fleet regulation. This could also be a possible mechanism for heavy commercial vehicles. In relation to renewable fuels, the EU Commission must also develop a framework for cars that is feasible both from a technical perspective and on the market, based on Consideration 11, so that carbon-neutral fuel vehicles can be classified as CO₂-neutral. Cars and light commercial vehicles should also be classified as zero-emission vehicles.

Electromobility is and remains the core technology for achieving the CO₂ targets. However, it is also clear that the climate goals cannot be achieved without a holistic approach. This includes focusing more on the existing fleet, which will still consist of over 30 million conventional vehicles in the year 2030. The run-up to power-based fuels, known as e-fuels, and advanced, sustainably sourced biofuels must be driven forward.

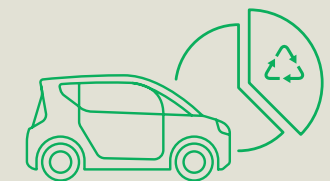
No climate-neutral mobility without recycling

With the establishing of alternative drivetrain technologies and renewable fuels, there are still CO₂ hot spots in vehicle lifecycles. Hardly any CO₂ is generated during operation, but it is generated during extraction and processing of the necessary raw materials, logistics, and component and vehicle production. This is why strategies for CO₂ reduction must extend beyond the vehicles' use phase. This holistic consideration of all value-added steps and their environmental impacts is reflected in the automotive industry's „Design for Sustainability“ strategies. These include concepts for extracting raw materials, production, repairs, remanufacturing, and recycling, and continue in the discussion about further development of the recycling economy. It is thus clear that we will not achieve climate neutrality without recycling.

From conserving resources in the manufacture of vehicles and using them for a long period of time to repairing, recycling, and reusing them, the principles of recycling are integral to the automotive industry. It always strives to strengthen these principles of recycling, such as by increasing the use of secondary materials like plastic recyclates and thus using fewer new materials from fossil sources.

Recycling and profitability must be considered together. An expanding recycling economy requires conditions that promote self-sustaining business models, innovation, and openness. For example, the certificate of valorization must be strengthened and digitized, dismantling SMEs must be supported in transitioning to electromobility, and the use of modern recycling technologies such as chemical recycling or advanced post-shredding technologies must be promoted. Suitable instruments include simplified approval processes and increased fees for landfilling and incineration.

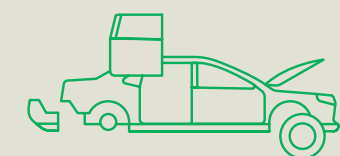
Market-economy control instruments and corresponding price signals must support the shift toward climate-friendly technologies and energy sources. With a cohesive CO₂ price signal, all stakeholders in the supply chain, from raw materials and fuels to recycling, will be equally involved in achieving the climate goals. Only with such emissions trading can CO₂ emissions be cut where it is most affordable. And only cross-sector emissions trading with a CO₂ cap makes it possible to ensure that the climate policy goals will be achieved in the long term.



1/3 consist of secondary raw materials



Life cycle of over 20 years



85% are recycled

Electromobility—How can the run-up to it succeed? Challenges and actions

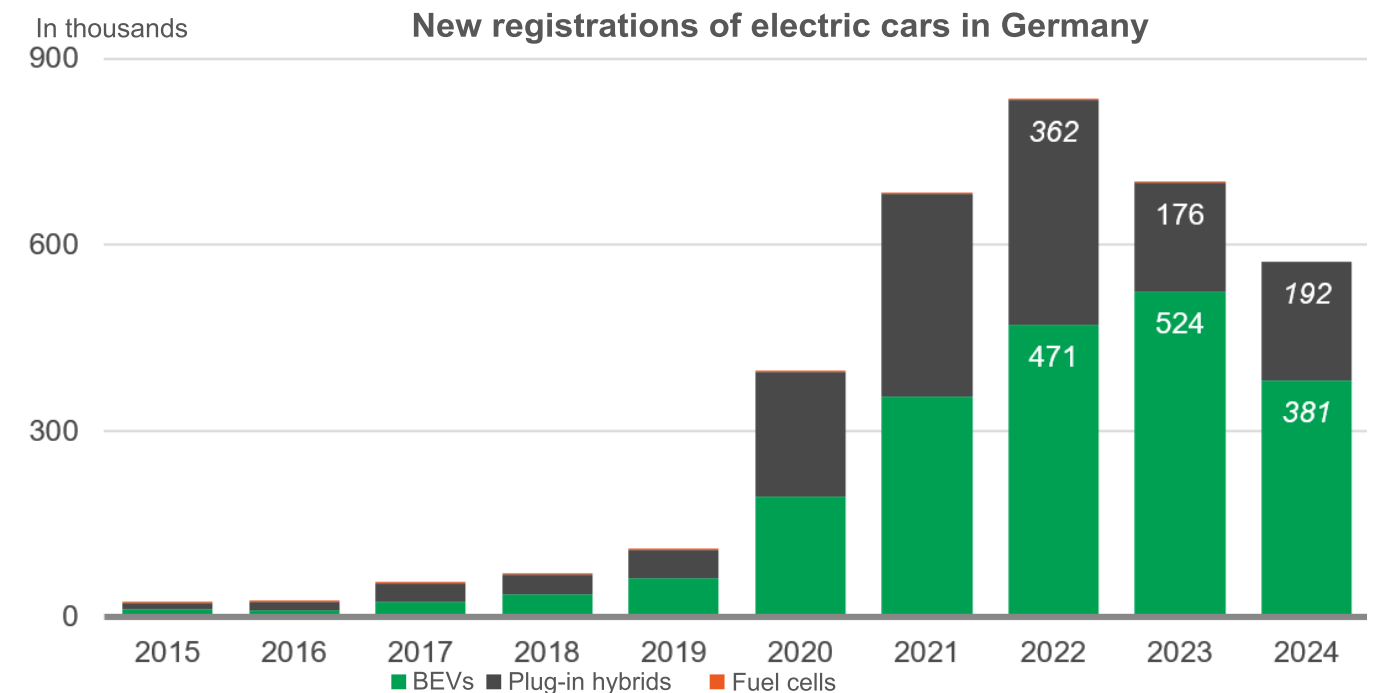


The German automotive industry currently offers 140 electric models worldwide and holds a strong position in the domestic market: Seven out of ten electric car buyers in Germany choose a model from a German manufacturer. A growing range of models is expected in the coming years that will include all vehicle segments, including subcompacts.

Ramp-up in 2024 thwarted by funding cuts

New registrations of purely electric cars (BEV) sank by 27 percent in 2024 compared to 2023, down to 380,609. One major reason for this is the abrupt expiry of the funding. Plug-in hybrids (PHEV), on the other hand, recorded 9 percent growth in that same period, meaning the number of approved vehicles in 2024 increased to 191,905.

On January 1, 2025, the number of electric cars was estimated at 2.625 million, of which 1.627 million were BEVs. This means that about 5.3 percent of all cars were electric, and 3.3 percent were BEVs.



Need to expand charging infrastructure in Germany remains great

The gap between supply and demand for the charging infrastructure for electric cars in Germany has narrowed. However, there are still major differences among the municipalities and there is still immense need to expand the charging infrastructure in Germany.

According to the VDA E-Charging Grid Ranking: As of July 1, 2024, 17 cars come to a public charging point on average. This means that the gap between supply and demand in public charging infrastructure for electric cars, which had been increasing steadily from 2020 to 2022, has again narrowed. In the last VDA E-Charging Grid Ranking, as of July 1, 2023, 21 electric cars statistically had access to a public charging point. On January 1, 2025, it was 23 electric cars.

Charging output plays an important role in the charging time. Quick-charging points can charge far more electric cars in the same amount of time than normal charging points. If one considers the average charging output available for each electric car in Germany in order to illustrate the expansion of the publicly accessible charging infrastructure, the VDA assessment shows that it has increased:

Whereas 1.7 kW were statistically available per electric car in Germany in July, 2023, it is now 2.1 kW exactly one year later. The reason for this is that quick-charging points with high charging output have been increasingly integrated into the infrastructure.

One third of all municipalities have no public charging point

Zwar spielt die Ladeleistung eine wichtige Rolle, doch für Verbraucherinnen und Verbraucher ist vor allem die Verfügbarkeit des Ladeangebots vor Ort entscheidend, da sie den Alltag maßgeblich beeinflusst. Die VDA-Auswertung zeigt jedoch: In gut einem Drittel (35 Prozent) aller 10.752 Gemeinden gibt es immer noch keinen einzigen öffentlichen Ladepunkt. Knapp drei Viertel aller Gemeinden (73 Prozent) haben noch keinen öffentlichen Schnellladepunkt installiert. Dass der Ausbau forciert wurde, schlägt sich aber auch hier nieder: Beim letzten VDA-E-Ladenetzranking (Stand 01. Juli 2023) gab es in fast jeder zweiten Gemeinde in Deutschland keinen öffentlichen Ladepunkt und in acht von zehn Gemeinden keinen öffentlichen Schnellladepunkt.

Ohne schnelleres Tempo droht Ladeinfrastruktur zum Engpass der Elektromobilität zu werden

154,037 charging points (of which 33,419 were quick-charging points with an output of over 22 kW, in turn 22,624 of which were high-performance charging points with an output of over 149 kW) were reported to the German Federal Network Agency on December 1, 2024. With 2.6 million electric cars on December 1, there are 59 charging points per 1000 electric cars (or 17 electric cars per charging point). The floating twelve-month average is decreased to 750 charging points per week.

The run-up to electric mobility will only succeed with a considerably accelerated expansion of the charging infrastructure. The speed of expansion is currently far behind the necessary pace. If the rate of expansion remains unchanged, only about 400,000 charging points will be available in the year 2030, far too few to meet the increasing demands. The Nationale Leitstelle Infrastruktur (NLL) states in its current study „Charging infrastructure after 2025/2030: scenarios for the run-up to market“ that between 380,000 and 680,000 charging points by 2030. The expansion monitoring of the NLL compares the public charging grid expansion in all 400 administrative districts (residents, area, stock, and output) with needs in 2025, 2030, and 2035.



Public charging must be simpler and more affordable: four actions for fair charging prices

The prices of public charging for electric cars are far higher than the costs of private charging. In order to be able to charge relatively affordably in all circumstances, multiple charging contracts are needed, which makes the situation more complicated.

End customers who are unable to charge privately and rely entirely on the public charging grid are particularly affected. The high costs and complex fee structure make the switch to electromobility more difficult and inhibit their entry into the market.

In order to reduce the prices at public charging stations, four key actions must be taken:

- 1. Reduce additional power costs**, including grid fees, taxes, expenditures, and levies.
- 2. Further specify the EU AFIR requirement**, in particular with regard to price proportionality and preventing cost discrimination.
- 3. Prevent unnecessary standing and blocking fees** to avoid excessive additional costs for users.
- 4. Promote competition** by implementing the EU EPBD requirement and a transparency office for charging prices, similar to the regulation of fuel prices at gas stations. These measures would help make electromobility more appealing and make the public charging infrastructure more user-friendly and cost-effective.

Comprehensive, publicly accessible charging infrastructure for commercial vehicles

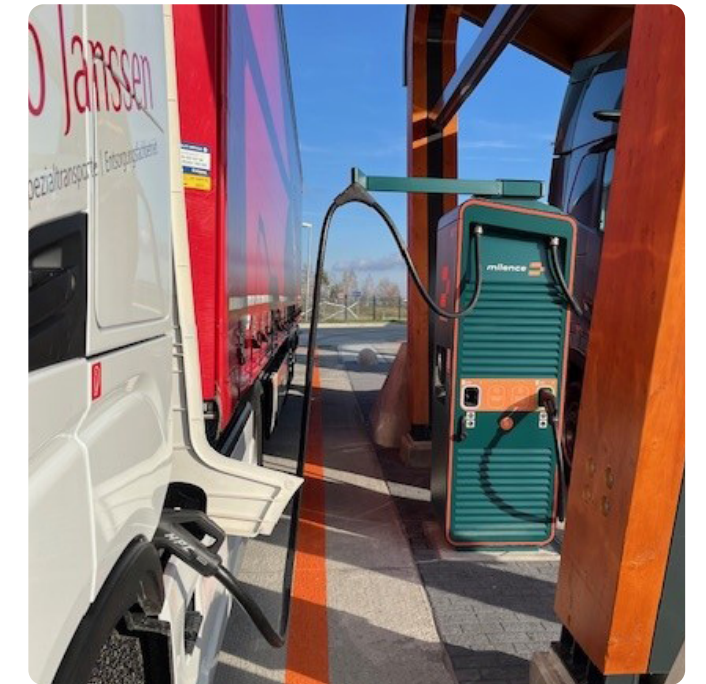
Around 30 percent of CO₂ emissions on European roads come from heavy-duty traffic, which clearly indicates that commercial vehicles play a key role in achieving the climate goals for road traffic. The successful market run-up of electric cars and buses requires the targeted expansion of a charging infrastructure that meets their specific requirements. While manufacturers are already producing the respective models, the necessary conditions must now be set. In particular with regard to long-distance traffic, there is not yet a comprehensive, publicly accessible charging infrastructure for commercial vehicles—a central requirement for heavy-duty electromobility. The truck charging infrastructure monitoring of the NLL reported a total of 230 charging points at 54 locations as of January 29, 2025.

With the tender for the truck charging network for rapid charging infrastructure at 130 unmanned rest areas, an important measure from the federal government's Charging Infrastructure Master Plan II began in 2024. Implementation must now be given the highest priority.

The infrastructure fee regulated therein as well as the pass-through model (the end customer brings their own power contract to the charging point) for truck charging may help reduce the investment risk for the charging point operator, create transparency in power prices, and prevent excessive power prices. This leads to predictability for the user, especially from the logistics industry, and concretely supports the run-up to electromobility.

It is clear that the challenges for grid connections are especially great in the area of heavy-duty commercial vehicles. An anticipatory expansion of the power grids and application for grid connections are thus all the more important. Furthermore, needs-based expansion of a grid to hydrogen stations and all the associated infrastructure is essential. There is urgent need for action here by policymakers, the Federal Network Agency, and the energy economy.

The automotive industry already contributes significantly to the success of electromobility and will continue to do so. With targeted investments and innovative solutions, it will drive this growth forward. Companies are already involved in establishing the charging infrastructure for heavy-duty commercial vehicles and long-distance buses.



The run-up to electromobility is a complex endeavor with its own challenges and opportunities

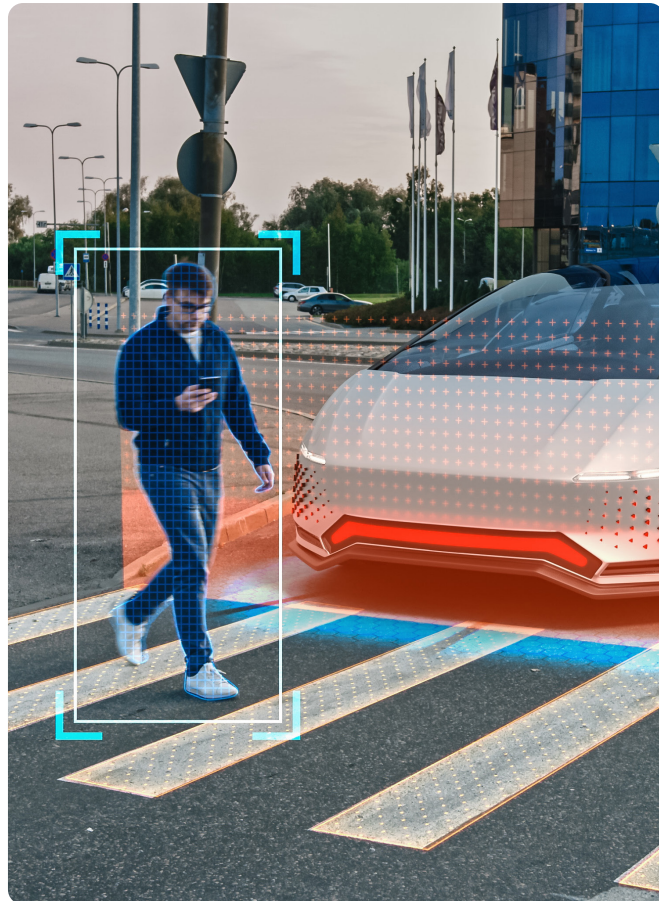
All relevant stakeholders must be aware of their responsibility to further expand the charging infrastructure in Germany. These include gas station operators, the housing economy, parking companies, commerce, charging point operators, the energy economy, and the automotive industry.

The automotive industry's investments and innovations are key to the success of electromobility now and in the future. Companies are already involved in many projects, including Ionity and Milence, which are driving the establishment of a charging infrastructure for cars and commercial vehicles, thereby continuously advancing the creation and expansion of the charging infrastructure.

Digital innovation and vehicle technology

Focus on autonomous and interconnected driving as well as artificial intelligence: How the German automotive industry is driving the technologies of the future

The automotive industry is undergoing a fundamental transformation, driven largely by digital innovations and new technology. At the center of this development are artificial intelligence as well as automated and interconnected driving. Both types of technology form the foundation for the mobility solutions of the future. The German automotive industry is taking a leading role here and contributes significantly to making mobility more secure, efficient, and sustainable. Automated vehicles in particular will play a major role in implementing more modern traffic and mobility concepts.



Automated and interconnected driving: key technology for the mobility of tomorrow

Automated and interconnected driving (AID) is an important factor in the technological advancement of the automotive industry and is of immense strategic importance. Qualified jobs, high added value, great potential for innovation, and the securing of international competitiveness and compatibility make AID a critical building block for the future of mobility.

Investments in research and development are enormous, the technology pathways are multifaceted, competitors from China and the USA are putting incredible pressure on the automotive markets, and the social and political environment is changing rapidly. These are challenging conditions for an industry that is in the midst of a transformation and that has changed Germany as an industrial hub like no other.

Targeted cooperation, consolidated expertise, and joint strategic efforts are required in order to remain successful in this dynamic climate and maintain a leading position in technology. VDA thus conceived the guiding initiative „Autonomous and Interconnected Driving.“ The initiative promotes cooperative development between manufacturers, suppliers, and research institutions and supports the establishment of competencies in key technologies. Within the VDA initiative, industry partners work together to develop positions on research and development needs. Policymakers can use these coordinated positions to align how funding will be allocated. Close cooperation with the relevant federal ministries has allowed the initiative to strengthen the national funding policy for AID and better interlink technological developments across programs and projects.



Driver assistance systems and partially automated driving functions of automation levels 1 and 2 (ADAS: Advanced Driver Assistance Systems) have already changed how we drive. The next levels, 3 and 4, are far more challenging for the industry as they are considerably more technologically complex. Further development of these systems requires expansion of the operational design domains, or ODD. This includes various times of day and year, weather conditions, environments, traffic situations, road types, and safe driving at high speeds. All vehicle categories—cars, trucks, buses, and shuttles—are considered in the use areas of personal traffic, public transport, and logistics. The goal of the industry is to offer serial production-ready, highly automated driving functions (levels 3 and 4) on a broad scale by the year 2030.

The first important milestones have already been achieved. After the basis for automated lane departure warning systems was established at the UN level, it has been approved in Germany and Europe since 2021. The first level-3 system reached autobahns with a maximum speed of 60 km/h (37 mph), in particular in congestion situations. This regulation was expanded in early 2023 so that speeds of up to 130 km/h (80 mph) and automated lane switching are possible. Mercedes-Benz and BMW have offered corresponding systems in their top-class vehicles in Europe and the USA since 2022 and 2023, respectively. In the coming years, such level-3 systems and vehicles will be used in far more usage environments and at even higher speeds. This is another step toward completely interconnected and highly automated driving.



Artificial intelligence plays a central role in advancing driver assistance systems

AI applications are already in use along the entire value-added process in the vehicle and supplier industry, from research and development to production, sales, vehicle use, and after-sales. Currently, AI functions are mainly integrated in existing software solutions and serve to support and optimize established systems and processes.

Driver assistance systems as well as autonomous and automated driving functions only reveal their full potential through the use of AI. Camera systems in the vehicle combine image processing algorithms with AI methods. Voice recognition systems and camera-based fatigue and alertness monitoring are also based on artificial intelligence. In the future, it will be possible to open and close doors via facial recognition. AI is also integral to vehicle production. It supports the predictive maintenance of plants and machinery and the optimization of testing and quality processes, among other things. For instance, AI can use acoustic anomalies to determine whether engine parts are not perfectly compatible. In battery production, it helps to identify defective parts early through pattern recognition. Even when developing new rim designs, AI-based processes are used to expand the technical and design possibilities.

With the increasing use of AI, the automotive industry is faced with new forms of older questions. Representatives from the areas of industry, research, and other partners formed the „AI Family“ as part of the VDA Guiding Initiative for Autonomous and Interconnected Driving (VDA GI) to lay the foundation for the secure, trustworthy, and efficient use of AI in autonomous driving.

A credible simulation framework was developed for these projects to serve as the basis for the sustainable use of AI in the development and validation of AID (autonomous and interconnected driving). Furthermore, a comprehensive security reasoning could be used as a key component of transparent proof of security. The development of a secure behavior derivation serves to meet the legal requirements of the verification.

Various usage areas (operational design domains, ODDs), including relevant and critical scenarios, were also analyzed. The formats derived from the projects, such as the Pegasus 6-Level model or the Omega data format, are now used worldwide in the development and validation of automated driving functions.

