VARIABLE 8: Economic value of the passenger car in Wallonia

12-02-2025 Final version

Contents

A. Definition of the variable

1. What is meant by economic value ?

The economic value of the passenger car for Wallonia is equal to its overall contribution to the Walloon economy. The **direct economic value** of the passenger car is reflected in two primary dimensions: economic value creation and employment generation. The economic value of the passenger car industry is captured by two indicators, net value added and full-time equivalent (FTE) jobs.

The passenger car also creates **indirect economic value**, by ensuring accessibility, as is discussed below.

2. Geographical scope

The geographical scope for this variable is the Walloon region. More specifically, we collect economic data for all companies that are primarily active in the automobile industry (defined in a broad sense), and that are domiciled on the Walloon territory.

3. Link with passenger transport by car in Wallonia

The economic value of passenger transport by car in Wallonia is closely linked to its role in enabling mobility, where the geographic dispersion of urban centers and rural areas often limits the effectiveness of public transportation.

The automobile industry is not only a direct source of employment and value creation, it is also an important source of indirect jobs because cars provide access to jobs. Many residents rely on cars for commuting to work, particularly in regions with limited public transport services. According to the 2021-2022 Federal Survey on Commuting, the modal share of the passenger car for commuting in Wallonia was equal to 84,7% in 2021, up from 80,4% in 2005.[1] In 2022, 89% of Walloon households owned at least one passenger car and the average number of cars per household was equal to 1.41. This high motorization rate brings along economic activity through garages and repair and maintenance shops.

The economic value of cars also indirectly supports other sectors such as retail, tourism and services, by ensuring accessibility.

By enabling economic activity and facilitating regional connectivity, passenger cars are a cornerstone of the Walloon economy, despite the need for sustainable evolution in the sector.

This fiche is focused on the direct economic value of the passenger car. The indirect economic value through accessibility and connectivity creation is discussed in fiche 9 on land use dynamics.

B. Indicators

1. Direct indicators : net value added, full-time equivalent and consumer demand

Supply-side indicators:

- Net Value Added (NVA): net value added is the value of output less the values of both intermediate consumption and consumption of fixed capital. Net value added provides a

[1] https://mobilit.belgium.be/fr/publications/enquete-federale-sur-les-deplacements-domicile-travail-2021-2022

measure of the actual economic value created after accounting for the replacement or repair of depreciated assets. It reflects the true net contribution of a business or sector to the overall economy.

- Full-time equivalent (FTE): FTE measures the total amount of full-time employees working at an organisation. FTE is a unit to measure employed persons in a way that makes them comparable although they may work a different number of hours per week.[2]

Demand-side indicators

- Consumer demand: consumer demand is measured by the number of passenger car registrations in Wallonia. We consider both the registrations of new vehicles and second-hand cars.

Table 1 Available indicators

Indicator	Source	Period	Comments
NVA	Central Balance Sheet Office , National Bank of Belgium	2015 - 2023	Data collected on company level based on primary NACE code. Aggregated for the following activities: - Automobile retail - Maintenance & Repairs - Automobile manufacturing - Road infrastructure - Motor fuels - Taxi and other passenger road transport - Automobile wholesale - Automobile parts & accessories - Car driving schools - Car services - Car leasing and rentals - Car assurances
FTE	Central Balance Sheet Office , National Bank of Belgium	2015 - 2023	
Vehicle registrations	Open Data Federal public service mobility and transport[3]	2012 - 2023	

2. Indirect indicators

The following indirect indicators are proposed:

- Percentage of households in possession of a passenger car
- Average number of passenger cars owned (out of all households)
- Average number of passenger cars owned (out of all households in possession of a passenger car)
- Average spending on passenger cars (new and second hand) per household per year

This data can be obtained from the Household Budget Survey (HBS), available at StatBel.[4]

[2] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Full-time_equivalent_(FTE)
[3] https://mobilit.belgium.be/fr/documents/open-data/transport-routier/immatriculations-des-vehicules
[4] https://statbel.fgov.be/nl/themas/huishoudens/huishoudbudget#news

C. Retrospective analysis

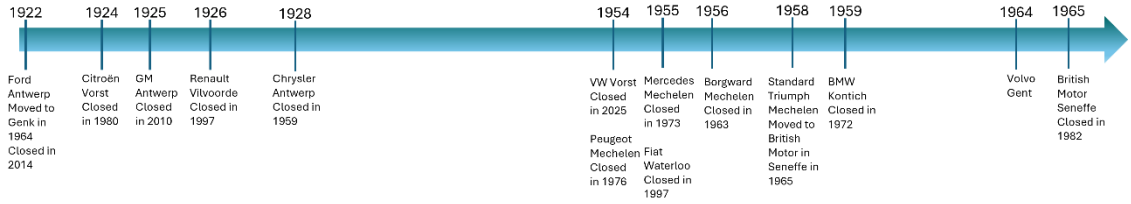
1. Past and present

A brief history of the economic role of the automobile industry in Wallonia

The Belgian automobile industry has a long tradition. It dates back to the late 19th century with brands such as Minerva (Antwerp), Imperia (Liège, Trooz), FN (Herstal), and Fondu (Vilvoorde). In the 1930s, the Belgian government ended its protectionist policies, allowing large foreign manufacturers to dominate the market, leading to the disappearance of Belgian brands. As of the 1920s, large international brands took over (Coppens & van Gastel, 2003).

Figure 1 shows a timeline of the automobile industry in Belgium from 1920 to 1965. Most assembly companies established in the 1950s were primarily focused on the national market. However, with the opening of the European market in the 1960s, they lost their raison d'être, and several facilities were restructured to serve the European market.

Figure 1: Timeline of the automobile industry in Belgium 1920 - 1965



Source: Coppens & van Gastel (2003)

As shown in Figure 1, Belgian car production has historically been predominantly a Flemish and Brussels affair. An exception was British Motor Company's assembly unit in Seneffe. The factory was built in 1965 by Standard-Triumph. Various models, such as the Mini and the Austin Allegro were assembled in this plant. Production was limited to left-hand-drive models intended for the continental European market. The assembly unit was closed in 1982 due to the economic downturn and a loss of market share for the British Motor models.

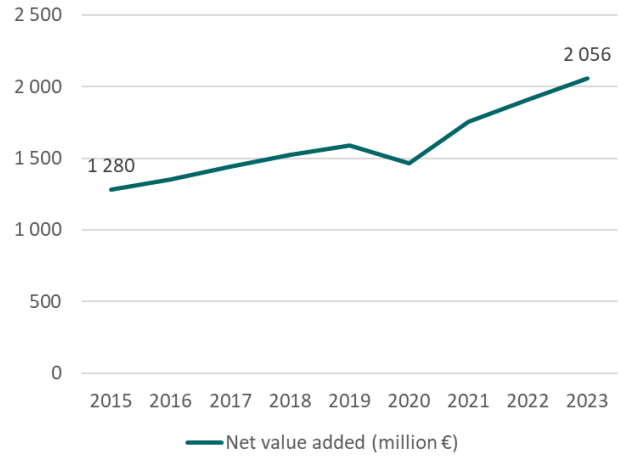
Job losses in the automotive sector have long been a reality in Europe as a result of automation and the relocation of production to countries with lower labour costs.

Although not being an important car production or assembly center, Wallonia played a significant role as a supplier to the automotive industry. The "Auto-Mobilité" cluster, established by the Walloon Minister of Economy and eight suppliers, provided a Walloon counterpart to Flanders' Drive. In 2000, the cluster consisted of approximately one hundred companies and represented about 16 000 employees (Nauwelaers & Pellegrin, 2004).

The economic value of the automobile industry today

Figure 2 shows the total net value added generated by all automotive economic activities in Wallonia from 2015 to 2023. Net value added has grown steadily over the past decade, with a temporary downturn during the Covid-19 crisis. In 2023, the Walloon automobile economy generated more than € 2 billion euro in added value, representing almost 2 percent of the value added of the total economy.

Figure 2: Net value added of the Walloon automobile economy (in million €)



Source: TML

Figure 3 shows the evolution of the employment generated by the Walloon automotive economy from 2015 to 2023. Employment grew steadily up to 2021. Since then, employment figures stagnated, and declined in 2023 compared to 2022. By the end of 2023, the Walloon automotive economy employed 23 192 full time equivalents, representing 2.2 percent of the total employment generated by the Walloon economy.

