EcoMobility TRANSITION

The European automotive industry and the relevant EU policy framework

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Introduction

This summary is being prepared for the EUKI funded project on the EcoMobility transition examining main recent trends in the transition towards net-zero mobility in Europe, presenting the main elements of the policy framework at EU level, framing the challenge of 'just transition' for Central-Eastern Europe, providing also some insights into practices of just transition (or the lack of these) from the European automotive core.

Since 2020 a remarkable surge in electric car sales has definitely taken place and, until 2025, it was a broadly shared view that the era of the combustion engine would soon be history. While Europe is certainly on the way towards electromobility, this is not a linear process: there are constantly ups and downs with new concerns emerging. There is also much uncertainty emerging in a complex and turbulent geopolitical context where multilateralism is eroding and where 'zero-sum game' perspectives are getting dominant.

The initial fear about electromobility was that, due to the technology, electric vehicles (EV) would need lower labour inputs than combustion engine driven vehicles and so, even if all other factors (market share, number of cars sold, etc.) remained constant, the demand for labour would fall. While previous publications (Galgóczi 2023; Pardi 2022, 2024) demonstrate that employment loss is indeed a direct consequence of electrification in the powertrain sector, and to a smaller extent in automotive manufacturing at large, the aggregate employment effect for the entire automotive ecosystem is expected to be neutral. Even in this case, however, millions of automotive jobs will be affected by deep restructuring, leading to disruptions across the value chain. This is a big enough challenge, in particular in the real world context of the capital-labour relationship and continuous cost pressures where each and every manufacturing plant is fighting for its own future within the concept of electromobility.

While most of the public attention has been devoted to this important aspect of the transition, the greater concern about the future of the industry is how the EU can position itself in a completely new economic geography defined by the EV era and fierce geopolitical rivalries. The main question is whether and how EU manufacturers can maintain their core competence and market share. The entire EU automotive sector faces an unprecedented challenge and the automotive cluster that emerged in the last 30 years in Central-eastern Europe is no exception.

1. Policy and market context

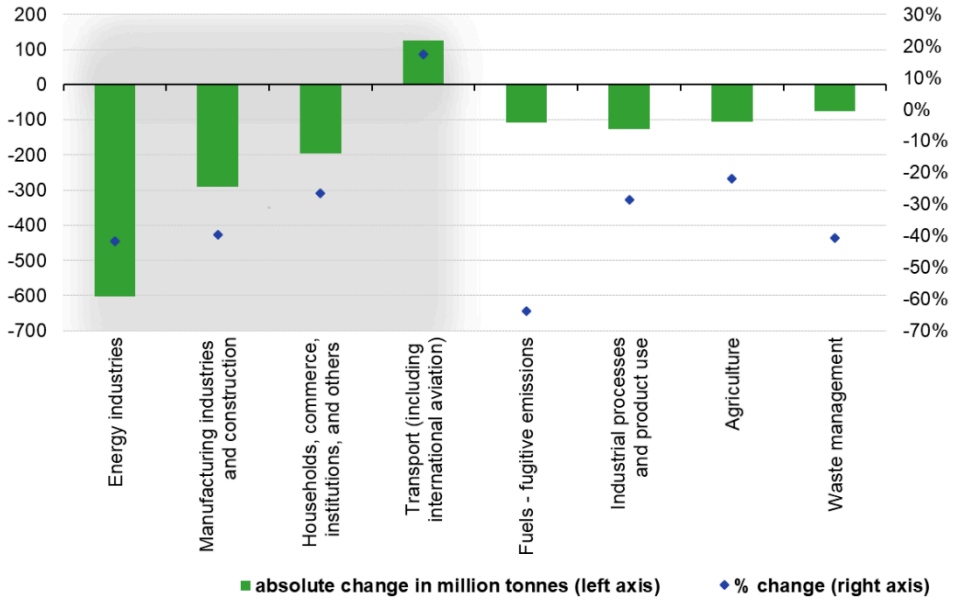
The automotive industry is not only the largest employer in European manufacturing, but that its transition is the most complex. The green and digital transformations facing it are intertwined in global value chains that are fully exposed to the changing geopolitical realities.

The transition towards electromobility is a key aspect of meeting the net zero objective of the European Green Deal, laid down by the 2021 European Climate Law. The proposed 2040 emission targets by the European Commission (2024a), designed to reach a 90% greenhouse gas (GHG) reduction by 2040 (based on 1990 levels), do reflect policy ambition, but there are many questions how this can be achieved; even more so how to do so in a just and sustainable way.