The European AI Act: overview of the timeline and transition periods



With the AI Act, the EU created the world's first comprehensive legal framework for the use of artificial intelligence. This regulation came into effect on August 1, 2024. According to Article 113 of the act, its regulations mainly apply as of August 2, 2026, whereas certain conditions will apply sooner.

Transition periods of the AI Act

As of February 2, 2025:

Prohibitions of certain AI practices and obligations for determining AI competencies come into effect.

As of August 2, 2025:

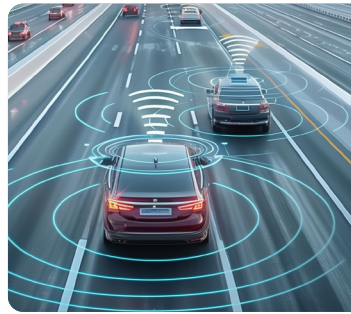
The governance regulations and specific obligations for general-use AI models come into effect.

By August 2, 2027:

Extended transition period for requirements of high-risk AI systems integrated in regulated products.



Mastering the digital transformation: challenges to security and interconnectivity



An extensive range of data-based services built on vehicle-generated information is key to keeping the German automotive industry competitive. Such services offer vehicle users innovative functions and create appealing business opportunities for manufacturers, suppliers, and service providers.

Use of in-car data

The data generated by interconnected vehicles offer a broad spectrum of innovative, customer-oriented solutions. These include applications in the areas of fleet management, predictive maintenance, traffic flow optimization, personalized insurance costs, and individual mobility solutions.

So that these services can be offered efficiently and industry-wide, uniform interfaces for the exchange of data between vehicle manufacturers, suppliers, and third parties are paramount. VDA supports initiatives that facilitate interoperable and standardized use of these data. The goal is to avoid island solutions and ensure an open yet secure flow of data between all stakeholders in the automotive industry.

The data must also be used lawfully, in particular with regard to the GDPR and other data protection regulations. Vehicle owners and users should have control of which data are obtained, processed, and shared with third parties. At the same time, manufacturers and suppliers have to use anonymized or aggregated data to generate added value without jeopardizing the users' privacy.

One example of a concrete solution is the VDA ADAXO concept based on extended vehicles (OEM backend). This offers fair, non-discriminatory, and secure access to in-car data and is compliant with the European Data Act. Clear conditions have been set that equally promote data use, competition, and consumer protection.



Digital and analogue infrastructure: keys to the transformation and security of the automotive industry

The digital and analogue infrastructure is crucial to the successful transformation of the automotive industry. VDA supports the implementation of V2X technology (vehicle-to-everything) to facilitate communication between vehicles, infrastructure (traffic lights, traffic guidance systems, etc.), and other road users. This technology helps optimize the flow of traffic, reduce traffic emissions, and increase traffic safety. The technical focus is on a combination of wireless radio (C-V2X) and direct vehicle communication (DSRC).

Because of its purely organizational purpose, the middleware does not differentiate between vehicle manufacturers. One promising approach is the consolidation of forces from various stakeholders in software development to significantly increase speed and efficiency. Instead of developing many software components parallel to each other multiple times, the idea is to create a pool in which various contributor softwares are provided and then used by distributors for use in serial development. This is known as open-source software and is already being used successfully in the consumer sector. The challenge for automotive use lies in adhering to security standards such as ISO26262. This places much stricter requirements on development.

In order to address these challenges, VDA founded the AK SDV on March 14, 2024, offering its members an antitrust-compliant platform for cooperation. Consisting of a hard-hitting team of OEMs and tiers, this committee developed concrete plans for establishing an open-source software ecosystem with architecture, toolchains, and processes for automotive use.

The Eclipse Foundation, with which VDA works closely, has already begun operative development in this area and created the first code in 2024. A minimum viable product that is supposed to show the basic functionality of the ecosystem has already been created. VDA is taking up these activities and driving the organization of additional important tasks and necessary roles (maintainers). This includes certification of the necessary security standards. A target was established during various AK SDV workshops. 2025 will be spent bringing the necessary overall organization to life and bringing it up to a stable state of progress. The shared goal is to start serial software development based on open-source software in 2026, which will go into production as of 2030.

Cybersecurity in interconnected vehicles: standards, updates, and protective measures

Cybersecurity of vehicles and vehicle systems are the utmost priority for the German automotive industry. User privacy must be protected, industry espionage and sabotage must be prevented, and vehicle passengers and their surroundings must be protected against threats stemming from cyberattacks on interconnected vehicles. The regulatory requirements of cybersecurity have become significantly tighter as a result of the intensifying geopolitical landscape. Pertinent frameworks like UNECE R 155, the Cyber Resilience Act (CRA), and the Network and Information Security Directive (NIS-2) set high standards. At the same time, the resulting bureaucratic load, in particular for SMEs, must be kept as low as possible in order to secure the industry's competitiveness.

Manufacturers are required to implement the requirements of UNECE WP.29 and the standard ISE/SAE 21434. Both regulations define the technical and organizational requirements for a cohesive cybersecurity management system (CSMS) that covers all life phases of a vehicle, from development and production to operation.

A deciding factor for the cybersecurity of modern vehicles is the possibility to provide software updates over the air (OTA). This technology makes it possible for manufacturers to resolve security vulnerabilities early, implement new functions, and troubleshoot errors without the vehicle going to the workshop. OTA thus not only helps improve vehicle security, but reduces maintenance costs and improves customer satisfaction.

Modern vehicle architectures increasingly rely on the zero-trust principle. Contrary to conventional security models, each communication request within the vehicle is evaluated independently. This minimizes the risk of a potential attack within an already compromised system spreading further.

Assigned and unassigned security testers are used in order to identify and troubleshoot vulnerabilities early. These play a major role in improving cybersecurity. However, the criminal law framework must be adjusted for this: While malicious hacks must continue to be prosecuted and punished, there should not be any legal gray areas for ethical security testers (white-hat hackers) that make their work more difficult or criminalize it.

The cybersecurity of international data transfers is also crucial for the automotive industry as a basis of international development, production, sales, and product monitoring.

Clear political frameworks and consistent regulation are required to effectively counter these challenges and ensure the competitiveness of the European automotive industry. We clearly addressed our demands of the Commission in our position paper from November, 2024:

Smart Regulation for Smart Vehicles (PDF):

- The Commission should resolve contradictions and overlaps among the regulatory requirements when configuring registration, certification, and reporting obligations, and support harmonized implementation in the member states. Clarity as to which regulations apply to which manufacturer groups in the automotive industry is also needed.
- Cyberattacks are often committed by insiders, namely employees of the affected companies. In order to minimize these risks, the Commission should create legal frameworks for background checks and for binding authorization and authentication of employees.

- Vehicle cybersecurity requires regular and secure over-the-air updates of the cybersecurity management systems. The Commission should work toward globally holistic regulations for the security of the international data network required for this.
- The US Department of Commerce published a legislative proposal on September 26, 2024 that prohibits the use of software and hardware from China and Russia in interconnected and automated vehicles in the USA in order to protect national security. In accordance with VDA's position, the Commission should work to minimize the negative effects of this regulation on the European automotive industry as much as possible.

VDA calls for better conditions and targeted measures from the EU Commission to keep the automotive industry successful in an increasingly digital and interconnected world. At the center of this is an efficient and consistent regulatory landscape. Furthermore, the following conditions and measures are required:

Software Defined Vehicle (SDV): European standards are paramount. The increasing complexity of software can only be mastered with an open software ecosystem with free and open-source software (FOSS). The Commission should actively promote both of these and dismantle regulatory hurdles.

In-car data: Data-based services offer innovative vehicle functions and new business opportunities, and are essential for the competitiveness of the European automotive industry. The Commission should ensure the functional security and cybersecurity of vehicles and the safety of the generated data by supporting the VDA-ADAXO concept.

Cybersecurity: UNECE R 155 and the EU Cyber Resilience Act (CRA) place new, stricter requirements on cybersecurity. In order to effectively and efficiently implement these requirements, the required workload must be reduced by eliminating contradictory requirements and double reporting obligations.

Automated and autonomous driving: After creating the EU legal framework for small-series production, it must be expanded to large-series production. A harmonized approval process in the member states and swift adjustment of the national road traffic laws are required, as are incentives for local expansion of the infrastructure and positive communication that increases acceptance.

Artificial intelligence (AI): It is already clear that AI will influence mobility along the entire automotive value-added chain significantly. The Commission should improve European competitiveness through strategic funding, the creation of a European AI ecosystem, and a legally secure and innovation-friendly legal framework.

International data transfer: The seamless transfer of data between the international economic areas, in particular the EU, China, and the USA, is invaluable to innovative vehicle technology, data-based services, and global production networks. This is also important for the international competitiveness and innovation of the European automotive industry.

Software-defined vehicle: the future of E/E architecture and cloud integration

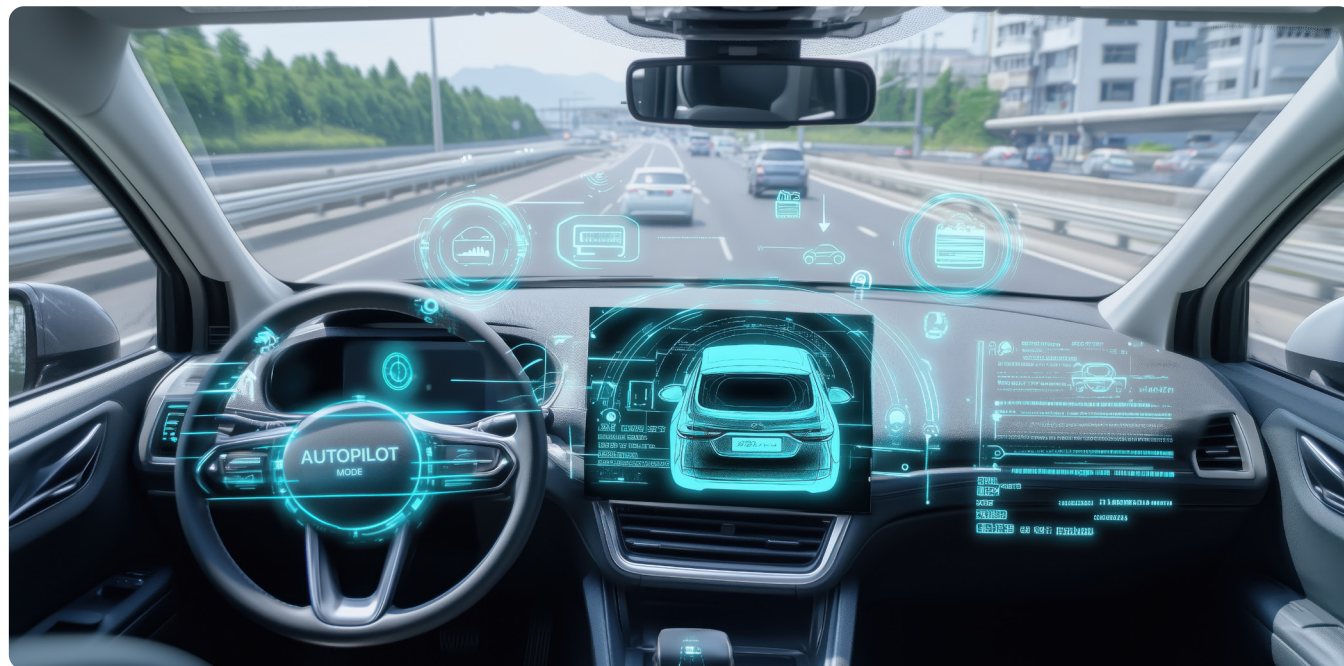
Software development in vehicles is developing rapidly. Ever more functions are being stored in the Cloud or use valuable resources there. In order to efficiently control the growing number of new applications and facilitate troubleshooting, security updates, and the integration of new functions in after production, the vehicle must be reconsidered from a software-centric perspective in the future. The „organization“ of the computers and software within and outside of the vehicle is critical. The key lies in optimizing the E/E architecture via logical centralization and targeted spatial consolidation of the vehicle computers.

In-car software is spread across multiple levels. Coming from the hardware, the first layer separates the hardware from the software. Above this is the operating system. The middleware ensures communication between the various applications and organizes the interfaces, among other things. Above this are the applications, which then serve as the interface to the user with inputs and outputs, categorized by the greatest domains like ADAS (advanced driver assistance systems), drivetrain, and infotainment.

Many new players and start-ups, including from China, are newcomers to automotive construction due to the transformation of the drivetrain and have been able to rebuild the software without any legacy burden. This has helped to considerably intensify the competitive pressure and speed.

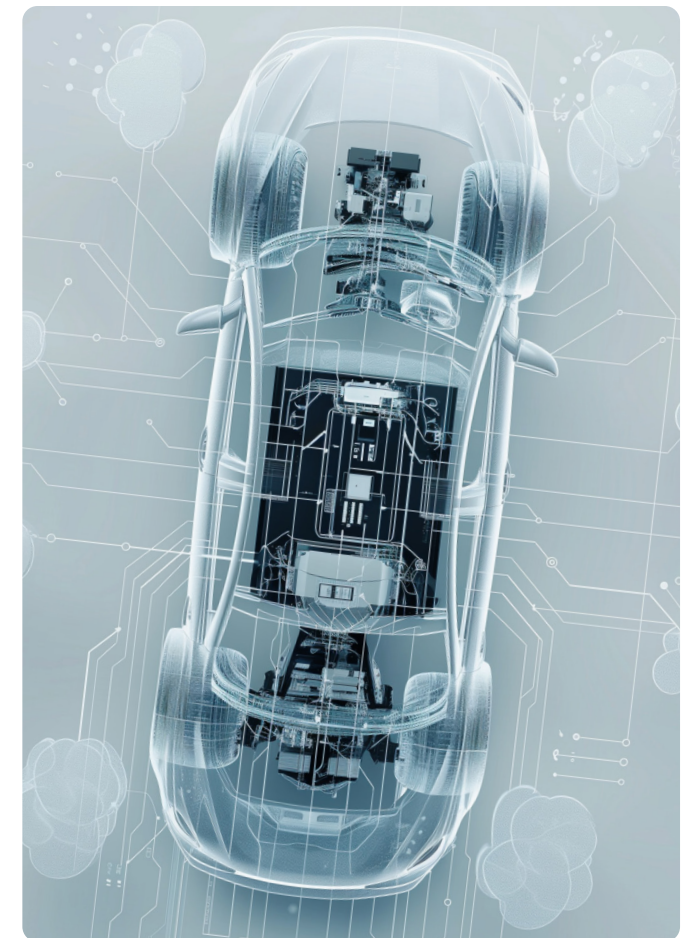
Because of its purely organizational purpose, the middleware does not differentiate between vehicle manufacturers. One promising approach is the consolidation of forces from various stakeholders in software development to significantly increase speed and efficiency. Instead of developing many software components parallel to each other multiple times, the idea is to create a pool in which various contributor softwares are provided and then used by distributors for use in serial development. This is known as open-source software and is already being used successfully in the consumer sector.

The challenge for automotive use lies in adhering to security standards such as ISO26262. This places much stricter requirements on development.



In order to address these challenges, VDA founded the AK SDV on March 14, 2024, offering its members an antitrust-compliant platform for cooperation. Consisting of a hard-hitting team of OEMs and tiers, this committee developed concrete plans for establishing an open-source software ecosystem with architecture, toolchains, and processes for automotive use.

The Eclipse Foundation, with which VDA works closely, has already begun operative development in this area and created the first code in 2024. A minimum viable product that is supposed to show the basic functionality of the ecosystem has already been created. VDA is taking up these activities and driving the organization of additional important tasks and necessary roles (maintainers). This includes certification of the necessary security standards. A target was established during various AK SDV workshops. 2025 will be spent bringing the necessary overall organization to life and bringing it up to a stable state of progress. The shared goal is to start serial software development based on open-source software in 2026, which will go into production as of 2030.



Traffic Prognosis 2040

Roads remain the most important means of transport

The Federal Ministry of Transport and Digital Infrastructure's Traffic Prognosis 2040 clearly shows in its basic scenario that roads will remain the primary means of transport in the future. According to the prognosis, trucks transporting goods will perform about 73.9 percent of all traffic output in 2040. By the same estimation, cars will make up 68.6 percent of all personal transport in 2040. In addition, public transport will make up 7.5 percent. These numbers highlight the central role of road traffic for mobility in Germany.



Interplay of means of transport: synergies for efficient transport of goods

However, it is also clear that all means of transport will be equally needed to transport both people and goods. For example, the means of transport for goods have system-induced advantages and disadvantages that make each of them suited for particular transport requirements. Trucks are of central importance mainly for their flexibility and networkability. In addition, they support other means of transport, such as railroads, such as by taking on transport tasks before and after the railroads complete their role. Trains and inland shipping are particularly suited for standardized, high-volume transports, large unit quantities, and high weight loads across long distances.

A good example of this is the transport of brand-new cars. The German automotive industry uses railroads for this purpose to a significant degree. The means of transport thus complement each other and jointly ensure efficient transport of goods.

Various means of transport are used for personal traffic as well. Mobility in urban agglomerations has become more diverse in recent years. Many people no longer rely on one means of transport, but rather select from among them as needed. The traffic system is increasingly shaped by multimodal mobility solutions. Types of divided mobility like carsharing and ride-pooling are able to offer an everyday alternative to personal cars. This can also close the gap between public transport and personal cars observed by many road users. The automotive industry is driving the shift toward sustainable mobility. With innovative technologies and innovative services, such as ride-pooling, the industry is making its own contribution as well.

In the future, autonomous transport systems could supplement existing public transport technologies as a mobility solution. For this, it is crucial that people continue to have the freedom to decide on their own mobility. They know best which means of transport is optimal for a specific route. It is often even a combination of means of transport in intermodal transport chains, meaning in the seamless connection of various transport methods, that offers the best service. It is necessary that the means of transport be well connected both physically and through sufficient parking and rest areas or mobility hubs, as well as virtually through corresponding data interfaces and uniform information, booking, and payment systems.



Traffic needs infrastructure

All means of transport rely on a functional infrastructure in order for them to function seamlessly. Too little has been invested in this in Germany for too long, and the need to catch up is enormous. The study „Transformation Pathways for Germany as an Industrial Nation,“ written by the BDI in cooperation with the BCG, estimates that over 100 billion euros will have to be additionally invested in maintenance and expansion of the nation's transport routes by 2030. 4,000 bridges in the long-distance road network alone are in urgent need of renovation.

Traffic jams and slow-moving traffic lead to preventable additional use and additional emissions. Damaged roads also pose risks to traffic safety.

Infrastructure policy should consider the main role of road traffic. Considerations to entirely abstain from expansion and new construction in road networks in the future are thus not expedient. Investments, such as in removing bottlenecks in the road network, will also be required in the future. Expansion of truck parking areas alongside highways remains critical because the need for space is increasing, partially due to the urgently needed establishment of a charging infrastructure for trucks and travel buses.

The drafting of the Federal Traffic and Mobility Plan 2040 is one of the main transport policy tasks for the 21st legislative period. It must present the needs of the means of traffic and define specific priorities compared to the past.

The resilience of infrastructures—their ability to overcome disruptions, natural disasters, accidents, and other unforeseen events, and to swiftly resume operation—should be more heavily considered in the future. Grids like transport routes, power, and telecommunications should be more heavily interconnected. Corresponding recommendations have been devised as part of the BMDV infrastructure dialogue in January, 2025.

The financing cycle for roads should be reinforced to ensure financing for the urgently needed renovation and expansion measures in the long-distance road network. One possibility would be to directly allocate tolls from Autobahn GmbH as income, as is already being done analogously with train path income in the railroad network. A service and financing agreement with Autobahn GmbH could also secure the funds for investments in maintenance over a span of years, as is already being done for railroads. Infrastructure funds could also present a model for securing traffic investments in the long term. To this end, it is important that a separate fund be established for each means of transport that complies with the specific conditions and prevents conflicts of allocation between them.

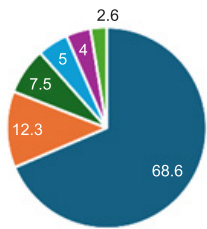
Optimizing the CO₂ toll

In order to ease the transformation in the transport of goods by road, profits from the CO₂ surcharge levied in the truck toll should be directed toward measures to pull truck traffic away from fossil fuels, such as to expand the charging and hydrogen infrastructure. It would also be sensible to extend the current toll exemption for zero-emission trucks beyond 2025. However, as this requires a change in the European legal framework, the toll difference between conventional diesel trucks and zero-emission vehicles should at least remain consistent for a period of years in order to ensure predictability for investment decisions.

Preventing driving bans

Policymakers should bank on innovation in order to achieve the new EU immission caps for airborne pollutants. The electrification and renewal of vehicle fleets by Euro-7 vehicles are major steps toward improving air quality. The potential of digitalization for optimized traffic management should also be utilized. Driving bans that constitute a major infringement on mobility and the transport of goods should be avoided. An extension of the deadline for meeting the cap requirements could also be considered for critical areas.

Shares of means of transport in personal transport 2040



■ Passenger car ■ Rails ■ Public transport ■ Air ■ Bicycle ■ Pedestrian traffic

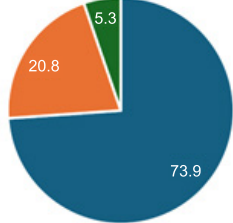
Considering rural areas

Traffic policy debates often focus on urban agglomerations. It is often overlooked that rural areas and the connections between the cities and their surroundings are subject to different conditions than urban areas. Cars are still invaluable outside of urban locales.