Figure 3: Employment generated by the Walloon automotive economy 2015-2023 (in FTE)

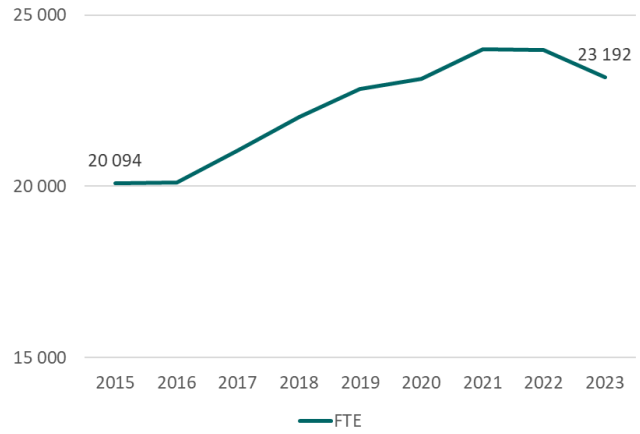
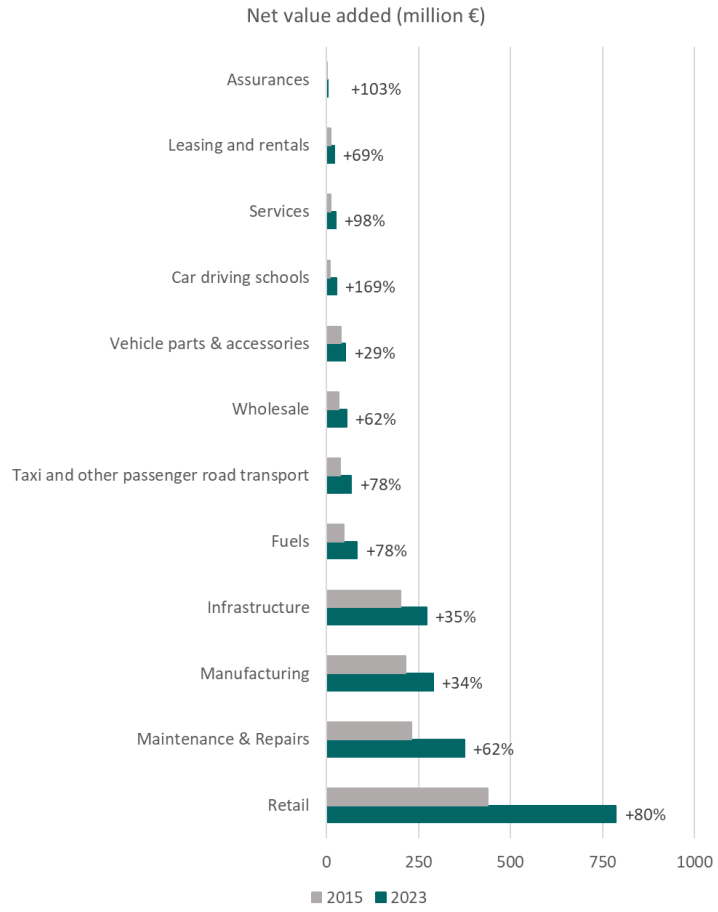


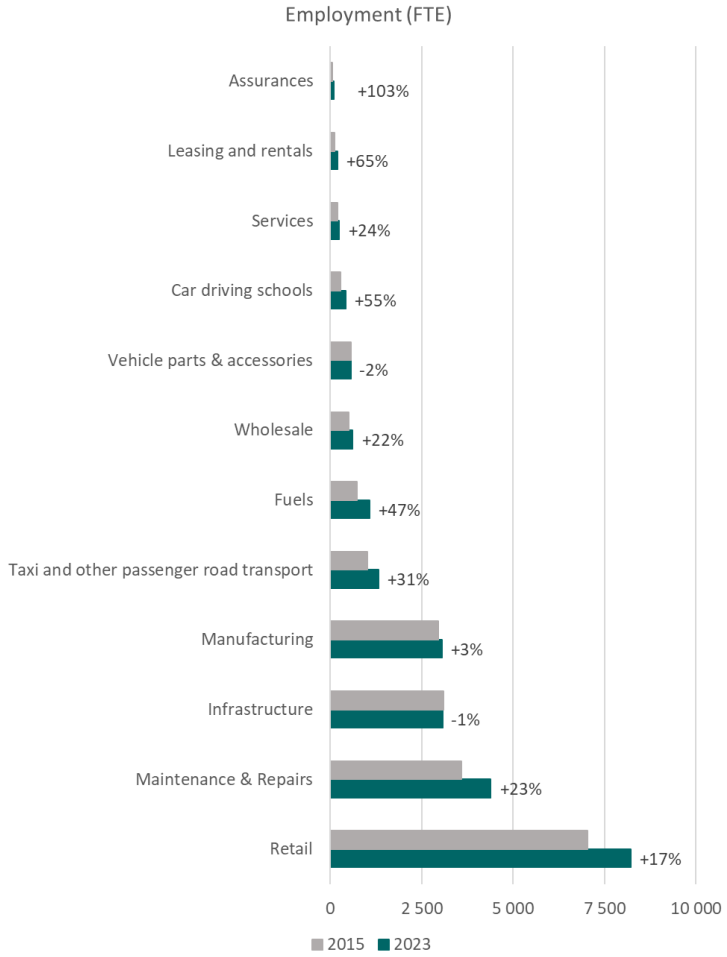
Figure 4 and Figure 5 show the net value added and employment generated by each automotive activity, comparing 2015 and 2023 values. The largest economic activity with respect to the automotive sector in Wallonia are vehicle sales (retail), which generated an added value of € 786 million and employed 8 210 FTE's in 2023. The retail activity has grown by 80 percent since 2015, indicating increased vehicles sales. Logically, related activities such as automotive wholesale, automobile maintenance and repairs and the sale of motor fuels followed the same trend.

Figure 4: Net Value Added of the Walloon automotive economy, 2015 versus 2023 (in million €)



Source: TML

Figure 5: Employment in the Walloon automotive economy, 2015 versus 2023 (in FTE)



Source: TML

Table 2 shows a ranking of the ten largest companies in the Walloon automobile economy, ranked by net value added in 2023. The top three companies are all active in manufacturing. Aisin Europe, based in Mons, produces a wide range of automotive products and technical solutions from hardware (automatic transmission, cooling module, body parts) to software (navigation & geolocation technology). Second in line, TI Group Automotive is based in Liège and produces metal components for the automotive industry. The third largest automobile company in Wallonia, Valeo Vision, produces hi-tech electronic equipment for the automotive industry. The company is market leader in high and low-voltage electric powertrain solutions and thus ideally positioned to benefit from the electric transition of the automobile industry.

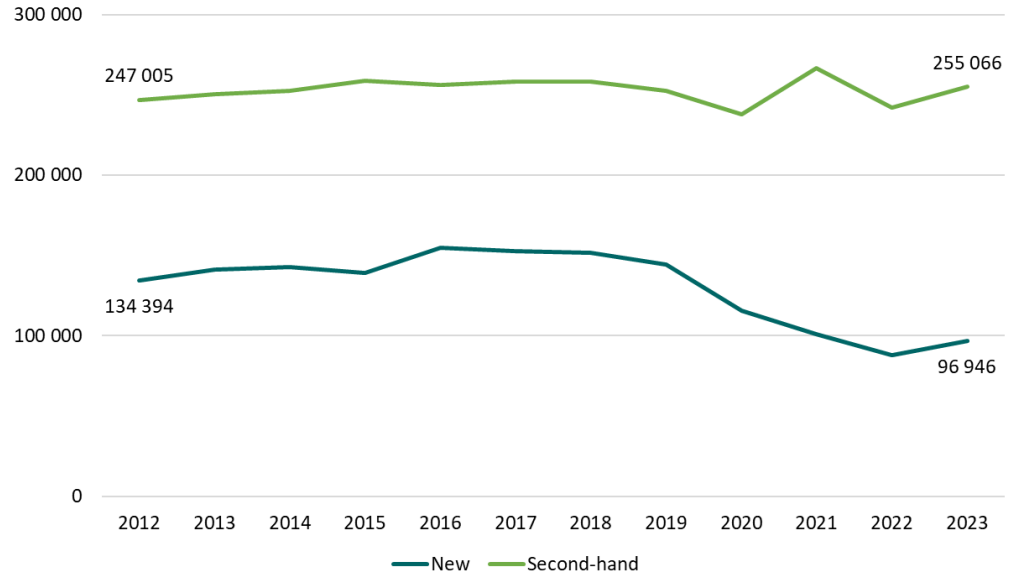
Table 2: Ranking of the 10 largest companies in the Walloon automobile economy by Net Value Added (2023)