1.1 Policy-driven decarbonisation

The pace of decarbonisation needs to be stepped up. While in the three decades up to 2020 the EU achieved a 30% GHG reduction, for the two decades between 2020 and 2040 it should deliver a further 60% (twice as much in two-thirds of the time). Furthermore, the transport sector actually needs to start decarbonisation as it is the only broad sector in the EU economy that, in the 1990-2021 period, did not manage to achieve any greenhouse gas reduction; on the contrary, emissions grew by 22% (Figure 1). This needs to be reversed and most of the reduction needs to be achieved in the remaining 15 years to 2040. This is a formidable task and, despite an increased pace of electrification in recent years, Europe is simply not on track to meet this objective. Given the record of road transport from the late 1990s – which includes the failure to meet voluntary targets before these became mandatory in 2009, to then 'delivering' the mandatory targets only through manipulation and cheating – the only realistic route left is radical emission reductions through fast-track electrification.

Figure 1 Greenhouse gas emissions by source sector, EU, change from 1990 to 2021 (million tonnes of CO_2 equivalent and % change)



Source: European Environment Agency; Eurostat online code: env_air_gge.

Note: fuel combustion as a source of GHG emissions is indicated by grey shading.

The core EU policy instrument for the decarbonisation of road transport is based on the EU emission standards for cars and vans updated by the 'Fit for 55' legislative package under the European Green Deal. It makes zero carbon emissions mandatory for light passenger vehicles sold in the European Union (EU) from 2035. The European policy framework for the decarbonisation of road transport is far from optimal (Pardi 2024); it actually makes emission reductions more difficult by making concessions to large and expensive vehicles. The EU Green Deal is based on three pillars: (a) promote the most efficient process of decarbonisation; (b) achieve a just transition that does not leave anybody behind; and (c) protect and develop European industries. By coupling preexisting upmarket drift with an

accelerated process of electrification, we argue that the ‘Fit for 55’ update of the emissions regulation is now producing the opposite results in all three pillars.

First, the consequence of the misguided regulatory framework practised since the 2009 introduction of mandatory emission targets that, through their weight adjustment formula, favour bigger and heavier cars, has been that decarbonisation has become much more costly and less efficient. Lax regulation on testing cycles contributed to the fraudulent practices of carmakers, culminating in the Dieselgate scandal when several European manufacturers were caught with having installed cheating devices to manipulate emission tests. After this, the only possible pathway to reach the longer term decarbonisation targets was the acceleration of electrification. However, cars – including battery electric or hybrid ones – have continued to become larger, heavier and more expensive. While this favours the mostly export-oriented premium segment of the automotive industry and is aimed at keeping manufacturers’ profit margins high – supposedly also protecting high quality European automotive jobs – it makes emission cuts harder to achieve and the transition more unjust.

Second, electromobility has become a luxury for the few. This is not only a distributional risk that generates unequal access to individual mobility, it also undermines the achievement of the decarbonisation targets. How can the 2050 net zero transport target be reached if, based on current trends, for a country like Poland it would take more than 40 years to change its car fleet?

Third, while electrification itself has a massive impact on jobs, the lack of competitiveness of European manufacturers in electromobility poses further risks. Electric vehicle manufacturing has redefined the foundations of competitive advantage. Europe’s competitive edge in the combustion engine has no relevance in the electric vehicle era. The legacy of the combustion engine has become a burden compared to newly emerging genuinely electric car manufacturers such as Tesla and the dozens of new Chinese brands; even more so since European manufacturers have put their stakes on the premium segment, abandoning affordable entry-level electric cars. The result is market share loss, putting European jobs at risk.

Recent developments reveal, that this implicit goal of preserving automotive jobs has come under threat in the new economic geography of electromobility. This means EU road transport is now in the middle of a lengthy decarbonisation process, driven by a malfunctioning regulatory framework under which no emission reduction has been achieved in 30 years. Moreover, electromobility has become the privilege of the few.