Buses as pillars of line transit

Public transport is a key component of any future mobility system, with buses playing a major role. Over 40 percent of public transport trips are taken by bus. The main advantage of buses lies in the fact that they can travel along less frequented routes, and so they often serve as the only relevant means of public transport in urban areas. Urban buses often have the densest network of connections. Since they were introduced in Germany, long-distance buses have provided an affordable mobility alternative for personal transport. The transformation of the industry will not stop for urban and travel buses. Charging infrastructure must also be considered.

Shares of means of transport in goods transport 2040



■ Truck ■ Rails ■ Domestic maritime shipping

Platform Urban Mobility

Cities and the automotive industry in dialogue

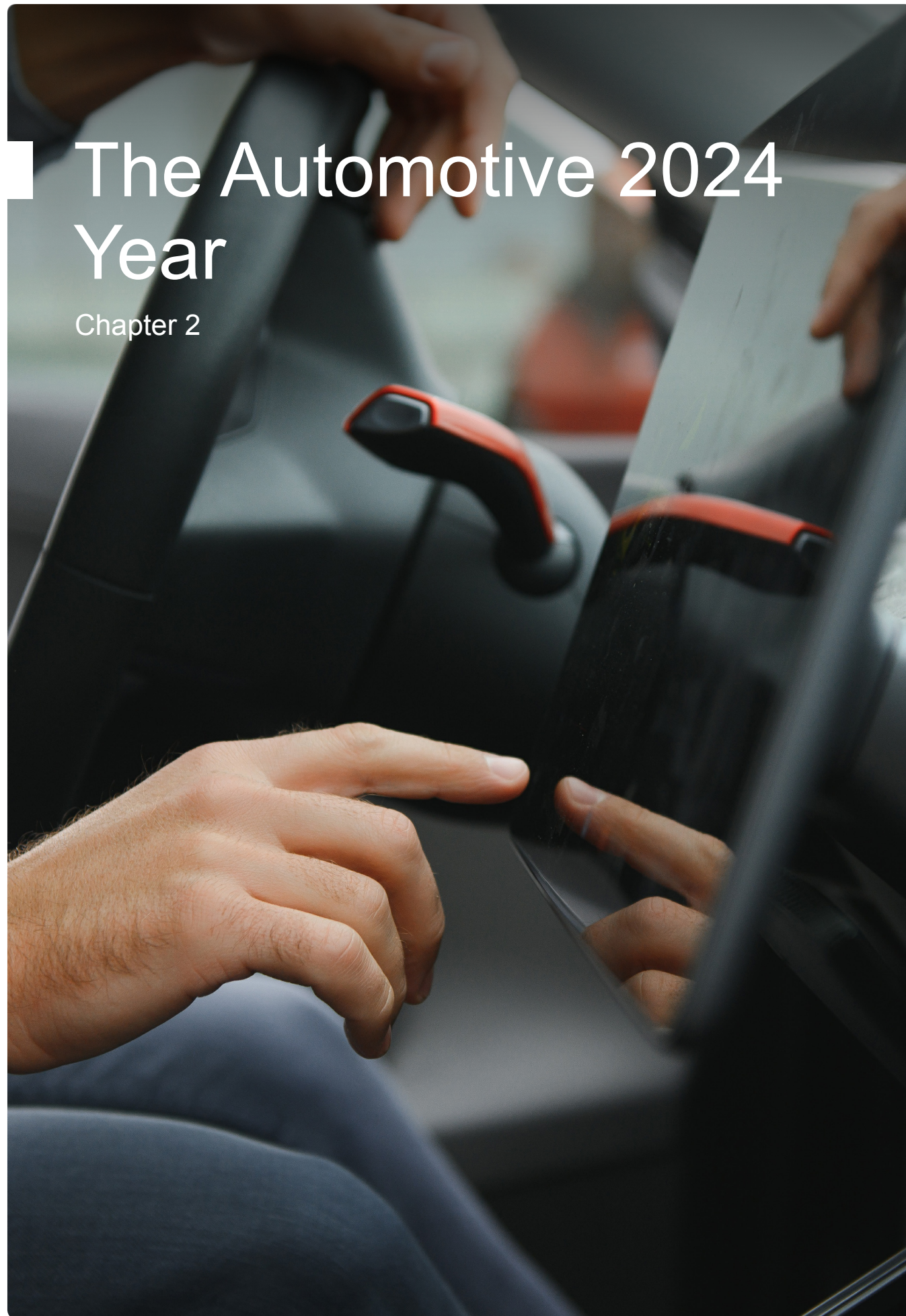
The urban mobility of tomorrow requires the interplay of all stakeholders. VDA created the Platform Urban Mobility (PUM) to deepen the dialogue between cities and the automotive industry.

The PUM serves as a forum for exchanging visions and ideas, identifying areas of action, and sharing best practice solutions. It also helps improve conditions in the industry.



The Automotive 2024 Year

Chapter 2



Conditions for the automotive industry did not considerably improve in 2024. We are still faced with the Russian invasion of Ukraine and the resulting economic consequences. Conflicts in the Middle East also continue to pose significant risks. Trade routes in the Red Sea can only be used to a limited extent as a result.

Pressure on Germany as a location has also increased. Deficits in competitiveness became clearer this past year. Evidence of this includes the high power and energy prices compared to other countries, and the strict bureaucratic requirements for companies in Germany. This has resulted in decreases in produced goods and services: Economic output fell for the second year in a row in 2024, and the GDP sank by 0.2 percent. The last two successive years of recession were 2002/2003.

Let us look at the automotive markets: The largest sales regions exhibited different manners of growth in 2024. In Europe and the USA, new car sales grew in the low single digits. Car sales in China grew markedly. Overall, market dynamics took a noticeable turn: While the previous years were shaped by high order backlogs, these are now depleted, resulting in sluggish market growth.

The run-up to electromobility developed very differently in 2024. In Germany, the end of the environmental allowance in late 2023 halted the run-up. The electric market in the USA grew at a much lower rate than in previous years. Only the leading market, China, exhibited significant growth, in particular with regard to plug-in hybrids and BEVs with range extenders. Regardless, Germany is still the world's third most important sales market for electric cars after China and the USA.

Car production in Germany took a minor hit in 2024. Production was bolstered by the high number of electric cars. Except for China, no country reported a higher rate of electromobility in production than Germany. In the global production ranking, based on units, Germany took 5th place behind China, the USA, Japan, and India.

The transformation of the industry pressed on: Domestic production of electric cars increased by 7 percent in 2024. One third of cars produced in Germany were equipped with an electric motor.

The most important export destination for German-made cars was, once again, the USA. This was followed by the United Kingdom, which long held first place in the export ranking until Brexit. France and Italy took third and fourth place, respectively. China, which held third place the previous year, fell to fifth.

The large international markets for heavy-duty commercial vehicles could not keep up with their figures from 2023. The markets fell even further into the red in Europe and the USA, where varying economic challenges had an immediate impact on commercial vehicle sales.



Germany

Car market in Germany

The German car market shrank by 1 percent in 2024 and achieved a market volume of about 2.8 million new registrations. However, this left the market 22 percent behind 2019, when 3.6 million new cars were approved in Germany. The year was largely impacted by the weak demand for electric cars, which itself was partially due to the expiration of the environmental allowance in late December, 2023. While the market grew in the single digits for the first half of the year (Q₁: +4 percent; Q₂: +6 percent), the market dynamics in the second half of the year fell into the red (Q₃: -13 percent; Q₄: -1 percent). The weak growth in the third quarter was due to the end of funding for commercial new registrations in September, 2023. There was also a marked increase in new registrations in August, 2023, with the resulting high reference level leading to a stronger negative performance in August, 2024 (-28 percent). The complete end of the environmental allowance in December, 2023 was last-minute, although a decrease in funding had already been announced. This had also led to a slight increase in BEV sales in late 2023, which caused weaker growth as 2024 came to an end.

Owner groups

If one considers new registrations by individual owner groups, 2024 developed in a similar manner. Private owners reported 2 percent fewer new registrations, and commercial owners reported a negative zero (±0 percent). 2021 was the only year in reunified Germany when new registrations among private owners were lower. Among commercial owners, there were various developments in the sub-groups to consider. While vehicle retail grew by 9 percent, the market volume of leasers increased by 3 percent. The sub-group of company cars shrank by 5 percent.

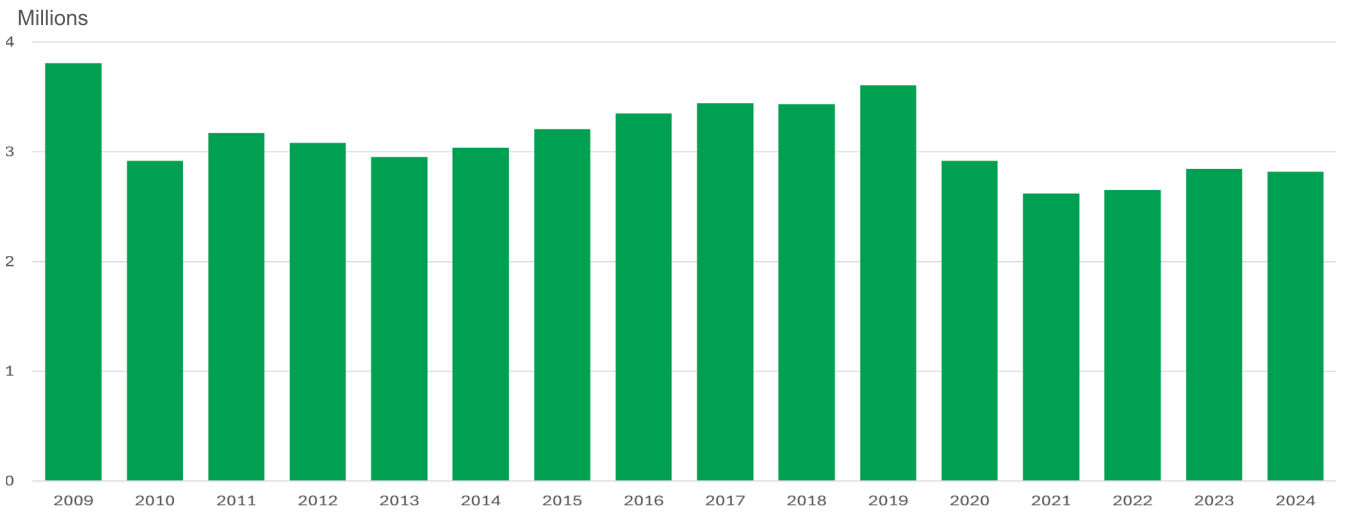
Drive type

Drive types were influenced by various conditions and factors in 2024. While new registrations of cars with an Otto engine (including mild hybrids) increased by 7 percent, new registrations of diesel cars (including mild hybrids) decreased by 4 percent. New registrations of electric cars were heavily impacted by the end of the environmental allowance in late 2023. Because no allowance had been paid out for plug-in hybrids (PHEV) since 2023, this drive type that was already at a low level increased by 9 percent. With a new registration volume of 191,900 PHEV, the year ended about 170,000 units below the previous record from 2022, the last time that buyers could benefit from the environmental allowance when buying a PHEV. New registrations of battery-electric cars (BEV) fell by 27 percent in 2024 due to the expiration of the environmental allowance. Fuel-cell vehicles, at under 200 units, continue to play a minor role.

Vehicle segments

New registrations by vehicle segments were very heterogenous in 2024. The upper mid-sized class experienced the greatest market volume growth (+30 percent), followed by the compact class (+13 percent) and minivans (+12 percent). Subcompacts (-43 percent), large executives (-26 percent), and sports cars (-17 percent) experienced the greatest decreases in new registrations. Based on total volume, all-terrain vehicles and SUVs were the largest vehicle categories in 2024. This diverse segment, which includes vehicles of many different sizes, recorded 1.2 million cars and, like the previous year, 41.5 percent of all new registrations.

New car registrations in Germany



Commercial vehicle market in Germany

Heavy-duty commercial vehicles

A total of 80,500 heavy-duty commercial vehicles weighing over 6 tons were newly approved in Germany in 2024, equating to a nearly 9 percent decrease over the previous year. The market is thus moving away from the pre-coronavirus level from 2019, which had the highest sales volume since 2008 at 91,400 new registrations. The gap from the previous record year is now at 12 percent.

Except for four months, new registrations in the other eight months of 2024 were consistently in the double-digit negatives. 11,800 new registrations in June marked a clear high in new registrations (+44 percent), the highest value since June, 2019. However, this growth was chiefly due to earlier registrations relating to the introduction of the General Safety Regulation, which has been binding since June 7, 2024.

Starting in July, markedly poor market growth set in. This was especially clear in August (-62 percent). After the peak in June, the market no longer recovered and remained in the red until the end of the year. The slowest rate of decrease was in October at -5 percent.

The strong overall decreases in 2024 are not only due to the high reference levels from 2023, but also weak economic growth, supply chain issues, and material shortages.

The segment over 16 tons also recorded a -13 percent decrease in new registrations. This segment reached a level of nearly 60,200 units in 2024, more than 8,000 vehicles fewer than in the previous year and once more below the pre-pandemic value from 2019. The number of commercial vehicles over 16 tons among all new registrations of heavy-duty commercial vehicles over 6 tons in Germany was 75 percent, just below the rate from the previous year.

Electric commercial vehicles slowly became more relevant. In Germany, heavy-duty electric commercial vehicles over 16 tons made up just 2 percent of all new registrations in 2024.

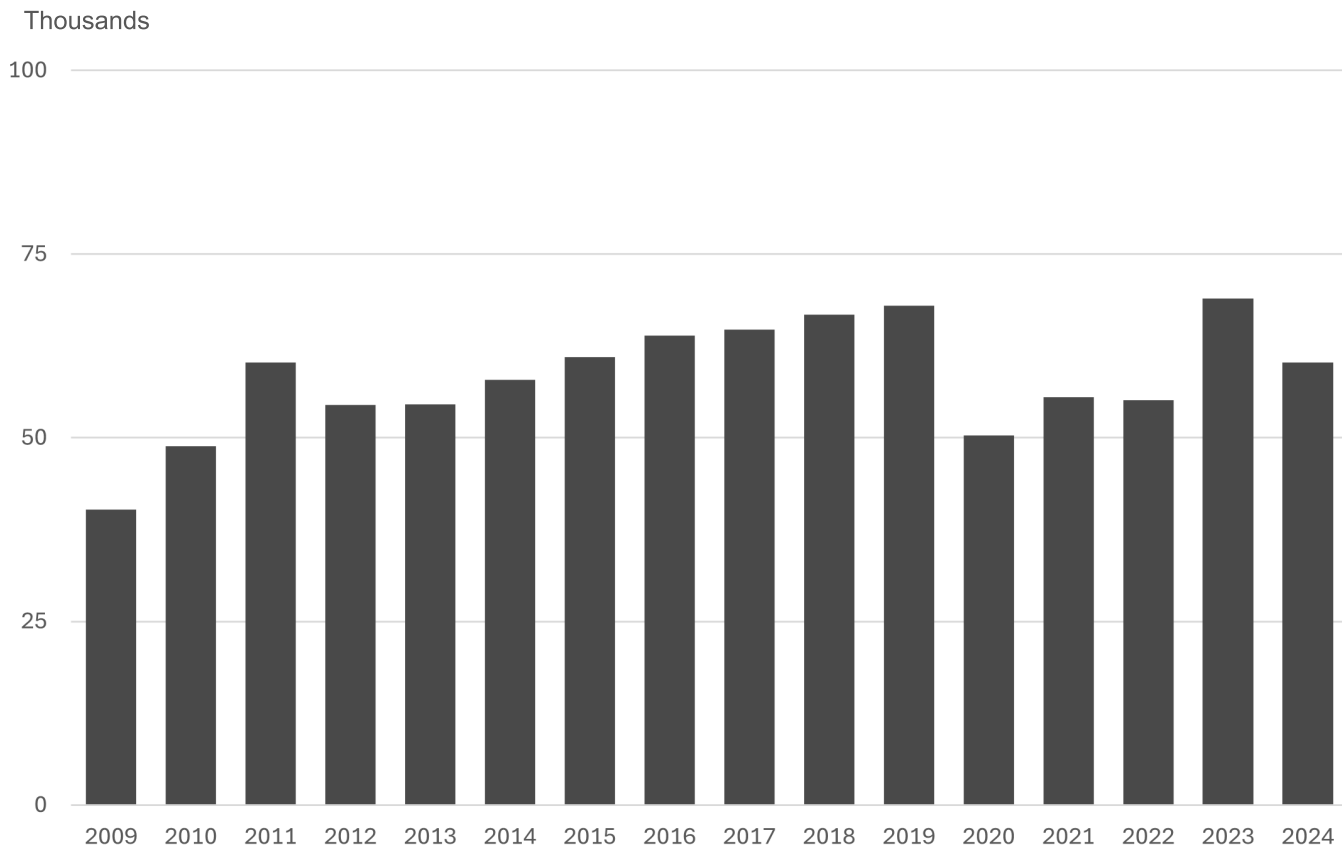
Light-weight commercial vehicles

The German market for light-weight commercial vehicles (up to 6 tons) once again experienced marked growth in 2024. New registrations grew by 9 percent over the prior year to 288,800 units, equating to an increase of 22,800 vehicles. This positive trend is thus continuing after the market had grown by 13 percent (29,800 units) in the previous year.

The market was still 23,100 units short from the numbers in 2019, equating to an 8 percent decrease from the market volume of that year. In 2019, the German market for light-weight commercial vehicles exceeded the 300,000 mark for the first time. Due to the economic effects of the coronavirus pandemic, this was followed by a three-year period of decreased market volume (2020: -12 percent; 2021: -1 percent; 2022: -13 percent).

The trend shifted in 2023 and continued in 2024. April (+36 percent) and June (+44 percent) experienced particularly high rates of growth. The market volume increased again at the end of the year: New registrations in October (+16 percent) and December (+13 percent) were above the values in 2023, itself already a year of strong growth.

New commercial vehicle registrations in Germany



Trailers and buses

German bus market

New registrations of buses over 8 tons in Germany sank by nearly 10 percent to 4,365 units last year, causing the market to fall almost to its poor level in 2022. From 2016 to 2021, the German bus market hovered above 5,500 units. This was largely due to the liberalization of long-distance buses in 2013. The coronavirus pandemic more or less paralyzed long-distance bus transport. In the first half of 2024, short-distance line transit increased by 5.4 percent to 18.36 billion passenger kilometers (about 11.4 billion passenger miles) over the same period in the previous year, thus reaching the highest level since 2011. The long-distance equivalent, however, sank by 43 percent to 1.63 billion passenger kilometers (about 8.45 million passenger miles) since 2019.

The Clean Vehicles Directive regulates the procurement of city buses by public clients in the European Union. It stipulates increasing minimum quotas for alternative drives (including e-buses) when modernizing fleets. This has had a positive impact on the number of alternative drives in new bus registrations in recent years.

New registrations in 2024 show that the funding has borne fruit and electric buses are becoming increasingly relevant. The number of electric buses grew to 16 percent (15 percent in the previous year). Buses with alternative drives made up 33 percent of all new registrations, while diesel buses made up 67 percent.

German trailer market

The German trailer market experienced a marked decrease in 2024. New registrations of trailers sank to 266,000 units, a decrease of 6,400 vehicles or 2 percent compared to the previous year. This marks the third year of negative growth for the market. The last year in which fewer trailers were given new registrations was 2013 (247,900 units). The national economy continued to inhibit market dynamics. The sub-segment of semitrailers, with a decrease of 17 percent at 28,200 new registrations, was particularly affected. The market volume reached the level from 2013 and marked one of the strongest decreases in recent years. The share of semitrailers in all new registrations sank to 11 percent (2023: 12 percent).



Car markets in Asia

Chinesischer Pkw-Markt

The Chinese car market grew for the fifth year in a row in 2024. Retail sales grew by 6 percent to 23 million cars, marking the greatest market dynamics since the last decrease in 2019. China was thus a central pillar of the global market and remains the largest single market worldwide. Unlike in most Western countries, Chinese car sales are well above the pre-coronavirus level (2019: 20.1 million cars) by 14 percent. China's global market share was at 29 percent in 2024.

High growth rates were primarily recorded at the start of the year (Q₁: +13 percent) and the end of the year (Q₄: +15 percent). It should be noted that the year-on-year comparison at the beginning of the year was favored by a temporary tax cut that expired at the turn of the year 2022/2023. The fourth quarter of 2023 was a record quarter, and the high growth rate led to an at the time unprecedented market volume in one single quarter of 7.4 million cars. The two middle quarters were marked by fewer sales (Q₂: -5 percent; Q₃: ±0 percent). Overall, sales from the end of April onward were supported by a state funding program that allowed consumers to earn an allowance of up to 10,000 yuan (approx. \$1,400) if, when buying a new car, they returned a car with an emission standard up to China 3 or a New Energy Vehicle registered before April 30, 2018. As of July, the conditions for this program were adjusted so that the funding was doubled to up to 20,000 yuan (approx. \$2,800). However, the effects of this funding program only became apparent in the market at the end of the year.



Last year, German manufacturers held a market share of 18.9 percent in the overall market, and most recently underwent a negative trend. This is due to the fact that their market share in the dynamic area of electromobility was less than in the overall market. Just under 4 percent of new electric cars in China last year bore the logo of a German maker.