Name	Location	NVA million €	Turnover million €	FTE 2023	Activity
Aisin Europe	Braine-L'Alleud	81	2 331	675	Manufacturing
TI Group Automotive Systems	Wandre	45	149	403	Manufacturing
Valeo Vision Belgium	Ath	43	115	650	Manufacturing
TRBA	Péruwelz	37	121	365	Road infrastructure
Doyen Auto	Seneffe	23	149	212	Maintenance & Repairs
Louyet Automotive South	Charleroi	21	207	179	Automobile sales
Auto Satellites	Lambusart	19	146	143	Automobile sales
Trico Belgium	Aubange	18	68	183	Manufacturing
Saga-Piret	Nivelles	17	129	187	Automobile sales
Car Avenue Star	Alleur	16	113	164	Automobile sales

Notes: NVA = Net Value Added; FTE = full time equivalent
Source: TML, based on data from the National Bank of Belgium

Figure 6 illustrates the trend in passenger car registrations in Wallonia from 2012 to 2023, revealing two key observations. First, overall demand for passenger cars has declined slightly over the period. In 2012, 381 399 passenger cars were registered, compared to 352 012 in 2023 - a decrease of 8%. Second, the second-hand car market has grown in significance. Registrations of new passenger cars have dropped considerably, declining by 28%, while registrations of used cars have increased by 3%. As a result, the share of second-hand cars in total registrations has risen from 65% in 2012 to 72% in 2023, highlighting a notable shift in consumer preferences.

Figure 6: Registrations of new and second-hand passenger cars in Wallonia 2012 - 2023

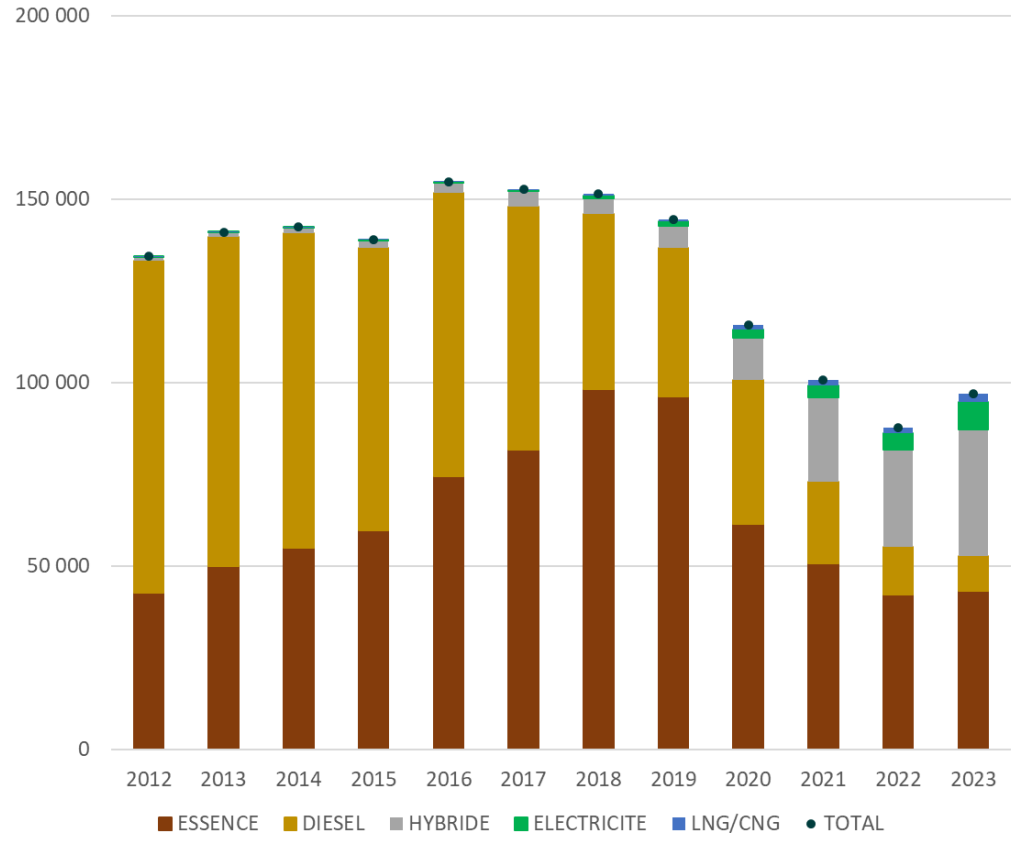


Source: SPF Mobilité et Transports

Figure 7 and Figure 8 present the number of registrations for new and second-hand cars by fuel type, highlighting significant shifts in fuel preferences for new vehicles. In 2012, new car registrations were overwhelmingly dominated by internal combustion engine vehicles. Diesel cars accounted for 67% of total registrations, while gasoline vehicles made up 32%. By 2023, this composition has changed dramatically. Gasoline vehicles now represent 45% of new car sales, while

diesel cars have declined sharply to just 10%. In contrast, plug-in hybrids have gained substantial traction, capturing a 36% market share, and battery electric vehicles (BEVs) now account for 8% of total new car registrations. These trends underscore a rapid transition towards alternative fuel vehicles in the new car market.

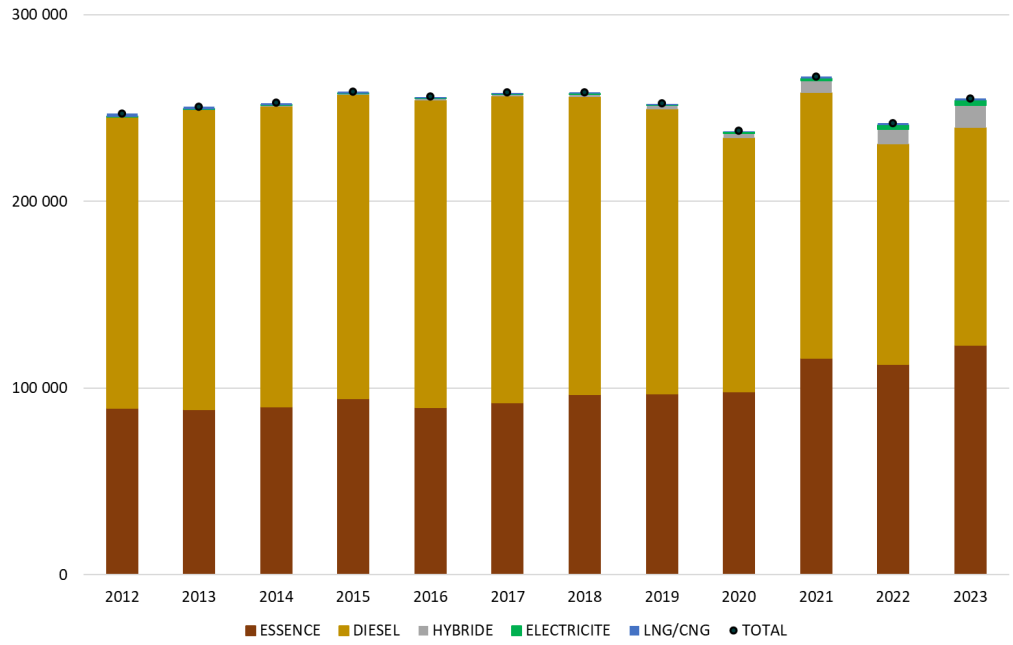
Figure 7: Registrations of new passenger cars in Wallonia by fuel type



Source: SPF Mobilité et Transports

The fuel mix of second-hand passenger car registrations remains less sustainable, as shown in Figure 8. The share of gasoline vehicles has increased from 36% in 2012 to 48% in 2023, while the share of diesel cars has declined from 63% to 46%. In contrast, second-hand hybrid and battery electric vehicles remain uncommon, accounting for just 5% and 1% of registrations, respectively. This highlights the slower adoption of more sustainable fuel types in the second-hand car market.

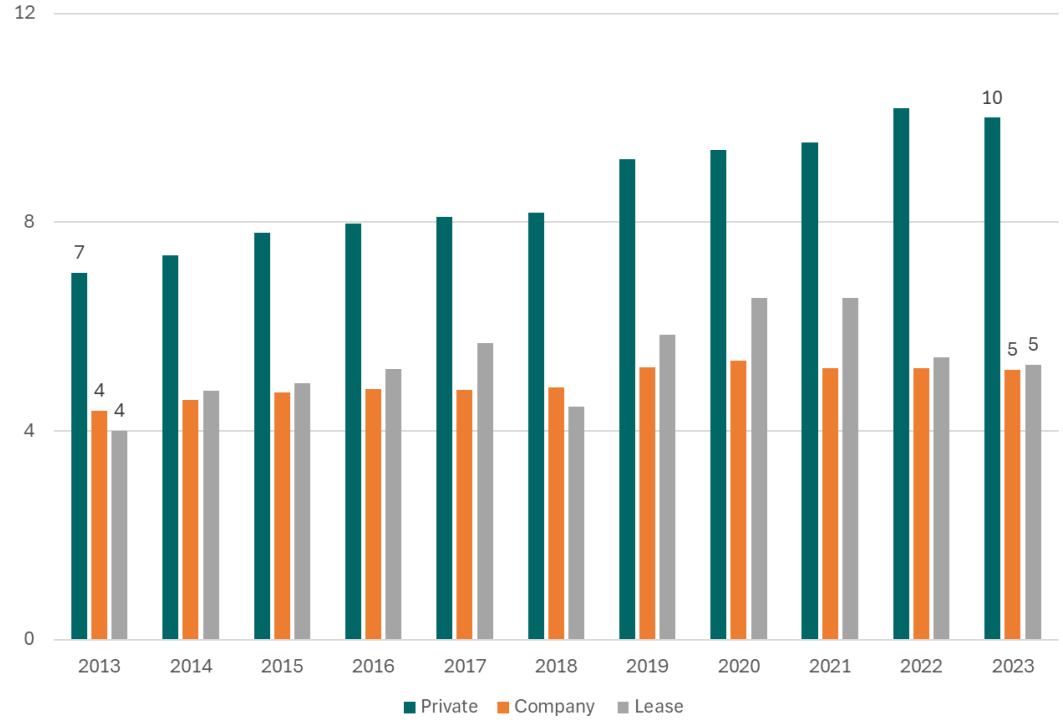
Figure 8: Registrations of second-hand passenger cars in Wallonia by fuel type



Source: SPF Mobilité et Transports

Figure 9 shows the evolution of the average age of the second-hand passenger car fleet in Wallonia from 2013 to 2023. The figure clearly depicts an aging trend in the vehicle fleet, especially for privately-owned cars. In 2013, the average age of a privately-owned passenger car in Wallonia was 7 years. By 2023, the average age has increased to 10 years. The average age of corporate-owned passenger cars shows a similar trend. The average age of company cars and lease cars has increased from 4 to 5 years.

Figure 9: Average age of second-hand passenger cars in Wallonia by owner type



Source: https://ecoscore.be/pivot?locale=nl

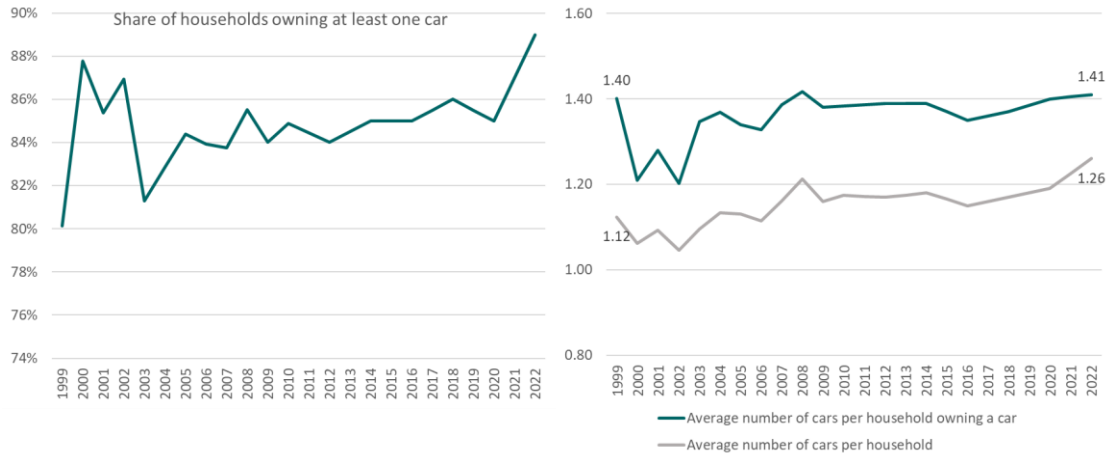
The increase in the average age of second-hand passenger cars in Wallonia reflects a broader trend of people holding onto vehicles for longer and delaying the purchase of newer cars. This behaviour can be attributed to several factors, including economic pressures, the rising cost of new vehicles, and changing priorities such as uncertainty about future fuel types (e.g., electric versus traditional combustion engines). Additionally, improved vehicle reliability allows older cars to remain functional for longer. While this may save consumers money in the short term, it can have negative implications for CO_2 emissions. Older cars typically have less efficient engines and lack modern emission-reduction technologies, leading to higher per-kilometer emissions compared to newer models. On the other hand, older cars are typically less heavy, less powerful and drive on average fewer kilometers than new cars, which counterbalances the effect of less efficient engines.

Indirect indicators of economic value

The indirect indicators of the economic value of passenger cars focus on consumer ownership trends. The left panel of Figure 10 reveals that in 2022, 89% of households in Wallonia owned at least one passenger car. Among these households, the average number of cars per household has remained relatively stable, increasing slightly from 1.40 in 1999 to 1.41 in 2022.

When considering all households in Wallonia, the average number of cars per household has risen more noticeably, from 1.12 in 1999 to 1.26 in 2022. This reflects a gradual increase in car ownership across the population over the past two decades.

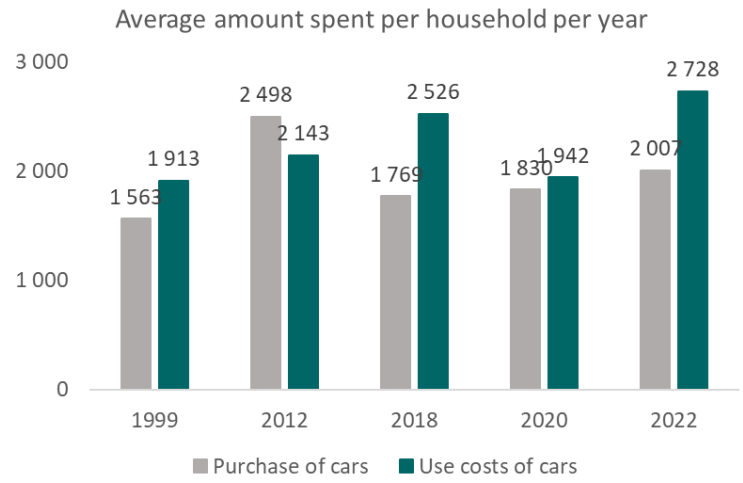
Figure 10: Passenger car ownership in Wallonia 1999 - 2022



Notes: The left figure shows the percentage of households in Wallonia owning at least one passenger car. The figure on the right shows the average number of cars per households among the households owning a car (green line) and the average number of cars per households for all households in Wallonia (grey line)
Source: Household Budget Survey – Statbel, https://statbel.fgov.be/fr/themes/menages/budget-des-menages

Figure 11 shows that the average amount spent on the purchase of a new or second-hand passenger car has increased from € 1 563 in 1999 to € 2 007 in 2022 (+28%). The average annual amount spent on the use of passenger cars has increased from € 1 913 to € 2 728 (+43%). The higher expenditure increase for the use of cars can be explained by increased fuel costs. In relative terms, spending on passenger cars in Wallonia has hardly changed. In 1999, 13 percent of the total consumption budget was spent on the passenger car. In 2022, the passenger car had a share of 12 percent in total consumption expenditure.Figure 12