Electromobility grew markedly last year. Sales of cars with an electric drive (BEV, PHEV, and FC) increased by 48 percent to 10.8 million vehicles. The share of electromobility in the overall Chinese market thus increased to 36.9 percent. In the second half of the year, even more than half of new cars were electric (H₂: 51.2 percent). Plug-in hybrids in particular benefited immensely from the market growth. Their sales, with 86 percent (4.4 million cars), were stronger than those of battery-electric cars (+29 percent to 6.3 million cars). The statistics of plug-in hybrids do not only include cars, but also cars with a range extender. If these two groups were to be viewed separately, „traditional“ PHEVs experienced growth of 89 percent in 2024 while vehicles with range extenders experienced growth of 77 percent. The Chinese government is bolstering the sale of electric cars by slashing the value-added tax. The market continued to be shaped by a price war in the fight for market shares in electromobility.

Japanese car market

Growth in the Japanese car market in 2024 was shaped by irregularities in crash tests of domestic brands. These became known early in the year and noticeably impacted consumer trust. The result was a much lower volume of new car registrations compared to 2023. The overall economic environment was also challenging for Japan. Economic growth was most recently low. The ongoing weakness of the yen makes Japanese products more appealing for international markets, but is leading to increased and increasing imported inflation, which in turn places pressure on real wages. The Japanese central bank remains cautious in spite of abandoning its strict zero-interest policy. However, an overall brightening investment climate offers hope for stronger economic growth in 2025. Weak private consumption is unlikely to provide a significant positive stimulus for economic development in the short term.

A total of 3.7 million cars were sold in Japan in 2024, 7 percent fewer than one year prior. 2023 still experienced strong growth, but this trend reversed in the first half of 2024. After the first six months, the Japanese car market receded by 12 percent compared to the previous year. The second half of the year was less negative with a minus of 1 percent, but was unable to balance out the decrease from the full year. The negative results led to a widening of the gap from the pre-crisis level. About 13 percent or nearly 576,000 fewer cars were newly registered last year than in 2019. German car manufacturers were able to retain their market share in 2024. As was the case in 2023, 4.3 percent of all newly approved vehicles in Japan bore the logo of a German maker. German makers are by far the largest group of international manufacturers in the very inclusive Japanese market. The market is primarily served by domestic Japanese brands. The market share of Japanese manufacturers was most recently at nearly 94 percent.

With regard to electromobility (BEV, PHEV, and FCEV), Japan has considerable room for improvement. Only 77,900 electric cars were newly approved in 2024, nearly one fifth fewer than the previous year (-19 percent). This decrease was stronger than that of the entire market. The share of electric vehicles in the Japanese market was 2 percent in 2024. However, it must be noted that the Japanese manufacturers and consumers primarily rely on full hybrid vehicles (FHEV). These make up about 30 percent of the overall market in Japan. This vehicle category does not fall under the local definition of electric cars. As a result, these vehicles are registered as combustion engines in the statistics in this part of the world.

South Korean car market

The South Korean market experienced a divided year in 2024. The weak end to 2023 continued in the first half of 2024. In the first six months, far fewer vehicles were newly approved than in the same period the previous year (-9 percent). The atmosphere shifted in the second half of the year and the market achieved growth of 2 percent. Aggregated, this recovery was not sufficient to bring the full year's results into the positive range. The South Korean market recorded 1.4 new registrations for cars throughout 2024, nearly 4 percent fewer than the previous year. The market share of German manufacturers ultimately decreased and was 12.1 percent in 2024 (2023: 13.7 percent). The market for electric cars was able to grow slightly, contrary to the overall market. 136,900 cars with electric drives (BEV, PHEV, and FCEV) were sold, or about 3 percent more than the previous year. However, the sale of electric cars in 2023 experienced negative growth. The weak performance from the previous year facilitated a positive rate of growth due to the statistical base effect. Growth in 2023 was unable to continue the high market growth from previous years until 2022. The share of electric cars in the overall market last reached nearly 10 percent (previous year: 9 percent).

Indian car market

The Indian car market maintained its position as the world's third largest single market in 2024. With 4.3 million cars, the market volume was 4 percent over that of the previous year. Sales in India are thus jumping from one record to another. Sales spiked in the first quarter in particular (+12 percent), but then noticeably plateaued. The third quarter even experienced a decrease of 2 percent before the positive shift returned in the fourth quarter, in particular in December (Q₄: +5 percent; December: +11 percent). The growth trend in the Indian market was shaped by robust economic growth. For example, private consumer spending in India is expected to increase by 6.6 percent in fiscal year 2024 (April, 2024 to March, 2025). Sales are being held back by high financing costs; in particular, the Indian central bank's key interest rate remained at its highest level in eight years at 6.5 percent throughout the year. In general, the motorization rate in India is still at a low level—most recently, car density was 34.6 vehicles per 1,000 inhabitants, significantly below the global average (175 cars per 1,000 inhabitants). Yet electromobility currently plays no significant role in India. Sales of electric cars grew by 9 percent, albeit at a very low level—the market share of electric vehicles remains below 1 percent.

Car markets in ASEAN

The major automotive markets in Southeast Asia were a mixed bag in 2024. Most Southeast Asian states experienced solid economic growth last year, but not all of them met their respective governments' targets. Economic growth only partially extended to the automotive markets. Such was the case in Indonesia and Vietnam, where car sales remained behind those of the previous year. The markets in Malaysia, the Philippines, and Singapore benefited from their growing economies. However, incentivization and tax abatements in the region continued to play a major role in stimulating the sale of electric cars, for example.

Electromobility is still in its infancy here, although it made up a considerable share in the overall market in Thailand.

The Malaysian car market benefited from the positive economic growth in 2024 and replaced Indonesia as the largest single market in ASEAN. Solid market growth of nearly 4 percent led to a sales volume of nearly 747,200 units. As a result, the Malaysian car market has taken the leading role in Southeast Asia for the first time since the financial crisis in 2009. After recent years of strong growth, the Indonesian car market experienced a sharp decline in sales in 2024, following the recovery from previous disruptions caused by the COVID-19 pandemic. Nearly 673,000 cars were sold in 2024 as a whole, down almost 14 percent from the previous year. Indonesia thus recently lost its leading position in terms of new car registrations in Southeast Asia to Malaysia.

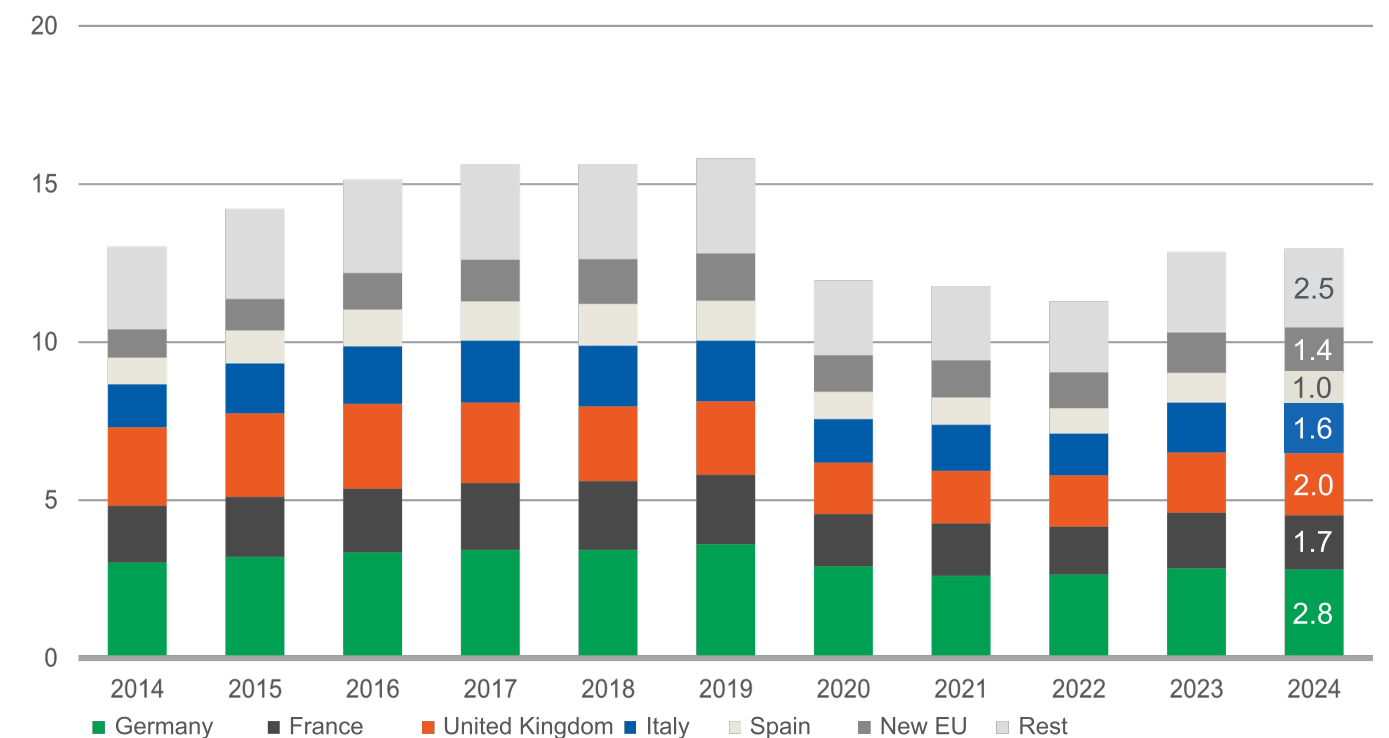
The other car markets in Southeast Asia also did not perform evenly: Sales in Vietnam, the Philippines, and Singapore increased significantly compared to the previous year. In Vietnam, almost 230,200 cars were sold, 7 percent more than in the previous year. In the Philippines, sales even saw double-digit growth of 11 percent to 120,800 vehicles. Singapore recorded a 42 percent increase to 43,000 newly registered cars. In contrast, Thailand recorded a significant decline in car sales. At 355,600 units, about 15 percent fewer new cars were registered than in the previous year. Sales of electric vehicles have also declined recently in Thailand. Nevertheless, electric vehicles accounted for 18.5 percent of the overall market (2023: 19.2 percent).

Europe

Car market in EU, EFTA, UK

New registrations in the European car market (EU, EFTA, and UK) remain at a low level after already challenging previous years and have failed to recover significantly in 2024. The majority of markets remained well below their pre-crisis levels of 2019. Numerous external shocks and internal challenges limited industrial production and overall economic demand. On the one hand, external factors such as Russia's ongoing war against Ukraine, unrest in the Middle East, and increasing global protectionism played a decisive role and dampened the mood of the foreign trade-oriented European economy. On the other hand, Europe also suffers from significant location-induced problems, such as persistently high energy prices, excessive bureaucratic strain, a lack of trade and cooperation agreements, and an uncompetitive tax and levy system for businesses and households. The gap between the largest competitors, the USA and China, is widening.

The combination of these factors led to minimal growth in the European car market last year, and growth was below the global average. While the European market was still characterized by a stable upward trend in 2023, the volatility of monthly growth rates in 2024 was highly pronounced. The recent tightening of the CO₂ fleet regulations in the European Economic Area (EEA), which require a 15 percent reduction in emissions compared to 2021, presents additional challenges for manufacturers and suppliers. In particular, sales of electric vehicles, and thus the share of electric vehicles in total registrations, must increase significantly in Europe in the short term. It remains to be seen what measures the new EU Commission and a new German government will take to support this necessary development.





In 2024, almost 13 million new vehicles were registered in the European car market, or 1 percent more than in the previous year. Recovery compared to pre-COVID levels remains sluggish: The European car market is currently still just under a fifth (-18 percent), or around 2.85 million units, below the new registrations in 2019. The five largest individual European markets performed unevenly compared to the previous year: Strong growth was recorded only in the Spanish car market (+7 percent), which benefited from solid overall economic development on the Iberian Peninsula. In addition, more new vehicles were registered in the United Kingdom than in the previous year (+3 percent). In the remaining major markets of Italy, Germany (-1 percent each), and France (-3 percent), even fewer new registrations were recorded in 2024, despite already weak performance from the previous year. The countries of Eastern Europe performed above-average (+10 percent) compared to the European aggregate. The Polish market remained by far the largest individual market in Eastern Europe in 2024 and also recorded the strongest growth of all single markets in Europe (+16 percent). Following behind were Czechia (+5 percent) and Romania (+6 percent). The Latvian car market was the only Eastern European individual market to record negative growth last year (-10 percent).

The market share of German vehicle manufacturers declined slightly last year. While 46.2 percent of all newly registered cars in Europe bore the logo of a German corporate brand in 2023, this figure fell to 45.4 percent in 2024.

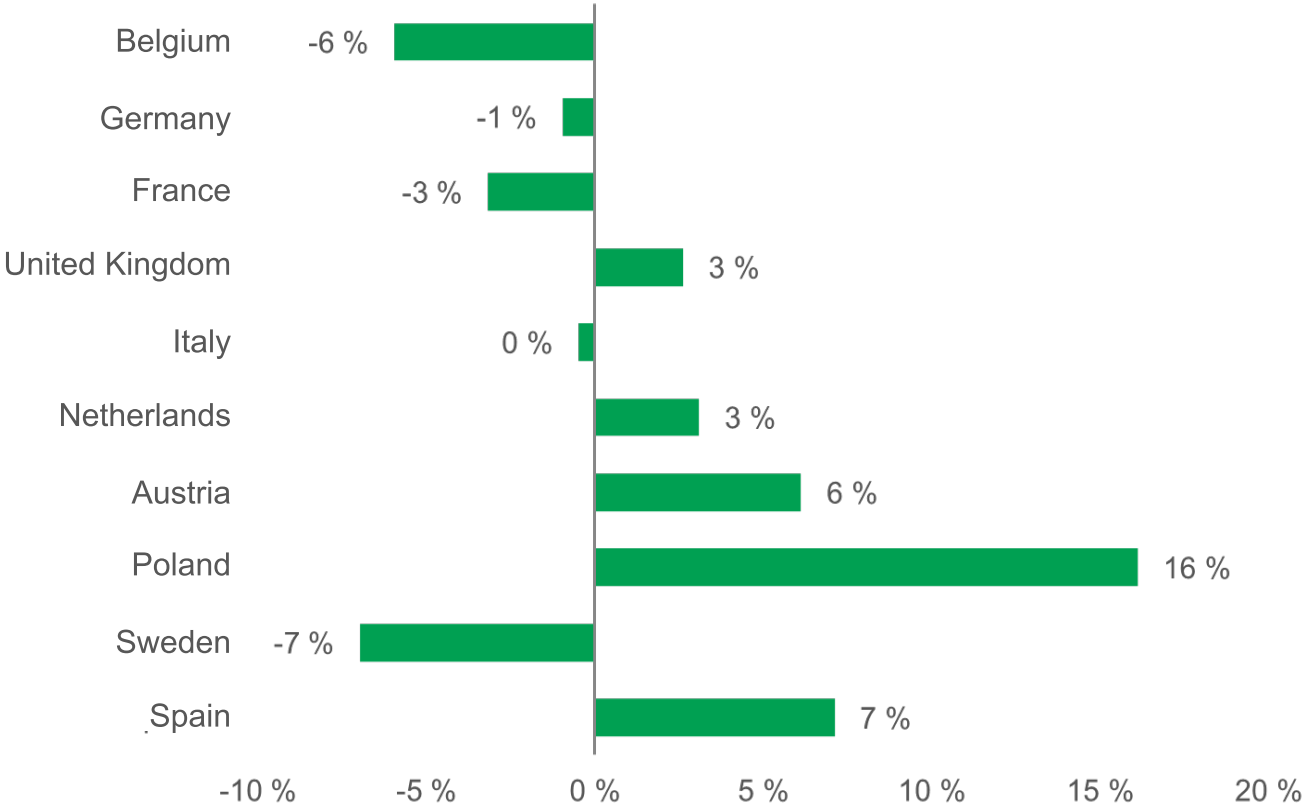
Overall, the electromobility market (BEVs, PHEVs, and FCEVs) performed disappointingly in 2024 and below average compared to the overall market. Across Europe, a total of just over 2.9 million new electric cars were registered, 2 percent fewer than the previous year. Accordingly, the electric share in the overall market fell slightly to 22.7 percent (2023: 23.4 percent). Purely battery-electric vehicles (-2 percent) performed somewhat less weakly than plug-in hybrids (-4 percent). While growth was still positive after the first half of the previous year, it noticeably turned negative over the rest of the year, meaning that the overall sales volume from 2023 could not be achieved. BEV sales stagnated, particularly in Germany. After the environmental allowance was abolished without a replacement at the end of 2023, demand for purely battery-electric vehicles plummeted (-27 percent). New PHEV registrations, on the other hand, benefited (+9 percent). Demand for these vehicles had already been severely negatively impacted by the halt to funding last year.

The market share of electric vehicles in the German market fell significantly for the second year in a row, now to 20.3 percent (2023: 24.6 percent; 2022: 31.4 percent). The British car market recorded comparatively strong development in the electric segment. The UK bucked the negative trend—about 20 percent more electric vehicles were sold than in the previous year. The EV market share in the United Kingdom increased to 28.2 percent (2023: 24 percent). In the Eastern European member states of the European Union, electromobility largely continues to exist as a niche market. Of the five largest individual Eastern European markets, only Hungary achieved a market share of more than 10 percent (11.7 percent). Electromobility continues to play a minor role in Poland (5.7 percent), Czechia (6.8 percent), Romania (6.5 percent), and Slovakia (4.8 percent). As in previous years, the Nordic countries of Norway (91.6 percent), Sweden (57.8 percent), Denmark (56.2 percent), and Finland (49.6 percent) achieved the highest market shares for electric vehicles.

Following behind are the Netherlands (48.5 percent), Iceland (42.2 percent), and Belgium (41.9 percent).

Of the Southern European countries, Portugal has the highest share of electric in the overall market. In this smaller country on the Iberian Peninsula, about one third (33.5 percent) of all newly registered vehicles were equipped with an electric motor in 2024.

Dynamic market development beyond pre-crisis levels is still not expected due to overall economic weakness. As a result of the tightening of CO₂ fleet regulations on the one hand, and the extensive, innovative commitment of German vehicle manufacturers and suppliers, among others, on the other, the share of electric vehicles in the overall market will increase significantly. The implementation of numerous new models and versions has been announced and will gradually expand the product range, particularly in the electric segment. Nevertheless, the European car market will remain well below the pre-crisis level of 2019 in 2025.



European heavy-duty commercial vehicle market

In Europe (EU, EFTA, and UK), sales of heavy commercial vehicles (commercial vehicles over 16 tons) fell by 9 percent year-on-year to just under 316,900 units last year. Of the five largest individual European markets, almost all recorded negative growth rates: France (-2 percent; 42,600 units), the United Kingdom (-8 percent; 38,900 units), and Italy (-2 percent; 23,700 units).

Despite a 23 percent decrease in volume to 24,500 units, the Polish market remains the largest market in Eastern Europe in 2024. The German market, which had grown strongly in 2023, recorded a sharp decrease of 12 percent to 60,200 units last year. Nevertheless, Germany remains by far the largest single market in Europe.

The Western European sub-market (EU14, EFTA, and UK) recorded an overall decline, largely driven by the weak economic situation in Germany. Along with Germany, France, the United Kingdom, and Italy, Spain remains one of the five largest individual markets in this segment.

The Spanish market stood out as the only major European market to experience strong growth in 2024, recording a 12 percent increase to 27,100 units. This brought the Western European heavy commercial vehicle market to a sales volume of 316,900 units, slightly below the pre-crisis level of 2019 (325,200 units).



Light vehicle markets in the Americas

USA

Light vehicle sales in the USA increased by about 2 percent to 15.9 million units in 2024. Compared to the last pre-COVID year of 2019, sales last year were still down 6 percent. This development was driven by stable overall economic growth. However, high financing costs and general price dynamics above the Fed's target rate continue to hinder more dynamic vehicle demand.

After a solid start to the year (Q₁: +5 percent), weak growth became apparent in the summer months (Q₂: ±0 percent; Q₃: -2 percent), before market volume increased significantly again at the end of the year (Q₄: +7 percent). However, a strong summer in 2023 also played a significant role in the rate of change. Sales of vehicles produced domestically, i.e., within the USMCA, remained at the previous year's level in 2024 (±0 percent). Sales of vehicles produced outside the USMCA increased by 9 percent. Nevertheless, the majority of vehicles sold continued to be USMCA-produced (77 percent). Almost 3 percent of all cars sold were produced in Germany, 8 percent in Japan, and 9 percent in South Korea.

Sales of electric light vehicles grew only slightly last year. At 1.5 million, sales were 5 percent higher than the previous year. This was the lowest growth rate for electric light vehicle sales since 2020 (2020: -4 percent; 2021: +107 percent; 2022: +46 percent; 2023: +56 percent). Sales of both battery-electric light vehicles (BEVs: +4 percent) and plug-in hybrids (+8 percent) grew at only single-digit rates. In the USA, the purchase of certain electric vehicles is currently subsidized by a tax credit of up to USD 7,500. The criteria to be met for the tax credit concern characteristics of the vehicle (e.g., location of final assembly, list price, battery capacity, weight, and manufacturer) and also of the consumer (income).