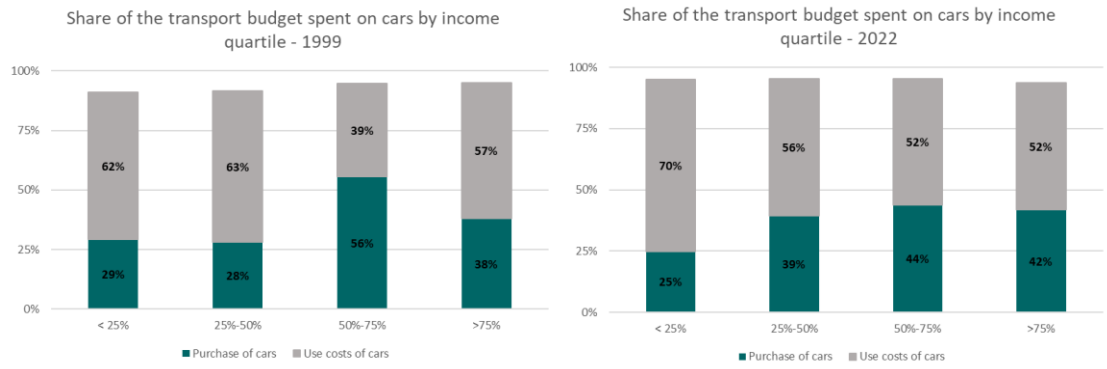
Figure 11: Average amount spent pre year on the purchase and use of passenger cars in Wallonia



Source: Household Budget Survey – Statbel, https://statbel.fgov.be/fr/themes/menages/budget-des-menages

Figure 12 shows the share of the passenger car in the total transport budget by income quartile. It is clear that the majority of the transport budget is spent on cars. In 1999, households in the lowest income quartile spent 91 percent of the total transport budget on their passenger car. The majority of the budget (70%) was allocated to car use. By 2022, the passenger car represented 95 percent of the total transport budget for households in the lowest income quartile. Households in the higher income quartiles allocate a larger proportion of their transport budget to the purchase of cars.

Figure 12: Share of the transport budget spent on the purchase and use of passenger cars by income quartile



Source: Household Budget Survey – Statbel, https://statbel.fgov.be/fr/themes/menages/budget-des-menages

2. Emerging factors of change

Both direct and indirect indicators of the economic value of passenger cars in Wallonia suggest market saturation. Employment in the sector has stagnated since 2021 and even declined in 2023. While Wallonia lacks automobile assembly plants, it is home to numerous automotive suppliers and subcontractors, many of which are struggling due to factory closures among major European car manufacturers.

Data on vehicle registrations and consumer spending also point to stagnating demand for passenger cars. Registrations of new cars have fallen sharply, with only partial replacement by second-hand vehicle registrations. This shift has contributed to an aging vehicle fleet. According to Febiac, the average age of the fleet has increased from 6 years and 4 months in 1993 to 9 years and 10 months in 2023.

Meanwhile, the electrification of the passenger car fleet presents both significant challenges and opportunities. The share of battery electric vehicles in new car sales is steadily growing, and eventually, the aging fleet will need to be renewed with zero-emission vehicles. This transition could benefit companies specializing in electronic technologies and software solutions, such as Valeo Vision, which are well-positioned to capitalize on this shift.

1.1 Dynamics of change

The production of traditional internal combustion engine vehicles (ICEVs) has historically been manufacturing-intensive, with significant barriers to entry for new competitors. However, the relative simplicity of producing electric motors has lowered many of these barriers. In the past, the value of a car was largely defined by the sophistication of its mechanical engineering, such as handling and horsepower. In contrast, the cars of the future will be distinguished by the user experience they offer, driven more by software than by hardware (The Economist, 2023). As a result, the automotive industry is shifting from a manufacturing-centric model to a technology-driven service industry. The development of electric, software-defined vehicles—essentially supercomputers on wheels—illustrates this transformation, where digital innovation and connectivity increasingly define the competitive edge.

Besides this strong trend in the new car market, the used passenger car market is growing in importance as consumers look for cost-effective alternatives to new cars. Additionally, the growing trend of eco-consciousness has also influenced purchase decisions, as many consumers opt for second-hand vehicles with lower emissions.

1. Strong trends in the new car market : Electrification, Automation, Connected and Polarized

The automobile economy is facing an unprecedented transition with far reaching effects on the industry and its users. This transition is driven by the following four fundamental trends (Roland Berger, 2024): electrification, autonomous vehicles, connected vehicles and polarization.

Electrification

The future of the passenger car is undeniably electric, with the share of electric vehicles in the total new car sales increasing rapidly. By 2035, European regulations mandate that all new passenger cars and vans must be zero-emission.[5] While alternative zero-emission technologies like hydrogen are expected to remain niche in the passenger car segment due to their higher costs, battery electric vehicles are poised to become the dominant zero-emission technology.

This shift toward electrification is set to transform the automotive value chain fundamentally. According to a recent study by KPMG, electric drivetrains require approximately 25% fewer parts and take about 65% less assembly time than traditional internal combustion engines. As a result,

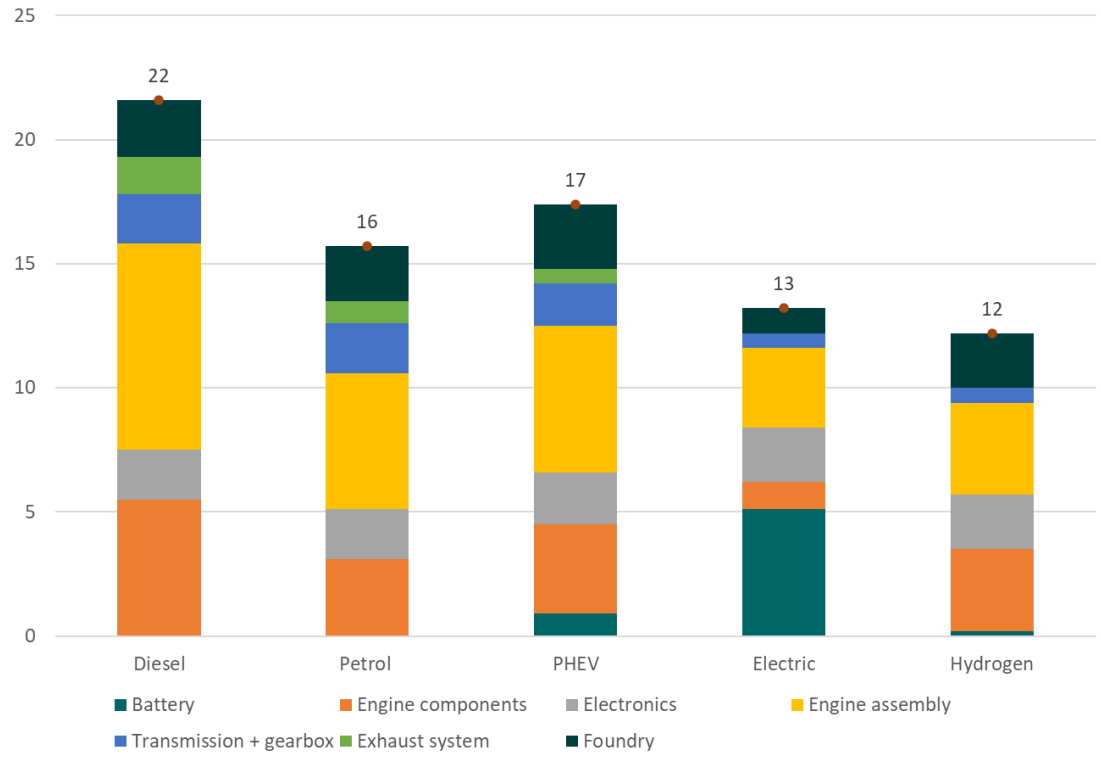
[5] Regulation (EU) 2023/851, amending Regulation (EU) 2019/631.

automotive Original Equipment Manufacturers (OEMs) will demand innovation from existing suppliers while seeking new ones. Additionally, the reduced labor intensity in EV production will lower manpower requirements on assembly lines, leading to job losses among traditional automotive suppliers (KPMG, 2023).

Figure 13 highlights the significantly lower employment needs for producing zero-emission vehicles compared to cars with internal combustion engines. Simultaneously, the increasing digitalization and automation of products and production processes are driving structural changes in the value chain and employment landscape. While many traditional jobs will disappear, entirely new roles requiring different skills and expertise are being created.

As shown in Figure 13, a substantial portion of employment in EV production is linked to battery technology. CLEPA (2021) reports that 70% of the value-added in EV powertrain technologies stems from battery production. Consequently, the overall employment impact of automotive electrification will heavily depend on the extent of local battery production capabilities.

Figure 13: FTE needs per 1 000 vehicles by propulsion technology



Source: Etui & European Climate Foundation[6]

For decades, Europe dominated the production of ICEVs. However, in the shift to electric vehicles, European manufacturers are lagging behind. China has emerged as the global leader in EV production, driven by substantial government subsidies and competitive advantages such as access to natural resources, a large domestic market, low labor costs, and affordable technologies (van Wieringen, 2024). By 2022, the EU had become China's largest EV export market, accounting for 40% of all Chinese EV exports (Féas et al., 2024).

The rising prominence of Chinese vehicles in global car manufacturing is expected to have a limited direct impact on the Walloon economy, as Wallonia currently lacks major car assembly or

[6] https://www.etui.org/sites/default/files/2022-08/The%20future%20of%20the%20European%20automobile%20industry%20-%20Narrative.pdf

manufacturing plants. However, indirect economic effects could arise through potential job losses for Walloon workers employed in manufacturing facilities in Brussels, Flanders, or neighboring countries. While the direct economic impact on Wallonia may be mild, the growing popularity of Chinese brands such as BYD, Nio, and Aiways is set to significantly alter the brand composition of the vehicle fleet. According to S&P Global Mobility, the market share of Chinese brands is projected to grow from 2,3% in 2023 to 10% by 2034, signaling a major shift in consumer preferences and market dynamics.[7]Automation

Automated solutions and artificial intelligence (AI) technologies are increasingly integrated into new vehicles. While some studies suggest that self-driving cars remain a distant prospect (EIU, 2024), others predict that autonomous vehicles are imminent (Kuhnert et al., 2018). According to the latter, autonomous driving could account for as much as 40% of all traffic in Europe by 2030.

The latest automotive sector outlook by Roland Berger (2024) notes progress in assisted driving technologies but highlights delays in deploying highly automated systems. The report anticipates a gradual evolution toward fully autonomous driving, with significant milestones expected between 2025 and 2040.

Currently, five challenges for the adoption of autonomous driving remain:

- Technological progress: addressing complex and uncommon traffic scenarios remains a significant hurdle for AI systems.
- Customer acceptance: consumers are less forgiving of mistakes made by autonomous vehicles compared to human drivers, making trust-building a challenge for manufacturers.
- Capital supply: developing and testing autonomous vehicles requires substantial financial investment.
- Economic viability: autonomous on-demand services face profitability challenges due to the high utilization rates and scale necessary to make them economically sustainable.
- Regulatory complexity: variations in regional legislation add complexity and limit the scalability of autonomous driving technologies.

Despite these challenges, the automotive industry is steadily moving toward a more automated future, albeit with incremental progress over the coming decades.

The trend toward automation and AI in the automotive market presents both opportunities and challenges for the Walloon economy. On the job market, automation could lead to a decline in traditional manufacturing roles, as vehicles increasingly rely on advanced software and automated systems rather than mechanical components. However, this shift also creates opportunities for growth in high-tech sectors, such as software development, AI research, and sensor manufacturing, offering potential for job creation in these fields. For Walloon companies, the integration of autonomous technologies presents challenges in staying competitive, requiring significant investment in R&D, upskilling the workforce, and adapting to evolving industry standards. Additionally, small and medium-sized enterprises (SMEs) in Wallonia could face barriers to entry due to the high costs associated with developing and deploying automated solutions. On the other hand, businesses that successfully innovate or partner with global leaders in automation could position themselves as key players in the supply chain, opening up new markets and revenue streams. Overall, while automation brings disruption, it also offers Wallonia an opportunity to pivot toward becoming a hub for advanced automotive technologies.

[7] https://www.spglobal.com/mobility/en/research-analysis/rise-of-chinese-brands-in-europe.html#:~:text=The%20market%20share%20of%20Chinese,sold%20in%20the%20European%20market.

Connected vehicles

Vehicle connectivity is set to increase dramatically, with an estimated 96% of new vehicles expected to be fully connected by 2030.[8] Technology companies will play a pivotal role by providing software for operating systems, while remote updates will become standard. Much like modern smartphones, cars will offer seamless updates and enhanced functionality. On-board systems will also evolve, incorporating advanced screens and augmented reality features.

This surge in connectivity is driven by the rise of software-defined vehicles (SDVs), where software, rather than hardware, governs vehicle functionality. According to Roland Berger (2024), software-enabled features such as safety systems, personalized settings, and enhanced connectivity will become key factors influencing customer purchasing decisions, potentially surpassing traditional hardware-based features like speed or acceleration in importance.

The benefits of the SDV approach extend beyond consumers, offering significant advantages for manufacturers. These include faster time to market, reduced material and development costs, scalability across vehicle segments, and the ability to provide over-the-air updates and upgrades. Such features not only enhance customer experience but also improve vehicle residual value and operational efficiency for automakers.

Polarization

The globalized nature of the automotive industry, characterized by extensive international trade, is giving way to increased polarization. Geopolitical tensions, divergent national and international regulations, evolving customer preferences, and macroeconomic changes are driving this shift.

To remain competitive, European automobile manufacturers must pivot from a globally uniform approach to one that is regionally differentiated, adapting their strategies to the unique demands of each market. This shift will require manufacturers to navigate a more complex and fragmented global landscape while maintaining innovation and efficiency.

2. Trends in the second-hand market: steady growth and e-retrofitting

In contrast to the stagnating levels of new car registrations, the second-hand market for passenger cars is demonstrating increasing registration numbers, year after year. According to Traxio, the number of second-hand passenger car registrations in Belgium grew by 5,6 percent in 2024, compared by the year before. In Wallonia, a similar trend is observed, as demonstrated in Figure 6. The increased popularity of used cars stems from the fact that consumers want to spend less money on their vehicle, especially during the transition period to electric vehicles.

The growth of the second-hand market is also influenced by regulatory changes at European level, such as the Euro 7 emissions standard, setting stricter emission limits for ICEV cars, and the CO_2 emission performance standards for cars that prohibits the sale of new ICEVs as of 2035. Because of these rules, some customers choose to delay buying new vehicles, preferring to wait for models that are fully compliant with the new standards.

A higher proportion of second-hand cars in the vehicle fleet boosts economic activity for retailers and garages, as older vehicles require more maintenance and repairs than new ones. Figure 5 shows that retailers and repair shops account for the largest passenger car-related employment in Wallonia. As the share of second-hand vehicles grows, these sectors will benefit further.

[8] https://www.febiac.be/nl/article/welke-veranderingen-kunnen-we-de-komende-20-jaar-op-de-automarkt-verwachten#:~:text=Tegen%202030%20zal%20naar%20schatting,ook%20zijn%20voor%20de%20auto's.

E-retrofitting

An emerging trend in the used car market is e-retrofitting, which involves replacing the internal combustion engine and fuel tank of existing vehicles with an electric motor and battery pack. Fully replacing the current vehicle fleet BEVs poses significant challenges. BEVs are relatively expensive, often exceeding the budget of many households, and forecasts suggest that the supply of affordable used BEVs priced below €9,000 will remain insufficient even by 2050 (T&E, 2023). Electrify (2023) estimates that by 2035, Europe will face a shortage of around 14 million BEVs, with the average four-year-old BEV costing approximately €20,000. Additionally, replacing all existing vehicles with new ones presents a massive manufacturing challenge and requires scrapping vast numbers of old vehicles, which contributes to CO_2 emissions.