The trend toward larger vehicles continued unabated in 2024. While sales of basic cars fell by 4 percent to 3 million vehicles, light trucks increased by 4 percent to 12.9 million units. The share of light trucks thus rose to 81.2 percent – a new record. The largest single segment within the light truck segment and the biggest winner in recent years were CUVs (cross-utility vehicles / crossovers), a segment that we generally classify as SUVs in Germany. CUV sales rose by 6 percent to around 7.9 million units in 2024 – in absolute terms, growth was higher in no other segment (+431,100 CUVs). Their market share rose from 47.9 percent to 49.5 percent. SUVs, with larger exterior dimensions and off-road capabilities compared to CUVs, achieved a market share of 9.2 percent. Their sales remained at the previous year's level at 1.5 million units (±0 percent). Pickup truck sales reached a volume of 2.9 million vehicles (+3 percent) and a market share of 18 percent. The van segment was the loser among light trucks: its sales fell by 3 percent to 0.7 million vehicles (market share: 4.5 percent). The sub-segments of the basic cars also saw very different dynamics. The smallest segment, small cars, was the main winner here. An increase of 11 percent resulted in a market volume of 1.2 million vehicles and a market share of 7.6 percent. The three other sub-segments of basic cars lost ground in 2024: Middle cars reached a market volume of 1.1 million units (-6 percent; market share: 6.8 percent), large cars reached 40,000 vehicles (-55 percent; market share: 0.6 percent), and luxury cars reached 656,000 vehicles (-18 percent; market share: 4.1 percent).

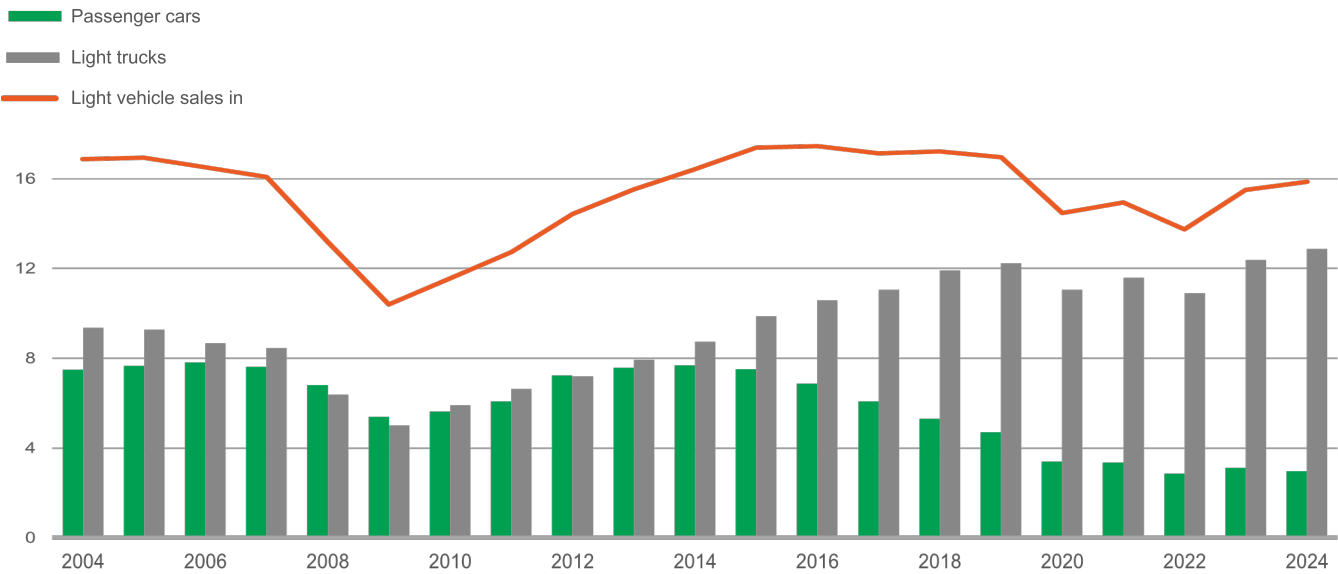
German manufacturers continue to have a strong market position in the USA. They sold a good 1.4 million light vehicles in 2024 (+2 percent). Their sales increased by 1 percent in both the basic car and light truck segments (to 406,700 basic cars and 987,400 light trucks). The market share of German group brands in the overall light vehicle market fell slightly to 8.8 percent in 2024 (2023: 8.9 percent).

Mexico

As in previous years, the Mexican light vehicle market grew strongly in 2024. 1.5 million units sold represented a volume growth of 10 percent compared to 2023.

Both the smaller basic car and the larger light-duty vehicle segment benefited from the market upswing. However, the light-duty segment grew significantly more dynamically, underscoring its increasing relevance. Nearly 889,700 newly registered units in this category were about 14 percent more than the previous year. The basic car segment grew by 4 percent to 606,300 vehicles. This means that 59.5 percent of all sales were attributable to the light-duty segment – and the trend is rising (57.2 percent in the previous year). German manufacturers also particularly benefited from this positive development.

New registrations of vehicles from German brands rose by 14 percent to a volume of 207,500 units. Due to this above-average growth compared to the overall market, German manufacturers increased their market share to 13.9 percent (previous year: 13.4 percent). This strong growth led the Mexican market to reach its highest sales level since 2017. However, the record level from 2016 was still undercut by 105,800 light vehicles, indicating that the gap is shrinking.



Kanada

The Canadian light vehicle market grew by 8 percent to 1.8 million vehicles in 2024. Sales of basic cars declined by 2 percent to 251,600 vehicles. Light truck sales increased by 9 percent to 1.6 million units. The share of light trucks in total new light vehicle registrations thus reached a record high of 86 percent. The difference from the sales volume in 2019 is nearly 4 percent.

The growth rate slowed over the course of the year: In the first quarter, market volume grew by 16 percent. Growth then leveled out significantly (Q₂: +6 percent; Q₃: +5 percent; Q₄: +4 percent). Private consumer spending grew at a stable rate, but a more significant upturn was hampered by factors such as low inventory levels.

The Canadian government has targeted a 20 percent market share for zero-emission vehicles (ZEVs) by 2026. Last year, this share was 14.4 percent. A total of 266,100 electric light vehicles were sold, with the majority being BEVs (194,700).

Light vehicle production in Canada fell to 1.3 million vehicles in 2024 (-14 percent). Excluding 2021 and 2022, when production volumes were significantly reduced due to COVID-19 and the consequences of the pandemic, this was the lowest production in over 25 years. Production in the basic car segment fell by 42 percent. Light trucks saw a 5 percent decrease.

Mercosur

Light vehicle sales in the South American Mercosur economic area increased significantly in 2024. A total of almost 3 million new vehicles were registered in the Mercosur member states – a double-digit growth of 12 percent compared to the previous year. Sales developed positively in all individual markets observed, but the pre-crisis level of 2019 has not yet been reached. At that time, 116,800 more units were sold, and the volume in 2024 was still 4 percent below the pre-coronavirus level.

The Brazilian light vehicle market reached a volume of almost 2.5 million vehicles last year. Sales were 14 percent higher than the 2023 level. Brazil is the region's leading market, accounting for around 84 percent of Mercosur sales. However, it remains well below the record levels of previous years. German manufacturers were also able to benefit from the positive market momentum and slightly increased their market share to 17.7 percent in 2024 (2023: 17.5 percent). Brazil still has room for improvement in terms of electromobility. However, the market share of electric vehicles in the overall market doubled to 4.8 percent last year. Despite the weak global economy, the Brazilian economy grew by around 3 percent last year. Due to uncertainties regarding the government's fiscal policy, combined with low foreign demand for Brazilian goods, the domestic currency, the real, has recently performed weakly and has lost significant value since the middle of last year. This made imports more expensive, triggered correspondingly increased inflationary pressure, and forced the central bank to gradually raise its key interest rate (as of January 2025: 13.25 percent). This resulted in a deterioration in financing conditions, including for motor vehicles. It is assumed that Brazil will remain on its growth path for the time being, albeit with less momentum and possibly increasing volatility.

Light vehicle sales also developed slightly positively in Argentina. 411,400 newly registered units represented growth of 1 percent compared to 2023. The overall economic situation remains unstable after difficult years marked by ruinous economic crises. However, the comprehensive economic reforms of President Javier Milei, who has been in power for just over a year, are gradually taking effect. Argentina is emerging from recession, and the signs point to growth. Economic parameters such as the inflation rate and the unemployment rate are declining. A similar trend was observed in the light vehicle market last year. While the first half of 2024 was still significantly negative compared to the same period last year (H₁: -22 percent), the automotive economy improved significantly over the rest of the year (H₂: +25 percent). If this trend continues, significantly more vehicles are expected to be sold this year, especially in the first half of the year. Nevertheless, reforms and restructuring are still only in their early stages. The high poverty rate and significant price increases for basic goods are putting a strain on society. The vehicle market has significant growth potential. In Argentina, for example, fewer than half as many new registrations were registered in 2024 as in the record year of 2013.

Mercosur's third-largest market, Uruguay, also recorded significant growth again in 2024. 62,900 newly registered light vehicles represented 9 percent more than the previous year and a new sales record for the small South American country.

Mercosur is a regional alliance on the South American continent founded in 1991. Its members pursue the common goal of promoting regional integration through political, social, and economic cooperation. The five countries that are currently full members of the common market are Argentina, Bolivia, Brazil, Paraguay, and Uruguay. Approximately 280 million people live in the Mercosur member states. The EU-Mercosur trade agreement, negotiated over more than two decades, is an important milestone for transatlantic cooperation and has the potential to create mutual prosperity, growth, and jobs.

USA commercial vehicle market

After recovering in recent years, the US heavy-duty commercial vehicle market is experiencing a noticeable decline in 2024 for the first time in three years. Sales fell significantly, particularly in the first half of the year (-8 percent compared to H₁ 2023). In the second half of the year, the decline was somewhat more moderate at -2 percent compared to H₂ 2023, but this was primarily due to the weak comparable figures from the previous year.

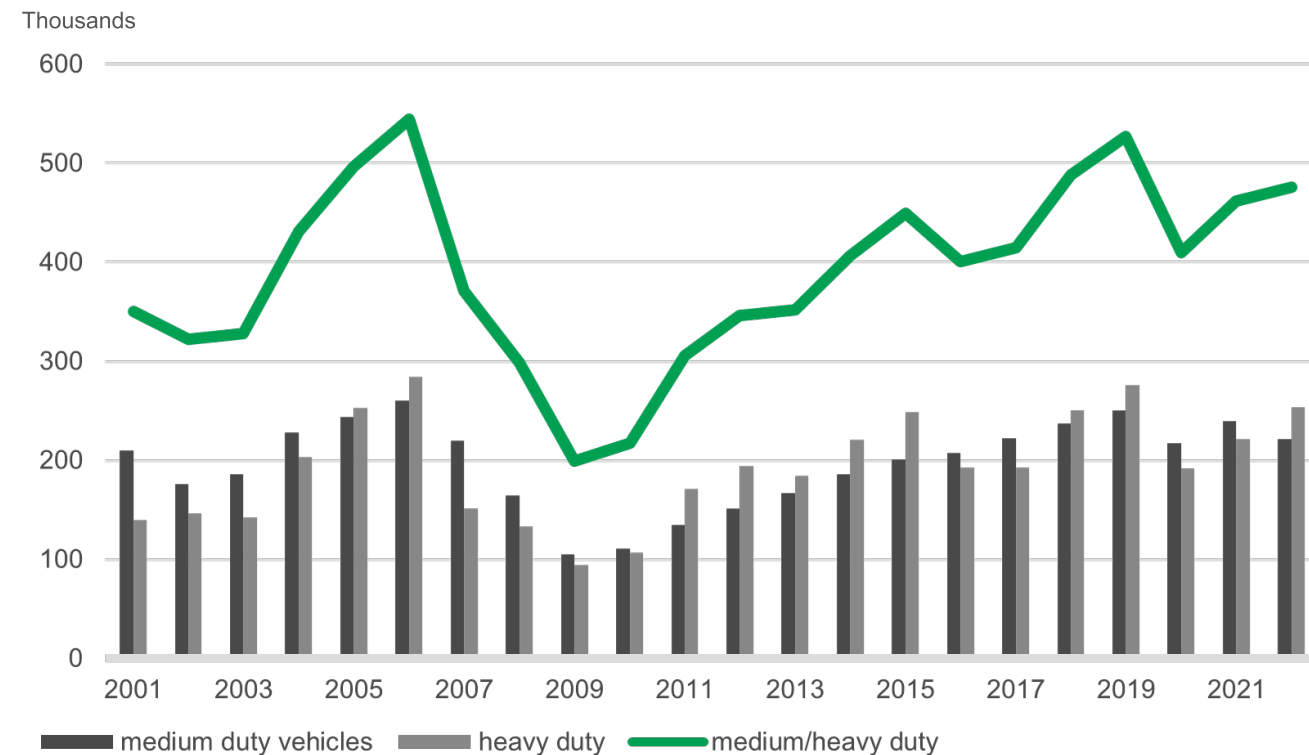
For the full year 2024, the US commercial vehicle market recorded a decline of 5 percent, corresponding to a total sales volume of 482,300 units. The heavy-duty segment (Class 8 / > 15 tons) performed significantly worse than the medium-duty segment (weight classes 4-7 / 6.3-15 tons).

The former suffered a double-digit decline of 10 percent compared to the previous year, while the latter grew by just under 1 percent.

The 2019 level, which, with almost 527,100 trucks sold, was the strongest year in terms of volume since 2006 (544,600 units at that time), was missed by 9 percent in 2024. In addition to weak domestic demand, declining exports may also have played a role in the decline. US exports of trucks to Germany more than halved in 2024, which is likely to have further limited sales opportunities for manufacturers.

Medium and heavy-duty vehicles in the USA

Sales of medium and heavy trucks

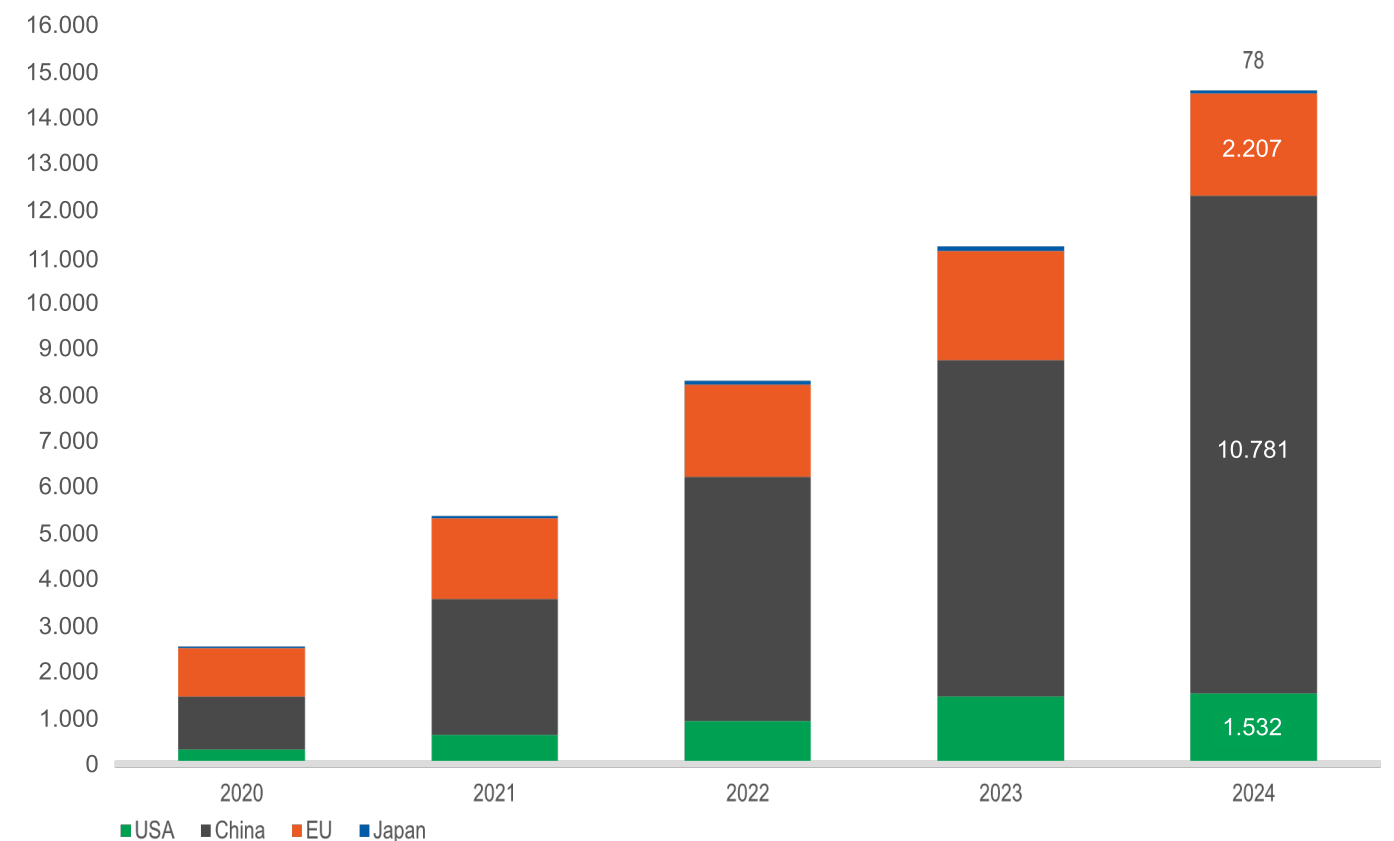


Source: Wards Intelligence

Electromobility in an international comparison

In 2024, the global advance of electromobility in new car registrations continued. With around 16.2 million newly registered cars with an electric drive (BEV, PHEV, or FCEV) worldwide, the previous year's record of 12.6 million units was significantly exceeded. This represents an increase in electric car sales of a good 29 percent, not quite as strong as in the previous year, when new electric vehicle registrations increased by over a third. This is entirely normal given the significant volumes now achieved during the ramp-up of a new drive technology. More than one in five cars sold globally is now electric. Of these, 10.3 million units, or 63 percent (previous year: 69 percent), are purely electric BEV vehicles.

The declining BEV share corresponded with an accordingly increasing PHEV share and was attributable to China, where plug-in hybrids were the drivers of e-mobility last year. Fuel cell electric vehicles (FCEVs) declined again and, with fewer than 5,000 units sold, continue to play a negligible role. The transformation from combustion engines to electric motors, which is necessary in view of the ambitious UN climate target, is thus in full swing in the automotive industry. It should be noted that developments in the various markets are quite heterogeneous; in general, it could be said that there is a more or less pronounced correlation between prosperity and the market penetration of electric cars. Incentives and legal requirements, e.g., regarding CO₂ limits, also play an important role.



German car production in an international comparison

Domestic car production

After two years of significant growth, domestic production last year was able to almost maintain its 2023 level. The final result was a decline of 1 percent to 4.07 million cars. This compares to a 6 percent decline in the first half of the year, which was almost offset by a 5 percent increase in the second half of the year. This means that domestic production remains 13 percent, or almost 600,000 vehicles, below the pre-crisis level of 2019.

2024 was a mixed year for domestic production. A major decline was only avoided by Germany's greater focus on the future of electromobility than any other country in Europe. The transformation towards climate neutrality is evident in the fact that by 2024, one in three cars manufactured in Germany was electric, a share surpassed only by China among the major production countries. A total of 1.35 million electric cars rolled off the assembly lines in Germany, making Germany the second-largest electric vehicle hub worldwide after China and ahead of the USA. 78 percent, or 1.06 million, of all electric vehicles produced in Germany were BEVs. Pure combustion engines were not spared from the trend toward e-mobility last year.

While gasoline engines stagnated at just under 49 percent of production, diesel engines lost another two percentage points, falling to 18 percent. As can be seen, Germany is leading the transformation in Europe, but traditional combustion engines remain an important mainstay in somewhat cushioning the abrupt shift toward CO₂-free mobility, with its drastic consequences for the workforce, especially at suppliers.

The most important segment last year was SUVs and off-road vehicles with 1.80 million units (+18 percent), ahead of the compact class with 0.91 million vehicles (-10 percent), the mid-size class with 0.47 million units (-27 percent), and just behind the upper mid-size class with 0.47 million units (+29 percent). The trend toward higher-quality vehicles is clearly visible, as high labor and energy costs are making the production of volume models in Germany increasingly unattractive. Production of the last small car model in Germany ended the year before last. In the global country ranking by unit sales, Germany was able to maintain its fifth place last year, behind China, the USA, Japan, and India, ahead of South Korea and Mexico. However, it should be noted that the premium share at German locations is above average. In Europe, Germany remains by far the most important production country.



International car production

For the first time in three years, German manufacturers' car production at foreign locations suffered a setback in 2024. At 9.5 million cars, the previous year's result was missed by 5 percent. This puts production levels slightly above those of 2015, but still one-seventh, or just under 1.9 million units, short of the production record set in 2019. In addition to the transformation to climate-neutral drive systems, which German OEMs are pushing even more strongly at home than abroad, high prices were a second major issue that prevented a production recovery. Although inflation was less pronounced than in the two previous years, it was still noticeable, and the persistently high price level prevented a production recovery. The semiconductor shortage was less of a production inhibitor than in previous years.

In 2024, 17 percent of all new cars worldwide bore the logo of a German brand.

A look at the different continents reveals that declines did not occur everywhere, and that developments were uneven across individual countries.

The only continent that recorded growth last year was America, where German manufacturers almost reached the 2012 record with 2.05 million units produced (+4 percent). Brazil was responsible for the increase, with a rebound of 46 percent to 462,000 cars. Production there significantly exceeded pre-crisis levels, but is still far from the 2012 peak. However, declines were recorded in both Mexico, with 682,000 units (-5 percent), and the USA, with 844,000 vehicles (-7 percent).

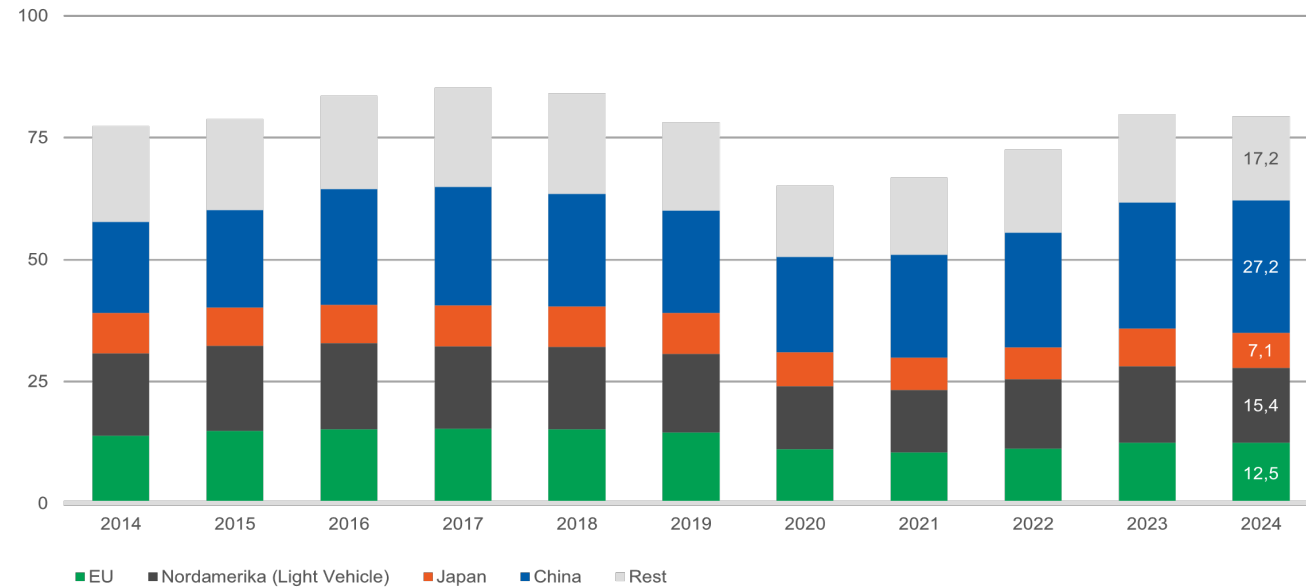
Production trends were less encouraging in Europe, where fleet renewal is progressing only slowly; the average age of the fleet is growing from year to year and now averages 12.5 years in the EU. Overall, German manufacturers produced 3.00 million cars in 2024, 6 percent fewer than in the previous year. Compared to the pre-crisis figure of 2019, this represents a shortfall of almost one million units, or almost a quarter. In addition to the high market saturation and weak or non-existent economic growth in many countries, the location is hardly competitive anymore, especially for the production of volume models, due to rising energy prices and the relatively high labor costs in many countries.

The most important production country was the Czech Republic, where production expanded by 4 percent to 897,000 units – very close to the 2019 record. Spain followed, also recording 4 percent growth. This was the third consecutive increase, and with 833,000 units, the gap to the record year of 2019 has now shrunk to 8 percent. Slovakia, the SUV production hub, ranked third in Europe with 342,000 cars, also representing 4 percent growth. Hungary followed with 325,000 units (-7 percent), ahead of Portugal with 236,000 units (-7 percent). The United Kingdom recorded a significant decline, with only 128,000 cars of German group brands (-37 percent) rolling off the assembly lines. In Belgium (-72 percent to 15,000 units) and the Netherlands (-94 percent to just under 8,000 units), German manufacturers' production was completely halted.

Last year, Asia was the continent with the largest production decline for German companies, with an 8 percent drop to 4.19 million cars. This was primarily due to the most important location, China, with an 8 percent decline to 4.06 million units. India also recorded a similarly significant decline, with 130,000 vehicles produced.

The transformation from combustion to electric engines is also reflected in the foreign activities of German manufacturers. Last year, more than one in ten cars produced there, at 0.99 million units, was already electric. Two-thirds of these electric cars were purely battery-electric vehicles and one-third were plug-in hybrids.

Production outside Germany has nearly doubled since 2009, and in 2010, it overtook domestic production. Seven out of ten of all cars from German OEMs are now manufactured abroad. A key success factor has been the focus on premium models. While only 20 percent of cars manufactured abroad were premium models in 2006, this figure has risen to 45 percent today. The global positioning of German OEMs is also reflected in the fact that they now produce almost 60 percent of their premium cars abroad, with 4.28 million vehicles.



Comparison: international car production

The development of global automobile production last year was shaped by several factors. Material shortages, which had hampered production, particularly in the semiconductor sector, following the coronavirus pandemic, continued to recede into the background over the course of the year and now play only a minor role. However, Russia's war of aggression against Ukraine led to persistently high energy prices, which, although they declined again somewhat, are still well above the 2020 level and have burdened household budgets through second-round effects. In addition, due to the economic weakness, particularly in Europe, a wait-and-see attitude among customers was observed, which led to a further increase in the average age of the fleet and only limited stimulus for production from the demand side. Global automotive demand has therefore developed weaker than expected.

The ramp-up of electric car production, particularly in Europe and China, but also in the USA, benefited from partly favorable government framework conditions; strict CO₂ limits imposed by politicians to facilitate the transformation to climate-neutral electric drive systems are having an impact. Without the ramp-up of electric car production, production would likely have even declined in 2024.

These circumstances led to global production in 2024 being slightly below the previous year's figure at 79.4 million cars (± 0 percent). However, this still exceeded the 2019 pre-crisis level of 78.2 million units. However, global production capacity is still higher; in 2017, production was a good 5 million units higher at 85 million. Prior to this, car production grew by an average of 5 percent per year from the financial crisis year of 2009 to 2017.

Looking at production in individual countries, a mixed picture emerges. The two emerging Asian automotive nations recorded the highest growth rates, with India and China each expanding their car production by 5 percent. In China, a record number of cars rolled off the assembly lines again, with 27.2 million units. While before the coronavirus pandemic, almost all domestic production was also sold in China, production is now driven by increasing exports. Last year alone, almost 5 million cars were exported from China. With 4.8 million cars, India was the third most important production country in Asia behind Japan, where production fell by 8 percent to 7.1 million cars, corresponding with a domestic market that declined by roughly the same amount.

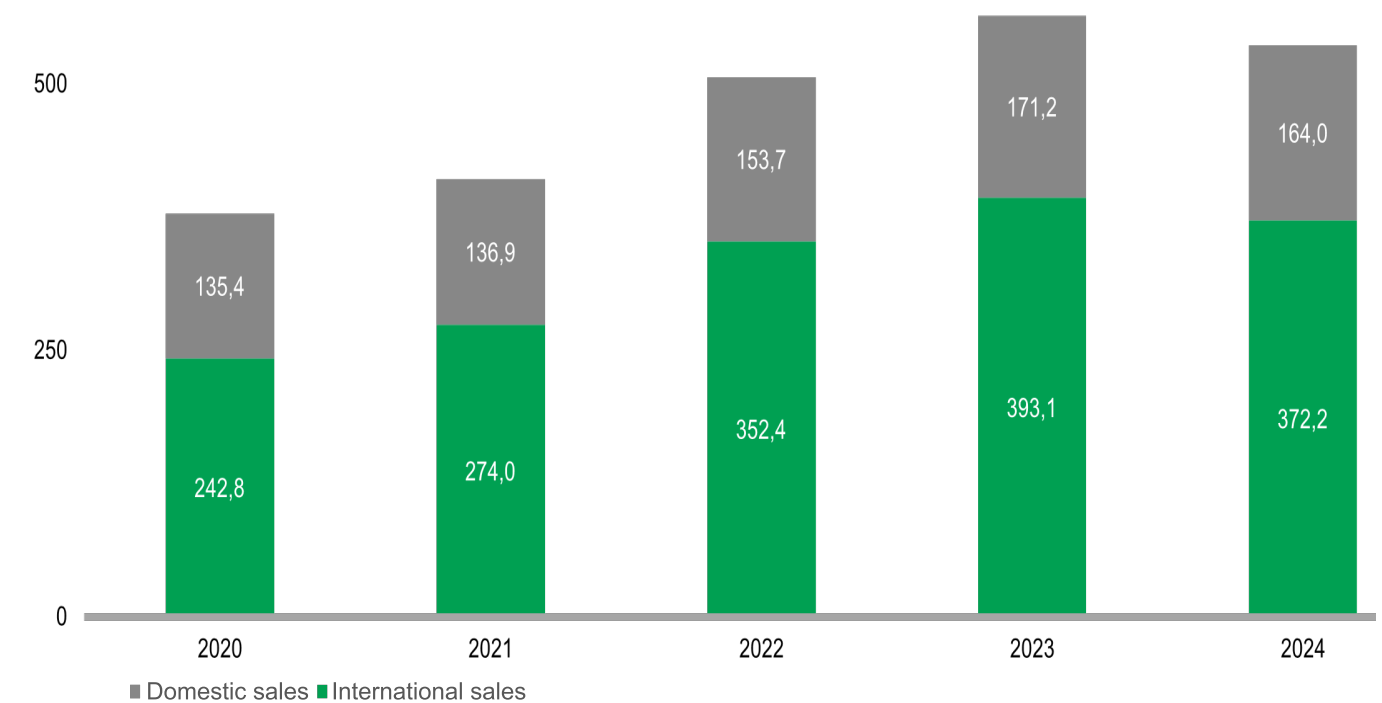
In South Korea, Asia's fourth-most important location, production was also reduced by 2 percent to 3.8 million cars amid a declining domestic market.

In Europe, production fell by 6 percent to 14.0 million cars, falling again below the 2020 level. Compared to the pre-crisis level in 2019, there is a shortfall of over 4 million units, or almost a quarter. This is not only due to Russia, whose production lost almost a million units. Overall, the European market is saturated, and the existing fleet is only slowly being renewed in the age of transformation, and the average age is increasing. This also applies to Germany, whose production fell by 1 percent to just under 4.1 million units (no. 5 worldwide), 0.6 million units below the 2019 figure. Electric cars (BEVs and PHEVs) were particularly successful in Germany, now accounting for a third of production. Germany is the second-largest electric vehicle location in the world after China and ahead of the USA. This shows how seriously German manufacturers are taking the transition to climate-neutral cars. Spain ranked second in total car production in Europe with 1.9 million units (+1 percent), ahead of the Czech Republic with 1.5 million units (+4 percent).

This was followed by SUV hub Slovakia with 1.0 million units (-8 percent), ahead of Türkiye (-5 percent, 0.90 million units), which overtook the once-major automotive nation France, which last year only achieved a production volume of 0.87 million cars (-15 percent), almost half below its pre-crisis level.

In the USA, Mexico, and Canada, production stagnated last year, declining slightly by 1 percent to 15.4 million light vehicles, 0.8 million units below the pre-coronavirus level of 2019. A breakdown by vehicle type shows that light trucks (especially SUVs) are the driving force, with a 2 percent increase, while cars declined by 16 percent. This means that five out of six light vehicles manufactured here are light trucks. The USA is the world's SUV production hub. Developments were mixed across the three countries. While light vehicle production declined by 1 percent in the USA, production in Mexico increased by 3 percent and fell by 14 percent in Canada.

The Mercosur countries also achieved only moderate growth last year, at 3 percent and 2.9 million light vehicles.



Car exports from Germany

In 2024, car exports increased by 2 percent (third consecutive increase) to 3.18 million vehicles, still 9 percent below the pre-crisis level of 2019. Compared to 2017, exports even decreased by 27 percent. The two mutually reinforcing factors are the transformation and the continued high inflation, which were accompanied by customer uncertainty and real income losses, leading to European markets in particular settling at a level below pre-coronavirus levels. At the same time, the German automotive industry remains highly dependent on exports; last year's export ratio exceeded the previous year's 78 percent, increasing by 2 percentage points. This underscores the eminent importance of export markets for the German automotive industry, which have been able to offset a large part of the weak domestic demand.

The trend toward local production slowed in 2024, and foreign production declined for the first time in three years (-5 percent). This should be seen against the backdrop of the massive reduction in domestic production after 2019, which stabilized in 2024. Nevertheless, German exports amount to just one-third of foreign production.

A key factor for the success of cars made in Germany abroad continues to be their high quality, for which adequate prices are paid. The long-standing trend toward premium models will remain strong in 2024. They currently account for 76 percent of all car exports (previous year: 74 percent). This share is particularly high in overseas export markets. Car exports to Asia are 93 percent premium, and those to America are even 95 percent premium.

The transformation from combustion engines to electric motors will continue in exports in 2024. With a share of 15.3 percent (previous year: 15.8 percent), diesel engines (including mild hybrids) continue to decline, falling to their lowest level since reunification. Gasoline engines also lost further share last year, now accounting for 50.8 percent (previous year: 52.4 percent). However, electric vehicles benefited from the decline in combustion engines, reaching a record high of 33.8 percent (previous year: 31.7 percent).

Exports of pure battery-powered vehicles have developed particularly dynamically, increasing by 13 percent and now accounting for almost four-fifths (79 percent) of all exported electric cars (including plug-ins).

The main drivers last year were German manufacturers' car exports to America, which increased by 11 percent to 562,000 units. This exceeded the pre-crisis level of 2019 for the first time, but is still a good third short of the record level of 2013. The most important export partner worldwide was the USA, with 448,000 cars (+12 percent). Nevertheless, exports to the USA have declined by 27 percent, or 165,000 cars, over the past 10 years. This development can be explained by the fact that German OEMs are increasingly moving towards producing vehicles for the US market directly in North America. Exports to Canada increased by 8 percent to 56,000 units, and those to Brazil even increased by 16 percent to 22,000.

German OEMs exported 1.8 million cars to Europe in 2024, 1 percent more than in the previous year. The most important partner country here was the United Kingdom, to which 390,000 cars were exported (-2 percent). This was followed by France (+7 percent to 203,000 units), Italy (+4 percent to 195,000 units) and Spain (+2 percent to 174,000 vehicles).

German manufacturers' exports to Asia decreased again in 2024, falling by 7 percent to 532,000 units. This decline was primarily due to China, the most important Asian partner, where exports plummeted by 17 percent to 178,000 units. Exports to South Korea also fell by 2 percent to 120,000 vehicles. The export destination of Japan declined by 6 percent to 89,000 cars.

With 59,000 units (+7 percent), Australia and Oceania continued to play a minor role as destinations for German car exports in 2024. Hardly any new cars were exported to Africa, with 45,000 units (+13 percent); used cars accounted for the lion's share of vehicles sold there for economic reasons.

Profits of the German automotive industry

Last year, German automotive industry sales fell by 5 percent to € 536.1 billion, down from the previous year's record high. In 2024, the automotive industry achieved its second-highest sales ever, based on nominal figures. However, the high sales figures of the past two years also reflect high post-COVID inflation. The sales decline was distributed roughly proportionally between domestic (-4 percent) and foreign business (-5 percent). Almost 70 percent of total sales were attributable to foreign business, 29 percent of which was attributable to business with countries within the eurozone.

The decline in sales extended across all manufacturer groups. For manufacturers of motor vehicles and engines, sales fell by 4 percent to € 437.9 billion. This means that just over four-fifths of total sales were generated through OEM business. This sales figure is also notable for the fact that, unlike in the other manufacturer groups, they were mostly generated through business with foreign customers. Manufacturers of car bodies, superstructures, and trailers suffered the largest sales losses – their sales fell by 10 percent to €13.0 billion. Suppliers recorded a sales decline of 8 percent in 2024 compared to the previous year. Overall, manufacturers of parts for motor vehicles and motor vehicles generated sales of € 85.2 billion. This represents just under 16 percent of total sales from domestic automotive production.

The number of employees in the automotive industry in Germany fell slightly in 2024. A total of 772,900 people were employed in the automotive industry, 1 percent less than the previous year. After a respite in 2023, the downward trend in employment that began in 2019 continued. As of 2024, employment in the automotive industry has shrunk by almost 61,000 people since the record employment level during the economic boom in 2018.

Employment among manufacturers of motor vehicles and engines remained roughly at the previous year's level (±0 percent) at 465,200. Just over 60 percent of employees in the automotive industry were employed by an OEM last year. Manufacturers of bodies, superstructures, and trailers saw an increase in employment last year, increasing employment by 1 percent to 40,800. This group of manufacturers last had this many employees 30 years ago (1995: 44,100 employees). About one in three employees in the automotive industry works for a manufacturer of parts for motor vehicles and motor engines. These companies employed an average of 266,800 people in 2024. This represented a decrease of 2 percent compared to the previous year. Fewer people were last employed in the supplier industry in 1997 (at that time, an average of 255,600 employees). This demonstrates that this group of manufacturers is particularly hard hit by the current transformation challenges. Furthermore, even behind the aggregate employment figures, a change is currently taking place. With new technologies and the increasing demands placed on the automotive industry's products, employment profiles in companies' workforces are also changing.



Labor costs in the international automotive industry

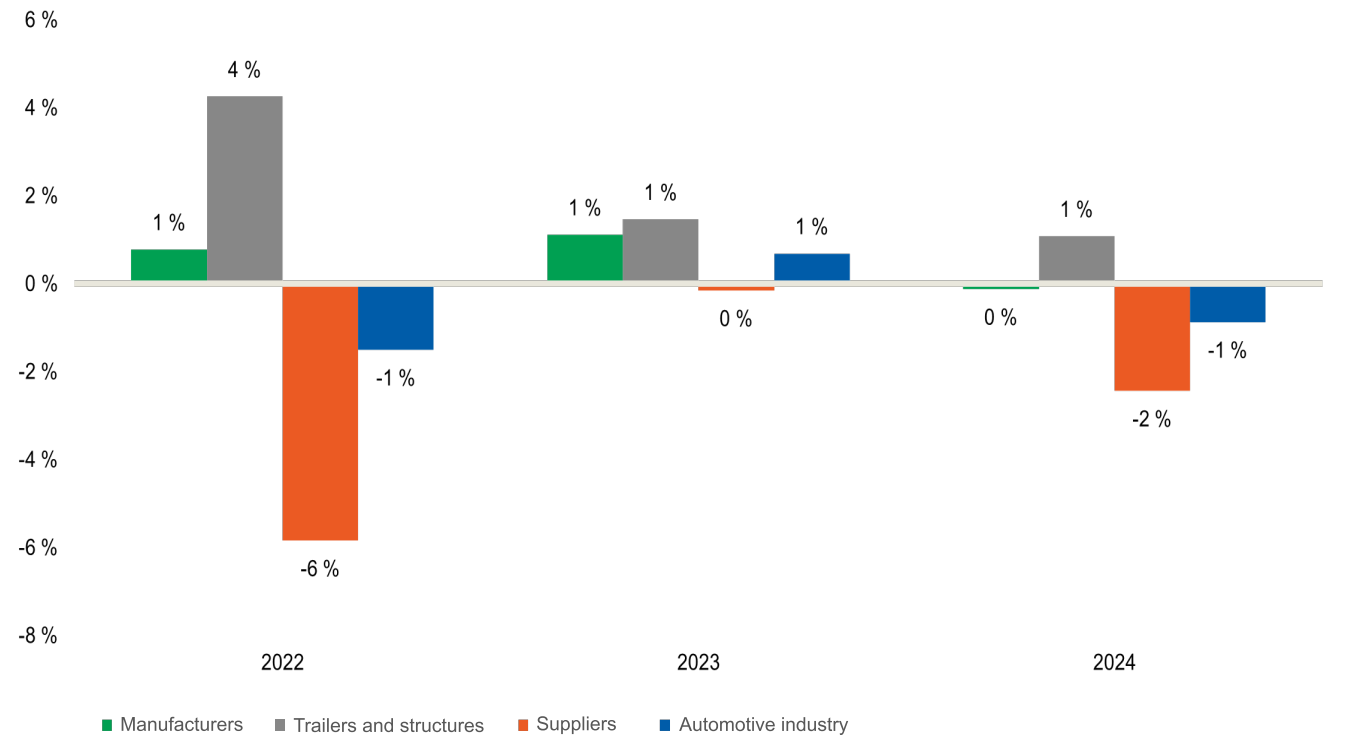
The high quality and increasing complexity of modern German-made cars, thanks to sophisticated assistance systems, increasing digitalization, and networking, come at a price. Added to this is the structural shift toward electromobility, which is in full swing. To remain attractive to highly sought-after skilled workers, automotive companies in Germany must offer attractive compensation. Last year, particularly in Europe, was characterized by significant increases in labor costs due to high collective bargaining agreements against a backdrop of high inflation. Therefore, in 2024, Germany will continue to have the highest labor costs in the automotive industry internationally, at over € 65 per hour (+5 percent compared to the previous year). The Netherlands followed in second place with € 62 (+5 percent), whose labor costs have increased by 76 percent since 2014. Austria ranked third with labor costs rising by 8 percent to € 53 in 2024. Directly behind it was Sweden, which saw labor costs rise by 5 percent to € 50. Japan's labor costs fell by 5 percent to the equivalent of € 23 due to the yen's devaluation. This is 7 percent less than ten years ago.