E-retrofitting offers a compelling alternative to address these issues, providing a cost-effective way to transition existing ICEVs to electric while significantly reducing CO_2 emissions. E-retrofit solutions generate 70% fewer CO_2 emissions than continuing to use an ICEV and 40% less than manufacturing a new BEV. However, current e-retrofitting costs are high, with retail prices averaging €16,000 (including VAT). Conditional on factors such as falling battery prices, economies of scale, and supportive environmental policies, costs could drop to €8,000 between 2035 and 2040 (Electrify, 2023).

The widespread adoption of e-retrofitting could have a significant impact on the Walloon economy, particularly in terms of job creation. As a region a high number of auto repair workspaces, Wallonia is well-positioned to benefit from the growth of this emerging market. E-retrofitting offers opportunities for local companies to engage in kit manufacturing, installation services, and maintenance, creating a variety of skilled and semi-skilled jobs. In optimistic scenarios, e-retrofitting could generate thousands of jobs annually across Europe, with roles in kit production representing 0.25% of automotive manufacturing jobs and installation services comprising up to 35% of maintenance and repair jobs (Electrify, 2023). For Wallonia, this could mean revitalizing its automotive sector, fostering innovation, and developing expertise in retrofitting technologies. However, achieving this potential will require investment in training programs, policy support to reduce costs, and incentives for adoption, ensuring that Wallonia remains competitive in this rapidly evolving market.

3. Uncertainties and inflection factors

Europe lags behind in terms of innovation

Europe's car industry failed to keep pace with fast-evolving zero-emission technologies. In the electric vehicle segment, Europe is lagging other global players in battery cell design, power electronics, extending battery range, and innovative rapid charging technologies (BCG, 2023).

While European manufacturers were focused on the production of hybrid vehicles, China, that had no existing car industry, went all-in on battery electric vehicles, which led to a Chinese competitive advantage. This competitive advantage is further enhanced by China's large internal market, enabling significant economies of scale. If European manufacturers and policy makers miss the train for the mobility transition, this will further undermine European competitiveness, creating the worst of all employment scenarios in the long term.

Overdependence on China

Europe's EV industry is highly dependent on foreign supply chains and significant parts of the production of EVs are located outside de EU. China dominates the global supply of crucial components and raw materials required for electric vehicles such as lithium, cobalt, and rare earth

elements. European automakers rely heavily on Chinese suppliers for batteries, an essential component in EV production. Any disruption in this supply chain - whether due to geopolitical tensions, trade restrictions, or logistical challenges - can severely affect production timelines and costs.

Skills shortage

The transformation of the automobile industry has created a strong demand for expertise in cutting-edge technologies. Modern passenger cars are essentially sophisticated computers on wheels, requiring technicians with advanced skills to diagnose, repair, and maintain them. However, individuals with these skills are also highly sought after in competing industries such as computing and gaming, which often offer higher salaries. As a result, car manufacturers face significant challenges in attracting skilled workers and lack the time and resources to train them adequately.

Costs

European automotive companies, particularly German OEMs, have long been renowned for their exceptional industrial operations. Their success is built on a highly skilled workforce, extensive automation, and economies of scale, all supported by historically low energy costs in Europe. This combination has enabled them to produce vehicles at globally competitive prices within local factories.

However, these advantages are increasingly at risk. Factories in the United States and China are rapidly advancing in robotics and automation, narrowing the technological gap. Additionally, many of these competitors benefit from more flexible cost structures, as lower labor costs and minimal unionization reduce their financial burden.

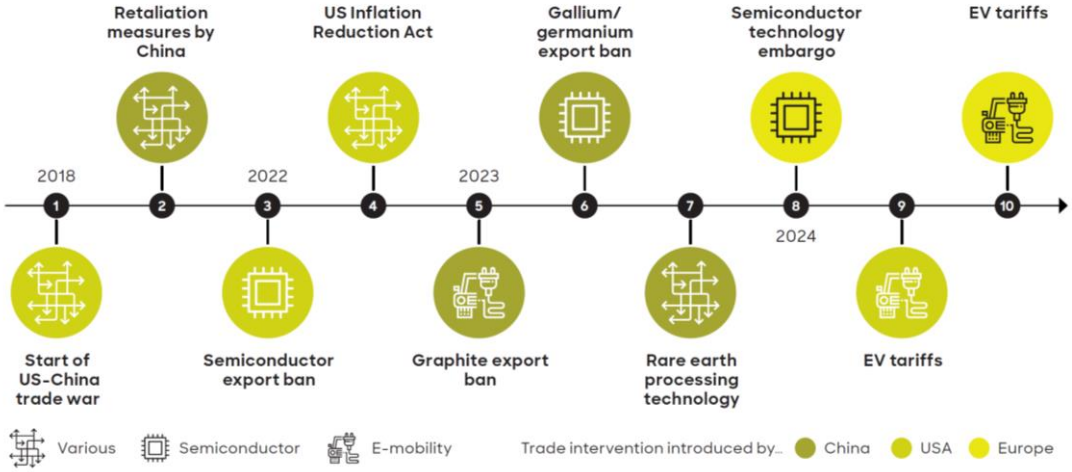
Meanwhile, energy price volatility, driven by geopolitical conflicts and resource scarcity, is likely to become a long-term challenge. This volatility disproportionately impacts European automakers, placing them at a disadvantage compared to competitors in regions with more stable energy markets.

Geopolitical tensions and trade wars

The era of globalized supply chains and free trade agreements once allowed European OEMs to benefit from low-cost materials and just-in-time delivery from developing countries, helping maintain competitive prices and efficiency. However, the shift toward deglobalization, driven by political efforts to de-couple and de-risk supply chains, is changing this landscape. Developed countries now encourage local sourcing, as seen with policies like the U.S. Inflation Reduction Act, which incentivizes domestic manufacturing. These changes are increasing costs and limiting overseas value creation for European automakers.

Figure 14 provides an overview of the main trade interventions affecting the automotive sector. In October 2023, the European Commission launched the largest EU trade case against China. In June 2024, the Commission implemented various trade tariffs on Chinese-made EVs after concluding that these vehicles benefited from unfair subsidies. Experts are worried that the tariffs are ineffective in safeguarding the European automobile industry, stressing the need for investment and other measures. China may respond with counter-sanctions, harming the European economy.

Figure 14: Major trade interventions affecting automotive players



Source: Roland Berger (2024)

3. Interaction with other system variables (past and future)

As the main part of the auto mobility economy in Wallonia concerns retail and maintenance, the main influencing factor is the state of the Walloon economy (fiche 7) which determines the purchase power of the population. To a lesser extent, the global extent (fiche 1) will also play a role for the (minor)part of the auto mobility Walloon industry that is export oriented.

D. Hypotheses for the future

The automobile industry is undergoing a significant paradigm shift, bringing considerable uncertainty to employment prospects. While forecasts on the net employment effects vary widely across studies, there is unanimous agreement that every job in the sector will face some level of disruption.

One consistent finding from research on the employment impact of the automotive sector's transition to electrification and automation is the likelihood of job losses in traditional manufacturing areas, such as car production and assembly. However, this may be partially offset by growth in other areas, including the rising demand for expertise in electronics, autonomous driving systems, and the deployment and maintenance of charging infrastructure.

Another common insight is that millions of jobs in the sector will undergo profound transformation. Changes will occur in required skill sets, job locations, contract types, and working conditions, fundamentally altering the nature of employment in the automotive industry.

Depending on the evolution of the trends and uncertainties described in the previous section, different scenarios may unfold. We propose four scenarios based on groups of assumptions. The set of assumptions can be broken down and recomposed to reconstruct new sets.

1. Trend hypotheses: loss in market share and net job losses

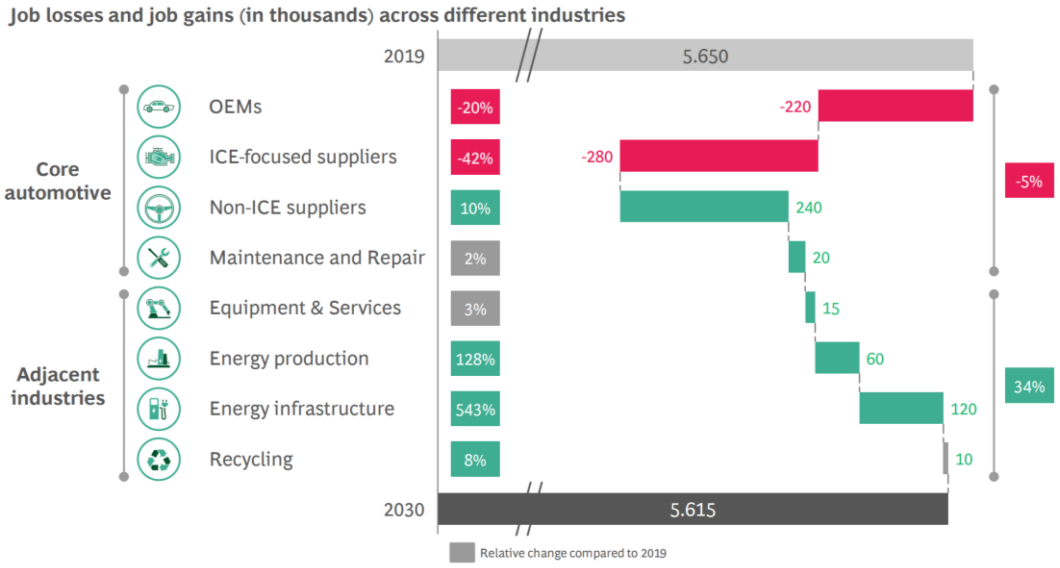
In this scenario we assume that the current strong trends continue in the future. European brands are still valued around the world, but US and Chinese brands gain in popularity. European

manufacturers lose global market share. The costs of e-retrofit remain substantial and this technology never plays a significant role in addressing the demand for affordable cars.

A continuation of the current trends and the implementation of stated policies would mean the following for the automobile industry:

- The shift towards full electrification leads to job losses in the domain of ICEV powertrain production. Overall 501 000 ICEV-related jobs are at stake, without taking into account employment opportunities created by electrification (CLEPA, 2021).
- The job losses in ICEV production will only partially be offset by productivity increases and new jobs related to EV production. BCG (2021) predicts a net loss of 50 000 jobs by 2030. CLEPA expects a net loss of up to 275 000 employees by 2040.
- The type of jobs in the automotive sector will change drastically. The core automotive industries, especially OEMs and ICEV-focused suppliers will suffer significant job losses, while adjacent industries, especially energy related industries will see significant job gains.

Figure 15: Expected change in the distribution of jobs in the automotive sector in Europe by 2030



Source: BCG (2021)

Wallonia does not host any car manufacturer. However, the three largest Walloon companies active in the automobile sector are manufacturing companies. Although some manufacturing firms are focused on electronic and software solutions specifically designed for electric vehicles, we can expect net job losses in the manufacturing segment.

Given the saturated demand for passenger cars and the largest share of added value and employment being generated from automobile sales, job losses may arise in this segment as well.

At the same time, the saturation in demand for passenger cars coincides with an increasing demand for alternative mobility solutions. Therefore, new jobs may be created in this segment, at least partially offsetting the job losses in the automobile industry.

2. *Incremental hypotheses: maintaining pace with China and the US*

In this scenario, the European manufacturers are able to narrow (but not fully close) the technology gap with China and the US. This is achieved through focused investments in R&D and the acquisition, training and retention of local IT talent (BCG, 2023).

European manufacturers develop more of their own automated, digital, connectivity and battery range and charging technologies. When in-house development is not possible, European companies form joint ventures or acquire Chinese and US tech firms.

European companies expand local battery production, supported by EU greenlighting lithium mining and refining project. In addition, European OEMs cut costs through restructuring labour and investing in automation, navigating headwinds from labour unions.

This scenario would only lead to a smaller loss of global market share for the European automotive sector compared to the "trends hypotheses" scenario and net job losses will also be smaller.

With respect to the retrofit of used cars, a favourable regulatory framework including subsidies for e-retrofit are implemented. The share of e-retrofit represents about 9% of the used car market in volume by 2040. E-retrofitted cars constitute a small percentage of the fleet until 2040 and then progressively replace some old small and mid-size ICEVs. The number of retrofitted cars on the roads reaches 8% of the car fleet in 2050. E-retrofit generates between 60,000 and 70,000 jobs at its peak in Europe. Kit manufacturing represents about 0.25% of automotive manufacturing jobs, and installation represents 5% of jobs in maintenance and repairs.

3. Hypotheses with major transformation: cutting-edge Europe

In this scenario, the industry has made significant investments in vehicle and plant technology and consumer engagement. EU institutions and national authorities have managed to develop a multifaced strategic policy approach, to better stimulate the developments of European EV production capabilities. The European market remains open to China both through imports and foreign direct investment (van Wieringen, 2024). European environmental policies remain targeted at net zero emissions by 2050.

Three critical elements precede this scenario (BCG, 2023):

- Increased efficiency of local production plants through significant automation and robotic innovation; and
- Accelerated adoption of renewable power sources in Europe, providing OEMs with inexpensive energy.
- Expiration dates on fossil cars are introduced gradually from 2030 to 2040, associated with bans on resale and export. Owners are obliged to scrap or retrofit expired cars. In parallel, a massive government-sponsored conversion program is introduced, including social financing solutions and subsidies.

European manufacturers are able to develop leading technologies and acquire a leading role in the global EV market, creating industrial manufacturing jobs in the EU. The automotive industry has attracted technology talent through incentives and the establishment of European IT technology hubs. Supply chain dependencies are actively reduced, in part by subsidies to European semiconductor fabrication plants.

European carmakers exceed their CO_2 emission targets from new cars by bringing more affordable models to the market. They are able to produce and sell EVs at significantly lower costs than internal combustion engine cars. By 2030, EV sales in Europe are between 60 and 80 percent of total vehicle sales.

In this scenario, European manufacturers and suppliers will experience a sizeable gain in worldwide market share. The scenario will lead to significant GDP growth rates and an up to 20 percent increase in employment at European level (BCG, 2023).

In the second-hand market, e-retrofit generates 900,000 European jobs at its peak, which represents about 7% of automotive manufacturing jobs and 35% of jobs in maintenance and repairs (Electrify, 2023).

For Wallonia, this scenario brings many benefits. There will be substantial value-added generated by manufacturing firms supplying to the EV-segment. These market players will be hi-tech, focusing on the development of electronics and software. This market segment will attract new entrants, including technology companies not traditionally associated with the automotive industry, fueling greater competition. At the same time, existing repair workshops transition to e-retrofit garages.

The largest automotive activity in Wallonia is the sales segment. Innovations include the development of online and offline retail networks and experience centers, offering an ecosystem of products and services to customers. The sales process is based on analytics and AI to drive brand loyalty, customer experience and value.

4. *Hypotheses with deterioration: fast decline under a sanctions spiral scenario*

In this scenario, the uncertainties outlined in Section D take a negative turn, leading to the following developments:

- European automakers avoid producing affordable EVs and continue prioritizing the production and sale of SUVs. This strategy results in further loss of market share to Chinese manufacturers, which specialize in small, affordable vehicles.
- Europe's investment in local battery and semiconductor production remains inadequate, leaving the supply of critical materials vulnerable to shortages and global dependencies.
- A cycle of escalating trade sanctions emerges. In response to European trade restrictions, China imposes counter-sanctions, blocking the export of EV batteries, components, and critical raw materials essential for EV production. These countermeasures bring European EV production to a halt within weeks. Many European EV producers face bankruptcy, as EU relief funds prove insufficient to sustain them.

The consequences of this scenario include a gradual deindustrialization of the European automotive sector, with job losses affecting up to 1.5 million employees, a 32% decline in GDP, and a 51% drop in equity value (BCG, 2023). Wallonia would also experience significant job losses and a notable decline in economic value for companies active in the automobile industry.

The overall impact on the Walloon economy is expected to be minimal. This is primarily because the automobile industry accounts for only 1 to 2 percent of total employment in Wallonia. Additionally, there are no automobile assembly units currently operating in the region. Furthermore, as outlined in Part C, Belgium has experienced numerous automobile plant closures over recent decades, none of which have triggered an economic downturn. Job losses in the sector have been offset by productivity gains and shifts to the production of other industrial goods. While manufacturing experienced net job losses, most displaced workers transitioned successfully to the services sector (De Grauwe, 2024).

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F. Identification of actors relevant for the variable

- The industry (Fiche acteurs 3: L'industrie)

- Trade unions (Fiche acteurs 4: Syndicats)