Labor cost increases in Germany over the last ten years have been comparatively high at 34 percent. This means that the competitiveness regained through wage restraint as part of Agenda 2010 is being squandered. The lack of attractiveness of Germany as a location is also reflected in domestic production, which lost over 1.5 million cars last year, to 4.07 million (-1 percent compared to 2023) compared to 2017, and remains under pressure.

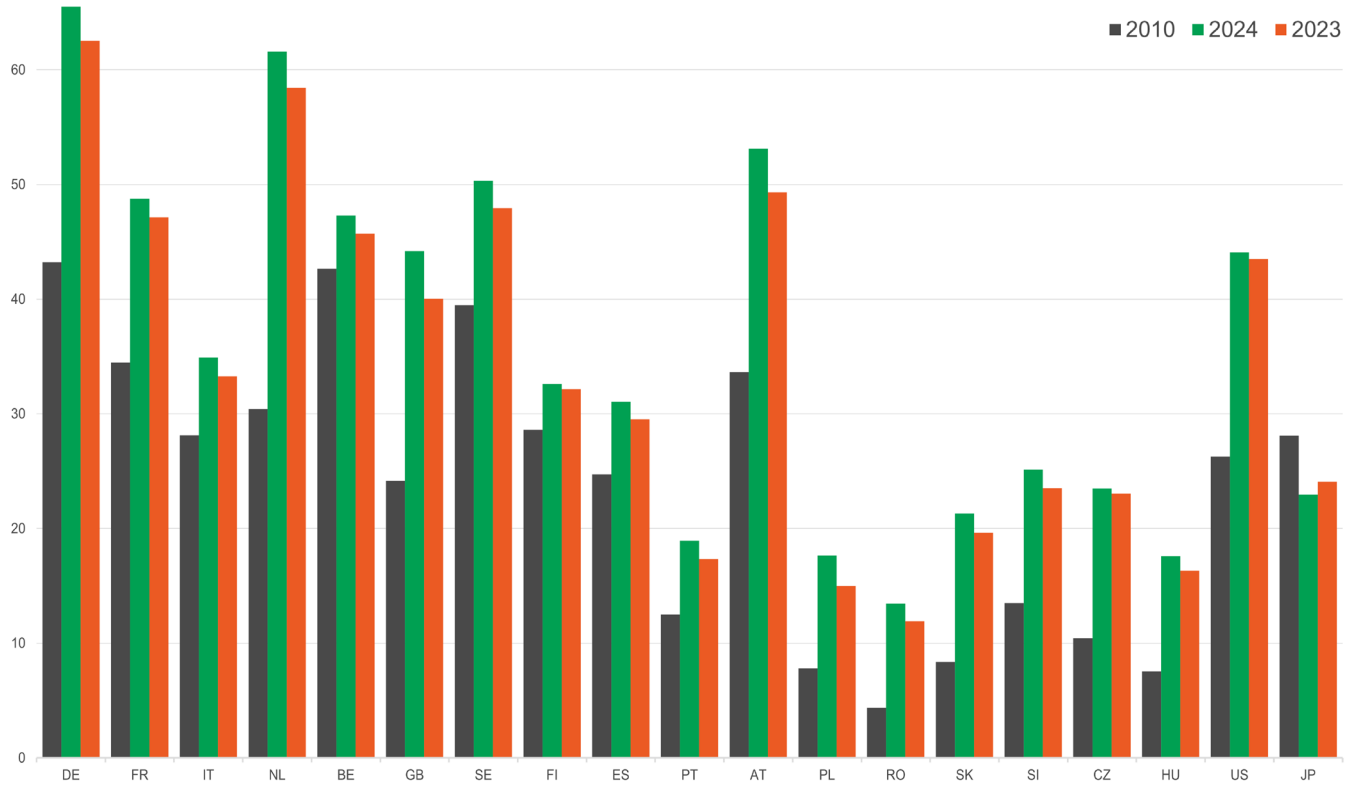
France follows in fifth place in the ranking at € 49 (+3 percent), ahead of Belgium at € 47 (+3 percent) and Great Britain at € 44 (+10 percent). High wage agreements and the strengthening pound also contributed to this. The USA is the first non-European country to rank just behind at € 44 (+1 percent). In Italy, labor costs rose by 5 percent to € 35 last year. Finland follows at € 33 (+1 percent), where labor costs have increased only slightly over the past 10 years, ahead of Spain at € 31 (+5 percent). Japan's labor costs fell by 5 percent to the equivalent of € 23 due to the yen's devaluation. This is 7 percent less than ten years ago.

In Portugal, labor costs rose by 9 percent to € 19 in 2024, placing them between Poland (€ 18) and Slovakia (€ 21). At the lower end of the labor cost table are Eastern European countries, with labor costs between € 13 (Romania) and € 18 (Poland and Hungary). These emerging automotive nations have experienced significant increases of between 86 percent (Hungary) and 152 percent (Romania) over the past 10 years, so that labor cost levels are gradually converging with those of other EU countries.

Employment by manufacturer group



Labor costs by country



Investments in Research and Development for the Mobility of Tomorrow

Chapter 3

The German automotive industry is investing billions in future technologies to secure its innovative power and actively shape the global transformation

Research and development are taking a key role in the German automotive industry in order to effectively face global challenges and increasing competition. The industry is investing massively in future technologies so that it can be prepared for current and future challenges.

Around 320 billion euros are planned to be invested in research and development between 2025 and 2029, with an additional approximately 220 billion euros for material investments, in particular in modern production facilities.

These enormous financial expenditures underline the determination of the German automotive industry to expand its globally unique innovative power and create an international success story.

Continuous innovations are crucial to maintaining the location. The Forschungsvereinigung Automobiltechnik (FAT e.V.) supports the automotive industry in Germany with a variety of projects and events, and promotes the transformation of the industry.



KI-generiertes Bild

FAT

The Research Association
of Automotive Technology



Research and
Management

- 47 member companies
- 4 members on the executive board
- 23 members of the research council
- 7 task forces
- 480 members of the task forces



Partners of
Research

- 42 current research projects
- 42 university and technical institutes
- 300 Professors, PhDs, Research Assistants (approx.)
- 7 network research associations:
FVV, FVA, DVS, FGSV, EFB, FOSTA, GHV



320 bln €

Investments in R&D
(2025 - 2029) + 220 bln €
in material investments

1

Drive & Vehicles

2

Energy sources & storage
technology

3

Automated driving &
interconnection

4

Infrastructure

5

Production

6

Recyclables & materials

7

Mobility & logistics concepts

Selection of realized projects from 2024

25 years of GIDAS: an anniversary of top-level research

One special event was the celebration of the 25th anniversary of the project GIDAS (German In-Depth Accident Study). GIDAS is the world's largest system for comprehensively examining real traffic accidents and it is renowned around the world. The results from GIDAS play a massive role in improving vehicle safety. Through innovative approaches and state-of-the-art methods, GIDAS also sends crucial impetuses for research and development in the area of safe mobility.

Further information: www.gidas.org

Leading initiative and high-level event with Federal Minister Habeck

As part of the leading FAT initiative, a high-level event was held in October to serve as a platform for interdisciplinary dialogue between industry, science, and policymakers. Federal Minister Habeck was also in attendance. The primary focus was on pioneering topics like the digitalization of approval processes, the acceleration of innovation cycles, and the optimization of research funding. One special highlight was the presentation of the project nxtAIM, which pursues innovative approaches in the area of interconnected and automated driving. The reception to the event was entirely positive. Furthermore, valuable impetuses for advancing the research landscape were given. Co-operation with the Federal Ministry for Economic Affairs and Climate Action (BMWK) remains a core priority.

Trailblazer for research, innovation, and sustainable mobility

In January, 2025, VDA published its position paper „Research and Innovation Policy Conditions for Sustainably Preserving Germany as a Technology Hub.“ In this paper, VDA calls for a strengthening of research and development in Germany by increasing the R&D budget to 3.5% of the gross domestic product. It also emphasizes that battery research and lightweight construction are key technologies for the future of the automotive industry. VDA also calls for a simplification of research funding to be achieved by breaking down bureaucratic obstacles. Finally, the report considers the establishing of interdepartmental technology roadmaps to be essential for ensuring optimal alignment between business, science, and policy. The position paper underlines the role of the German automotive industry as a driving force in the transformation toward sustainable and competitive mobility.

Project Group Airbag: FAT starts project group for innovative, passive safety systems

With this project group, FAT is placing new focus on the safety systems of the future. The goal is to develop innovative solutions for passive safety in the context of new vehicle technologies.

Standards and regulations in the automotive industry in 2024

Progress through standardization.
Get involved!

Alternative drives

- Charging technology
- Energy recovery
- Battery technology
- Hydrogen technology

Smart traffic systems

Assisted and automated driving

Alternative vehicle requirements

- Ergonomics, sight, and light
- Driving dynamics
- Data communication
- Vehicle safety and security

Vehicle and mobility sustainability

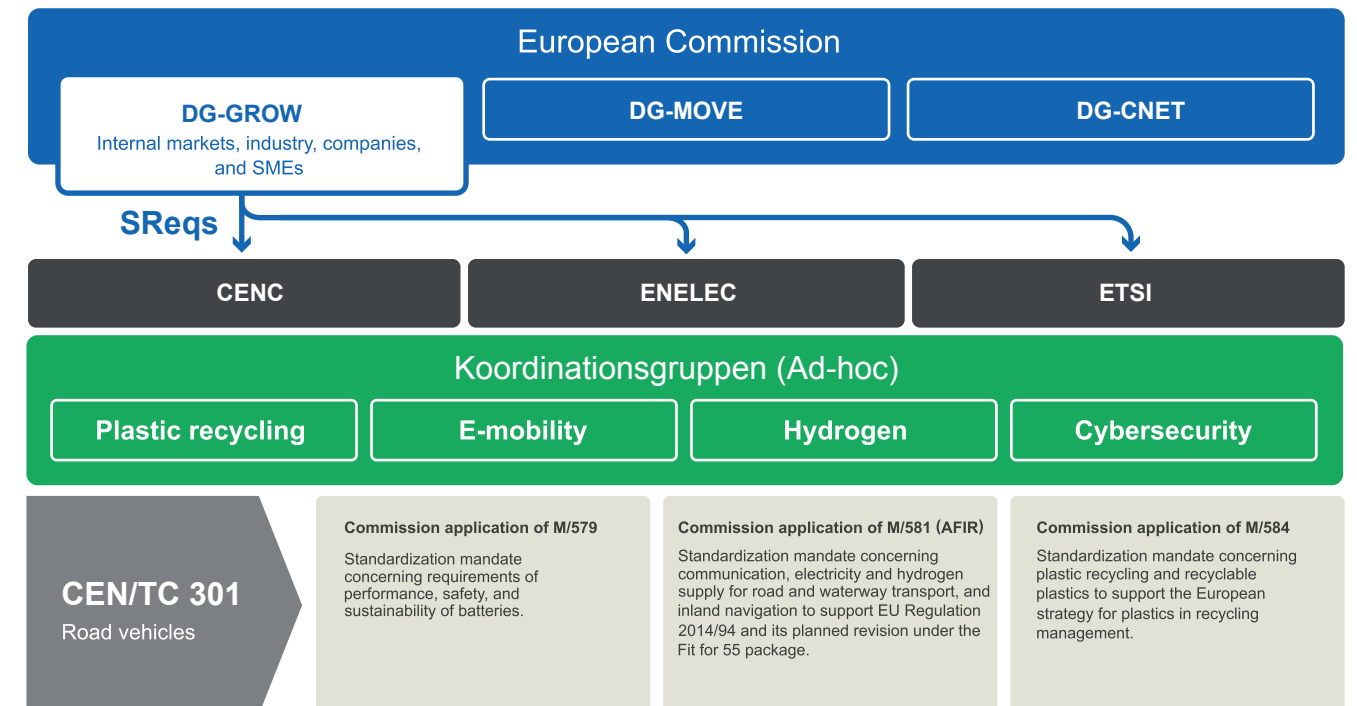
Vehicle AI

VDA | Normenausschuss Auto und Mobilität



Standardization is a broad concern that plays an important role for all economic sectors and for society as a whole. In order to best support the association members in establishing standards, VDA e.V. worked with DIN e.V. to form a contractual agreement on sponsoring a Standards Committee for Automotive and Mobility (NAAuto) at DIN. At the same time, the association is active at the political level to improve the political and organizational conditions for standardization.

In the context of the political and organizational conditions, standardization projects for European standardization organizations are increasingly being issued that supplement regulatory requirements.



European standardization: Regulation 1025/2012 and the role of the DIN Standards Committee for Automotive and Mobility

Article 10 of Regulation 1025/2012 of the European Parliament and European Council on European standardization regulates „Standardization Requests, SReq.“ This stipulates that the European Commission, for purposes of its powers granted in the contracts, can mandate European standardization organizations (normally CEN, Cenelec, or ETSI) to devise European standards within a set period of time. These must be unanimously agreed upon and must be compliant with the goals defined by the Commission for the mandate.

The DIN Standards Committee for Automotive and Mobility (NAAuto) is primarily concerned with such standardization mandates through the committees it manages for the technical committees CEN/TC 301 (Road Vehicles) and CEN/TC 278 (Smart Transport Systems), but it is not limited to these.

The graphic above shows the required dependencies for the approval and drafting process between the European Commission (DG GROW), the European standardization organizations, and the technical committees for such standardization mandates, using regulations and mandates from the preceding year as an example.

One specific example of such a standardization mandate is the creation of DIN EN 18060 „Performance of Modules and Batteries for Electric Vehicles.“

In this case, the Commission orders the creation of a harmonized European standard that makes it possible to assess the performance and durability of automotive traction batteries. When fulfilling the requirements of a harmonized European standard, a company can assume that all applicable requirements in Europe apply to the product being brought to market. This is known as the presumption effect.

This harmonized European standard 18060 defines the applicable testing procedures to determine performance and durability of different battery types. These are supplemented with parameters such as nominal capacity, output, internal resistance, and energy return efficiency. The standardized determination aims to create comparability and transparency for the customer and the consumer.

VDA Events 2024: Dialogue, Innovation, and the Future of Mobility

Chapter 4

AUTOMOTIVE INSIGHT 2024

Anniversary: 25 years of the Technical Congress: focus on innovation, digitalization, and sustainability

The theme of the 25th VDA Technical Congress was „Innovative. Digital. Sustainable.“ and drew over 450 visitors to Berlin on February 20 and 21, 2024, including leading representatives from the areas of industry and policy.

Prominent speakers like Federal Education Minister Bettina Stark-Watzinger; Minister-President of Saarland Anke Rehlinger; Parliamentary State Secretary to the Federal Minister for Environment, Nature Conservation, Nuclear Safety, and Consumer Protection Dr. Bettina Hoffmann; and the President of the

Kraftfahrt-Bundesamt Richard Damm enriched the event with their attendance. Top-level speakers from industry were also present: Dr. Holger Klein (CEO ZF Friedrichshafen), Arnd Franz (corporate board chairman Mahle Group), Frank Blome (CEO PowerCo SE), Henrik Falk (board chairman Berliner Verkehrsbetriebe, BVG), and Maria Röttger (president Michelin Europe North, Michelin Reifenwerke AG & Co. KGaA).

The variety in the exhibition area gave participants the chance to learn about the latest innovations and technologies during the breaks. The conversations continued and contacts were made that evening at the Villa Elisabeth in Berlin.



VDA SME Day in Bonn:
Strengthening location and suppliers: artificial intelligence as a driver of the transformation

The 24th VDA SME Day was held in Bonn in June, 2024. Around 200 executives, managers, and employees of member SMEs in the supplier industry (manufacturer group III) and manufacturers of trailers, structures, and buses (manufacturer group II) used the two-day conference to engage in dialogue about the most pressing issues in the industry. The exhibition area gave participants a comprehensive overview of SME-specific services and opportunities for cooperation. Automotive start-ups presented their innovations. Participants brought their own questions and experience to the deep dives on various aspects of artificial intelligence.

Hendrik Wüst, Minister-President of North Rhine-Westphalia, held a keynote on the first day of the conference in which he emphasized the immense importance of the automotive industry in North Rhine-Westphalia and beyond. Oliver Zipse, chairman of the BMW Group, used his keynote to provide exciting insight into the global cooperation with suppliers and partners. Other top-level speakers included Daniela Schmitt, Minister for Economy, Transportation, Agriculture, and Viticulture of Rhineland-Palatinate; Tim Rokossa, Head of Company Research, Germany and Head of Auto Research Global at Deutsche Bank AG; Ramin Mirza, Chief Customer Officer at Aleph Alpha; and Dr. Stefan Wrobel, Professor of Computer Science at University of Bonn and director of the Fraunhofer Institute for Intelligent Analysis and Information Systems IAIS.



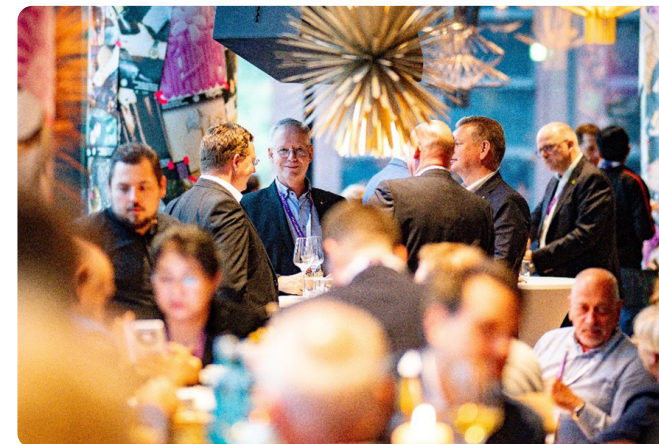
International Press Workshop: media kick-off for IAA TRANSPORTATION 2024

The International Press Workshop in Frankfurt am Main is the media kick-off event for IAA TRANSPORTATION.

The press workshop offered a unique platform to prepare for IAA TRANSPORTATION, which was held on the grounds of Deutsche Messe AG in Hannover from September 16 to 22, 2024. With the theme „People and Goods on the Move,“ the event highlighted important topics like logistics, transportation, and the digitalization of commercial vehicle traffic. Special focus was placed on the road toward climate neutrality, the necessary infrastructure for achieving this, and the exhibitors' innovations.

The many national and international journalists were given exclusive insight into current innovations and industry insights via a wide range of sessions by select CEOs of the IAA TRANSPORTATION exhibitors.

The evening before the workshop, the popular Media Night, gave additional opportunity to network in a casual atmosphere.



Automotive Logistics Forum in Wörth am Rhein

The Automotive Logistics Forum was held at Daimler Truck in Wörth am Rhein on February 18 and 19, 2024. The event, organized annually by Bundesvereinigung Logistik (BVL) e.V. and VDA, brings together logistics and supply chain experts from the automotive industry. Manufacturers (OEMs), suppliers, and specialists from the areas of IT, packaging, services, and consultation use the forum as an opportunity to engage in dialogue.



Automotive Logistics Forum 2024

A special highlight was the presentation of the VDA Logistics Award, which Bosch received for its „Next Generation Transport Management“ (NGTM). This ensures greater transparency, more efficient supply chain management, and more sustainable use of resources.

VDA New Year's Reception: platform for dialogue and networking

VDA kicked off the year with the New Year's Reception at AXICA at Brandenburg Gate on January 31, 2024. 500 guests from the areas of industry, business, policy, and media came together to engage in dialogue and network. The speech by Federal Transportation Minister Dr. Volker Wissing was a special highlight.



VDA Tech Tour 2024: SMEs learn about innovations in Silicon Valley

The annual VDA Tech Tour in October, 2024 gave SME members the opportunity to learn about the innovation ecosystem in Silicon Valley. Visits to start-ups, tech companies, and venture capitalists shows trailblazing developments in the automotive industry. The goal was to make valuable contacts and provide food for thought for the transformation and competitiveness of the German industry.

The study underlines the importance of such partnerships for overcoming complex innovation challenges in the automotive industry.



VDA Startup Synergy: solutions for growth and competitiveness

The VDA Startup Synergy was held at BASECAMP on December 2, 2024, in cooperation with Telefónica Deutschland. For the first time, the event focused on the challenges and opportunities for German start-ups. Solutions for growth, dismantling bureaucracy, and competitiveness were discussed with renowned experts from the start-up scene and political decision-makers.

Study „Innovation through Cooperation“

The study „Innovation through Cooperation,“ published in December, 2024, was created in cooperation with the Institut der deutschen Wirtschaft. It examines the cooperation between SMEs and start-ups in the automotive industry.

The results show that 50 percent of companies surveyed are already cooperating with start-ups, whereby the access to new technologies and increased innovation are listed as the primary objectives.

VDA at party conventions

VDA actively seeks dialogue about the future of mobility and Germany as a business location. At various political party conventions, we held discussions on current political issues and the various perspectives of numerous challenges. The VDA Charging Grid Ranking could also be tested at the VDA stand. It informed many delegates and interested visitors about the regional differences for the existing charging infrastructure and the possibilities for the mobility of the future.



VDA Members' Assembly 2024

The biannual VDA Members' Assembly was held on November 7, 2024. After the appointment of the advisory boards, revisors, board of directors, and the presidium, as well as votes on various decrees concerning the budget and VDA membership fee, the day ended with a Members' Night.

The member companies and numerous guests from the areas of business and policy held their discussions at Frederick's on Potsdamer Platz. The guest speaker was Christian Dürr, faction chairman of the FDP.

Julia Esterer (Dr.-Ing. Ulrich Esterer GmbH & Co. Fahrzeugbauten und Anlagen KG), Karin Rådström (Daimler Truck AG), and Alexander Vlaskamp.

(MAN Truck & Bus SE) were newly elected to the VDA board of directors during the assembly.

Martin Daum (Daimler Truck AG), Gunnar Kilian (TRATON SE), and Jürgen Spier (Spier GmbH & Co. Fahrzeugwerk AG) stepped down from the board.

The other members of the VDA board of directors were re-elected to their position on the board by the assembly.



Success in Hannover: IAA TRANSPORTATION 2024

Chapter 5



At IAA TRANSPORTATION 2024, nearly 1700 exhibitors from 41 countries presented their innovations at the fairgrounds in Hannover from September 19 to 25. The leading global platform for commercial vehicles, logistics, and transportation recorded a 21% increase in exhibitor attendance compared to 2022. With about 145,000 visitors, VDA recorded a 9% increase and held more space than two years prior with 258,000 square meters.

The number of international exhibitors increased markedly to 72 percent, a record high in IAA history. Exhibitors from 41 countries presented their products and services. This highlights IAA TRANSPORTATION's position as an internationally renowned platform. 145 global and European debuts also demonstrated the industry's impressive capacity for innovation.

IAA TRANSPORTATION's slogan, „People and Goods on the Move,“ was continued this year. The new key visual and this year's sub-claim, „Meet the pioneers of transformation,“ of IAA TRANSPORTATION 2024, demonstrated the dynamism of the mobility industry: interactive experiences, the opportunity to experience the latest vehicles and technologies for yourself through test drives, and an in-depth look at the latest technological developments in the field of mobility.

IAA TRANSPORTATION 2024 enjoyed outstanding media coverage, with 16,200 mentions of IAA TRANSPORTATION in online media. Over 1,400 journalists from 52 countries were on site to report on the event's latest developments and innovations. Every second journalist came from abroad. The exhibitors organized a total of over 80 press conferences, with a large portion of the coverage—over 76 percent—coming from international media from a total of 116 countries.



For the second time, the IAA Conference was held on three stages with over 80 sessions on the most important topics in the industry. Top-level representatives from industry, innovative start-ups, and experts presented their visions and solutions for sustainable transportation solutions on the Main Stage, Industry Stage, and in the Speakers' Corner. The conference offered a unique platform for discussing ideas and developing new partnerships.

One special highlight of IAA TRANSPORTATION 2024 was the test drives, in which visitors were able to test the latest emission-free commercial vehicles on the event grounds and on public streets. 18 renowned manufacturers offered test drives in 60 vehicles (LCVs, HCVs, and buses). There were over 6300 test drives in total, over 2200 test drives on the cargo bike course, and over 450 test drives in the truck school. The numbers were thus almost 17% higher than the previous IAA TRANSPORTATION record.

The entire value-added chain of the transportation industry was also present at IAA. Suppliers were heavily represented once more. 51% of the 1699 exhibitors belonged to this group, a strong increase of 45% compared to the last event. Suppliers were followed by manufacturers of trailers, structures, and containers at 14% and taking up 28% of the space. Infrastructure providers exhibited an even sharper increase to 56, equating to a 70% increase compared to 2022.

Both the quality and quantity of the trade visitors at IAA TRANSPORTATION 2024 remained high. The number of trade visitors was 86%, 34% of whom came from abroad. About half of the trade visitors (49%) and 72% of international trade visitors held leading positions. 71% of trade visitors and 84% of international trade visitors were involved in purchasing decisions.



The success of IAA TRANSPORTATION 2024 shows that the industry is ready to actively shape the transformation toward climate-neutral mobility. „IAA TRANSPORTATION has impressively shown that our industry is actively driving the shift toward climate-neutral and digital solutions with investments and innovations, and that we have already developed the products for the various challenges and made them ready for serial production,“ says VDA President Hildegard Müller. IAA TRANSPORTATION remains the central meeting point for the mobility and logistics industries and will continue to accompany the transformation process in the future.



Quality Management

Chapter 6



Efficient development processes and high quality standards are crucial to the future of the automotive industry. With Automotive SPICE®, the VDA Quality Management Center (QMC), and certified assessors, uniform standards for software, electronics, and system development are defined worldwide.

Automotive SPICE®: an established standard for software quality in the automotive industry

Automotive SPICE® is a globally recognized standard for evaluating and improving development processes of software-based systems in the automotive sector. It was published in 2005 by the Automotive Special Interest Group and is currently in version 4.0. The name „SPICE“ stands for „Software-based systems Process Improvement and Capability dEtermination.“

Based on the ISO/IEC 330xx series of standards, Automotive SPICE® defines a process reference model (PRM) and a process assessment model (PAM). These models determine which development processes are evaluated for software, electronics, and mechatronic systems, and which indicators are used for their uniform evaluation.

Because the automotive industry demands increasingly complex and faster innovations, Automotive SPICE® helps to ensure quality, security, and efficiency in the development processes. With the current version 4.0 includes major improvements in order to consider current trends in vehicle electronics and software development.

Automotive SPICE® assessors worldwide

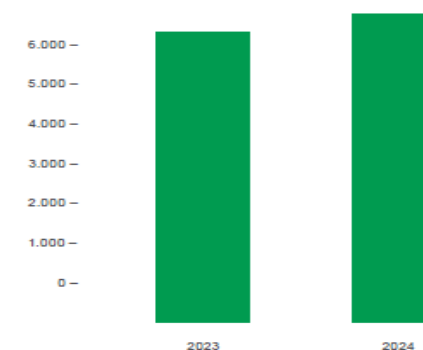
Assessors are experts that help companies analyze and evaluate their development processes according to Automotive SPICE®. They conduct assessments in which they determine whether a company meets the Automotive SPICE® standards.

The number of certified assessors differs by region. Here is an overview of the number of assessors in select regions for the image below:

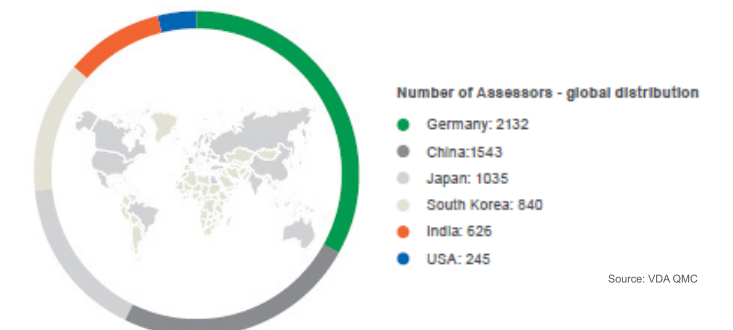
- Germany: 2132
- China: 1543
- Japan: 1035
- South Korea: 840
- India: 626
- USA: 245

These numbers show that Automotive SPICE® is especially widespread in Germany, China, and Japan. The high number of assessors in these countries reflects the importance of standardized development processes in the automotive industry.

Automotive SPICE® Development of assessor numbers



International distribution

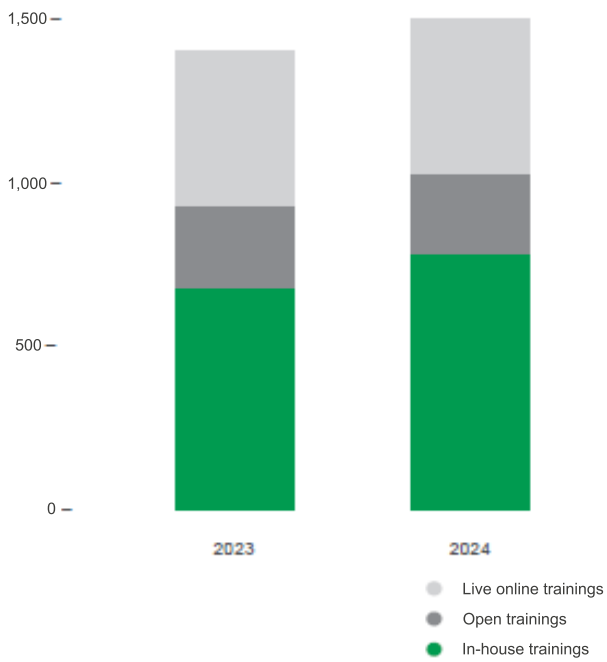


Qualification for the highest standards: training in quality management in the automotive industry

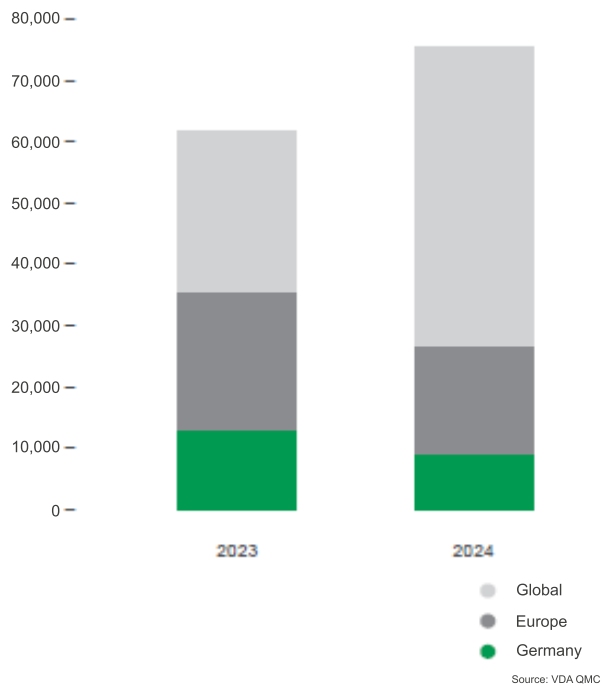


The VDA Quality Management Center (QMC) offers an extensive education and training program for professionals in the automotive industry, ranging from basic qualifications and training in QM methods to specific auditor training. With a global network of 45 licensed partners in 44 countries, the VDA QMC ensures that all qualifications are conducted on site, in house, or digitally and in the respective national language. The training is conducted by trainers who are tested by the VDA QMC in order to ensure the highest quality standards.

Development of VDA QMC trainings



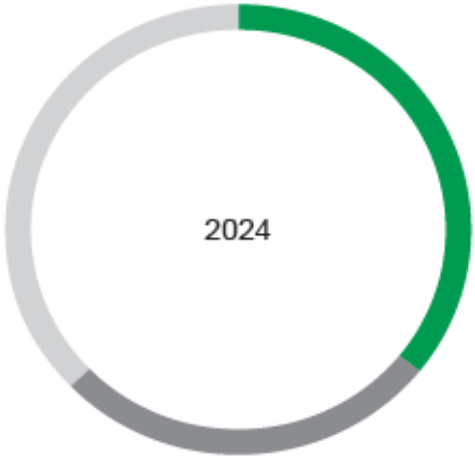
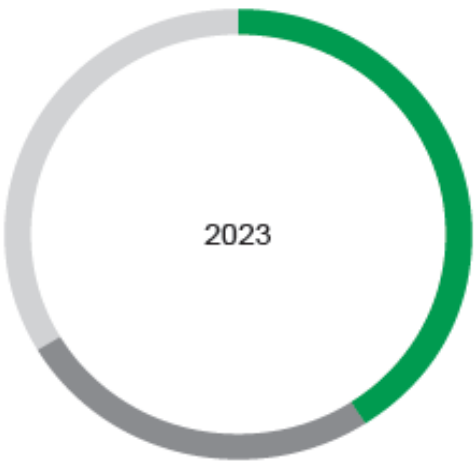
Development of VDA QMC trainings with licensed partners



The QMC offers a range of publications on standardization and improvement of quality processes in the automotive industry. These are published in different phases: Yellow volumes contain the initial results from project group work that are then provided online for free after being approved by the Quality Management Committee to obtain feedback from the industry.

After revision and further approval by the Committee, these are published as red volumes and serve as binding reference documents in bilateral contracts. There are also blue-gold volumes that appeared between 2000 and 2010 and focused on process-oriented topics. In the future, only revisions of these volumes will be published.

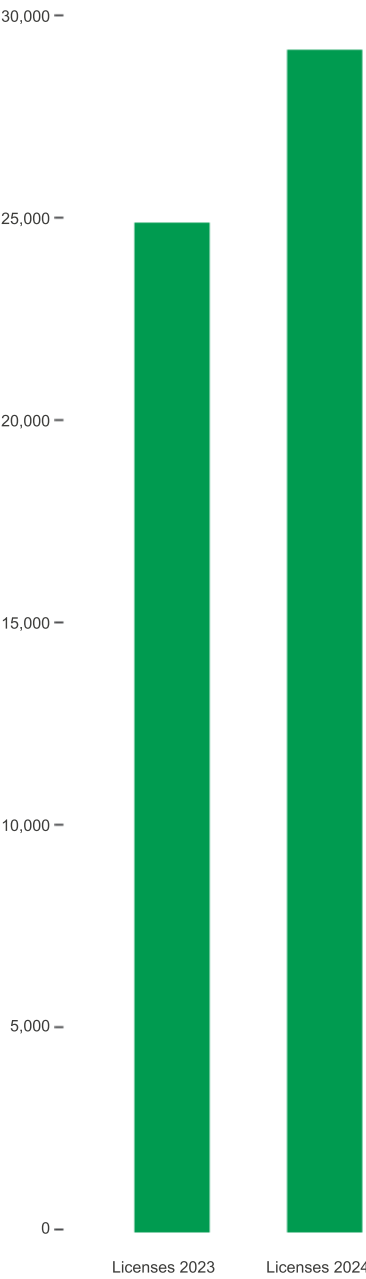
Development of VDA QMC publications



- International publications
- English issues
- German issues

Source: VDA QMC

Development of VDA QMC software license



- German issues

Source: VDA QMC

Founding the VDA Women Expert Network



The automotive industry is still primarily represented by men. In some VDA committees, there are fewer women than men. An initiative at the association level offers a platform for female industry representatives to network and contribute to making women in the industry more visible.

The idea for a network of female committee members came from the experts themselves. Mutual dialogue within the new Women Expert Network is important. Unlike in internal company networks of women, experts from various companies but with similar positions and areas of expertise come together in this network. The VDA Women Expert Network started with an initial meeting on January 31, 2024 at the VDA QMC in Berlin. The founders defined their mission during this meeting: To create a platform that empowers women to make work in the association more appealing to women and to actively shape support for women, especially in technical professions. Throughout the year, the network was established, expanded to other VDA committees, and the criterion for acceptance was defined.

All women who have been members of a VDA committee before are eligible to join the VDA Women Expert Network. This means they have access to a protected member area and exclusive, free technical seminars as well as the opportunity to share experiences at regular network meetings.

The companies also benefit from their employees participating in the VDA Women Expert Network. The topics discussed are communicated in the respective companies and serve to drive opportunities, advance positive initiatives and experiences, set benchmarks, and help dismantle stereotypical role systems. Women experts are also booked as speakers for their specific areas and serve as role models for younger colleagues in the automotive industry. The VDA Women Expert Network offers women in the automotive industry the opportunity to get involved in the association's work. Through their expertise and perspectives, they actively contribute to the technical configuration of VDA recommendations, volumes, and guidelines. At the same time, the network sends a clear signal that the automotive industry offers appealing career opportunities to women.

The VDA QMC regularly organizes top-level events for experts from the automotive industry. These provide a platform for dialogue on current developments, challenges, and best practices for quality management. The formats include symposiums, expert forums, and trade conferences where renowned industry representatives share their knowledge and discuss the latest trends.

Examples include the Quality Management Symposium, the VDA Automotive SYS Conference, and the Expert Forum at IAA Mobility. The events offer technical presentations and workshops, as well as valuable networking and insight into innovative solutions for the industry. They are geared toward manufacturers, suppliers, and other stakeholders who want to deepen their expertise in quality management.



Qualitätsmanagement Symposium der Automobilindustrie
15.–16. Mai 2024 in Hannover



VDA Automotive SYS® Konferenz
03.–05. Juli 2024 in Nauen



VDA QMC Expertenforum auf der IAA MOBILITY
17.–22. September 2024 in Hannover



21. Qualitäts-Gipfeltreffen der Automobilindustrie
26.–27. November 2025 in Berlin

VDA Lobby Registry Entry Significantly Expanded after Legal Amendment

Chapter 7

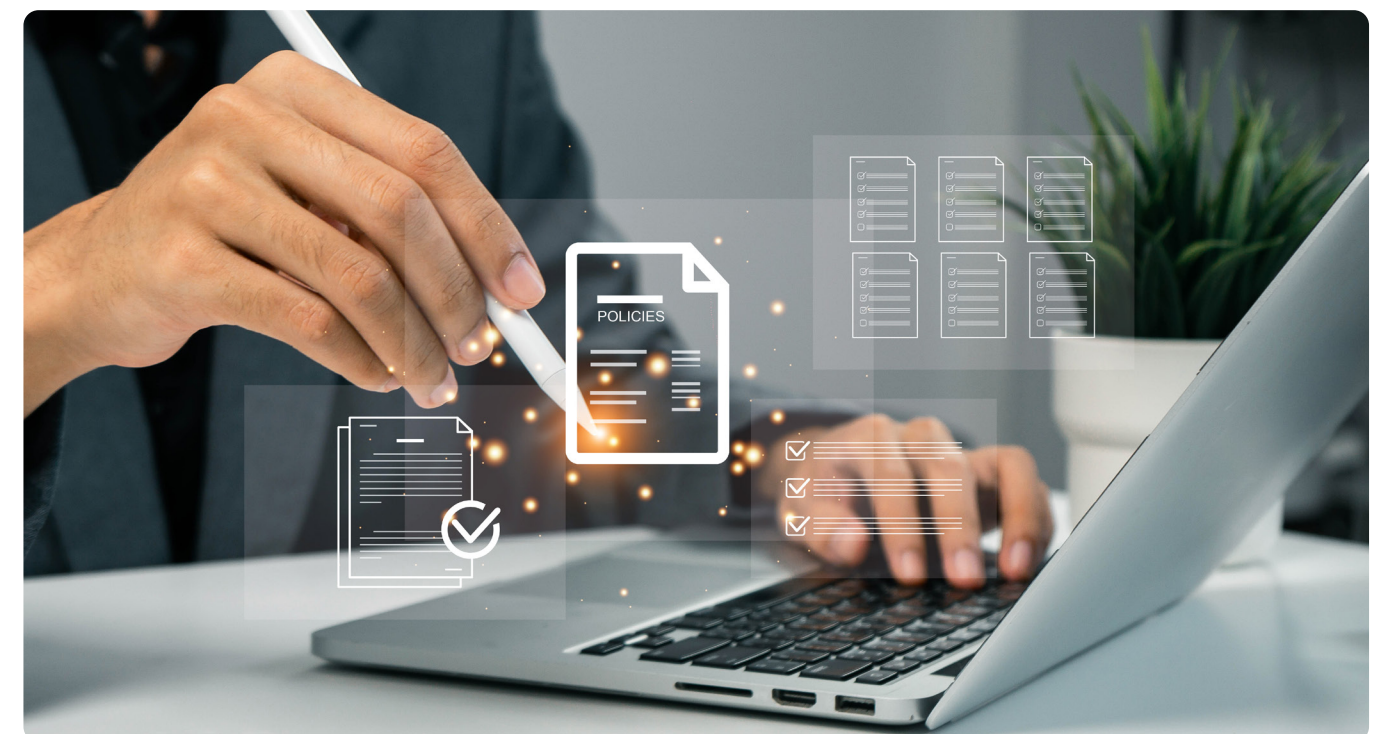
Lobby registry for representing interests to the German Bundestag was established in 2022. This law was amended, effective March 1, 2024. Within a transition period up to late June, 2024, all lobbyists had to revise, supplement, and publish their registry entries according to the new legislation.

The amended lobby registry law aims to create structural and substance-based transparency in order to increase public faith in policy and improve the legitimacy of parliamentary and governmental expressions of intention and decision-making processes. VDA revised and supplemented its entry in the Bundestag's lobby registry accordingly and on time. It includes regulatory propositions VDA is involved in, statements, and position papers.

The members have been provided with a guideline for applying the amended lobby registry act. This explains all the important changes to the law, explains their significance for the companies with checklists and diagrams, and contains practical examples.

Major changes to the lobby registry:

1. Regulatory propositions must be specifically named.
2. Fundamental positions and assessments of the named regulatory propositions must be uploaded.
3. Sources of financing and personnel expenses of the lobby must be disclosed.



Strong network – strong voice

The German Association of the Automotive Industry (VDA) consolidates more than 650 manufacturers and suppliers under one roof. The members develop and produce cars and trucks, software, trailers, superstructures, buses, parts and accessories as well as new mobility offers.

We represent the interests of the automotive industry and stand for modern, future-oriented multimodal mobility on the way to climate neutrality. The VDA represents the interests of its members in politics, the media, and social groups. We work for electric mobility, climate-neutral drives, the implementation of climate targets, securing raw materials, digitization and networking as well as German engineering.

We are committed to a competitive business and innovation location. Our industry ensures prosperity in Germany: More than 780,000 people are directly employed in the German automotive industry.

The VDA is the organizer of the largest international mobility platform IAA MOBILITY and of IAA TRANSPORTATION, the world's most important platform for the future of the commercial vehicle industry.

If you notice any errors, omissions or ambiguities in these recommendations, please contact VDA without delay so that these errors can be rectified.

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