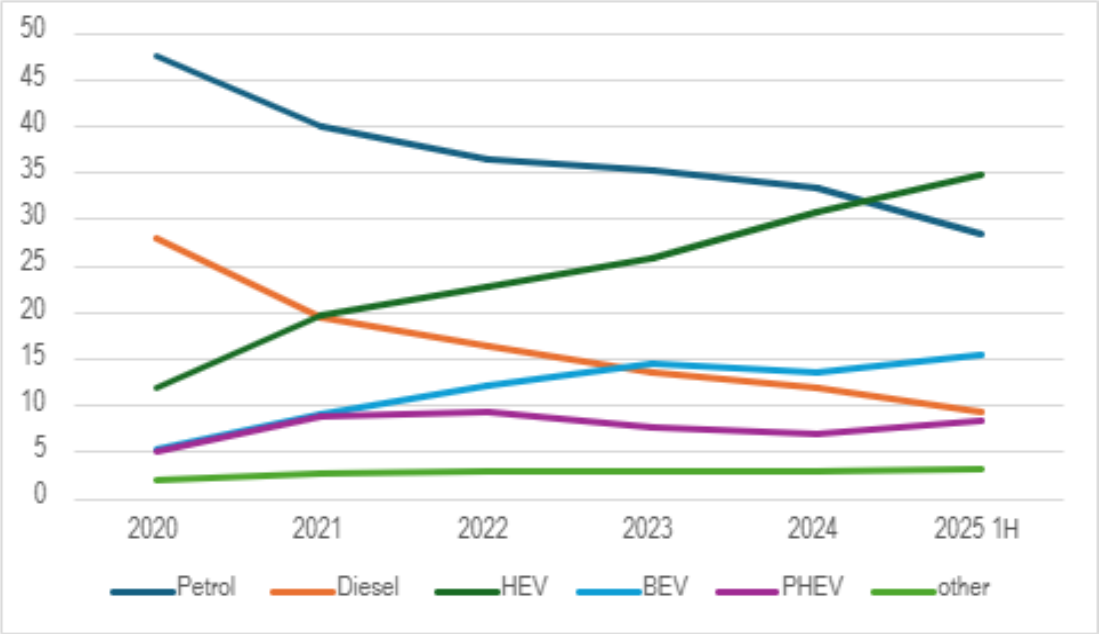
1.2. Recent market developments

Unfortunately, but not surprisingly, the generally shared assumption by Boston Consulting Group (BCG 2021) that, in the transition to electromobility, apart from changing the engine, ‘all other factors remain constant’, has not materialised. The main challenge the industry now faces is loss of market share in a shrinking market. This also has consequences for employment.

According to the European Automobile Manufacturers' Association (ACEA 2025), in the first half of 2025 (compared to the same period of 2024), new car sales in the EU27 fell by 1.9%, and remained nearly 20% below the pre-pandemic 2019 level.

Figure 2 shows the development of the distribution of new car sales by type of fuel in the EU27 since 2020 (ACEA 2025). The share of petrol and diesel car sales has continued to fall, reaching 28.4% and 9.4% respectively for the first six months of 2025. The share of hybrid electric vehicles (HEV) grew further, reaching 34.8%, while that of plug-in hybrid electric vehicles (PHEV) remained flat, making up 7%. Most importantly, the share of fully electric BEVs, that grew continuously until the end of 2023 to reach a 14.7% share of new car sales, then fell in 2024 to 13.6%, although it did pick up again in the first half of 2025 to reach 15.6% (ACEA 2025). These trends illustrate that, while the initial momentum in the shift towards electromobility has been broken, the trend is still upward.

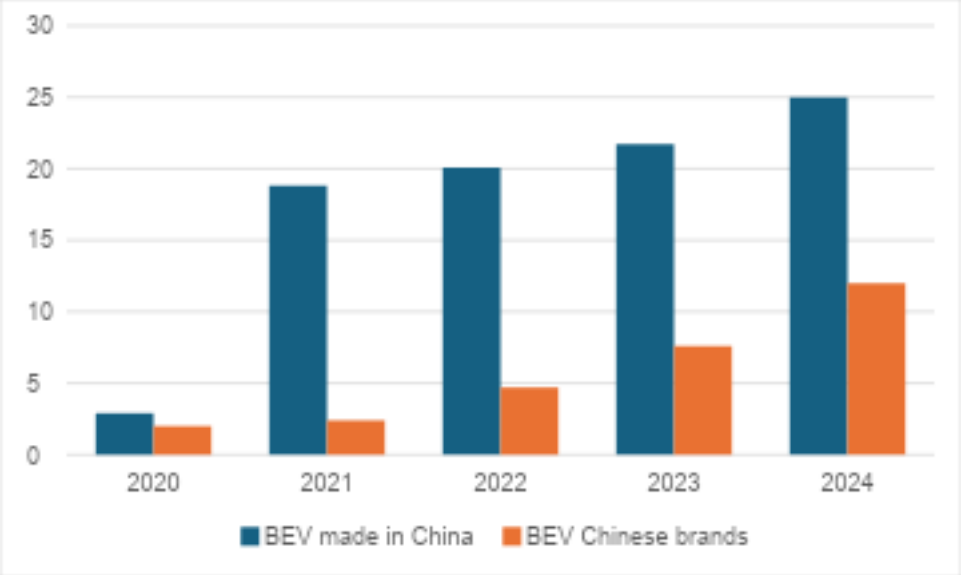
Figure 2 New car sales by fuel type in the EU27 (2020-2025 1H)



Source: ACEA (2025). Note: for 2025, January-June.

A further concern in Europe, linked also to the discussion on industrial policy, is that China's share in the European electric car market is rapidly increasing. Figure 3 shows the share of made in China BEVs in total EU BEV sales between 2020 and 2023 (ACEA 2024). Made in China BEVs include western brands such as Tesla, Dacia and Mini that are manufactured there and exported to Europe, as well as Chinese brands including BYD, SAIC (MG) and Polestar. In 2020, 2.9% of BEVs sold in Europe were made in China (2% having been Chinese brands), whereas in 2023 they made up 21.7% (7.6% Chinese brands). A recent projection by the European NGO Transport & Environment (included in the graph) reckoned that, in 2024, all made in China BEVs would reach a quarter of EU27 BEV sales, in which the share of Chinese brands would be 12%.

Figure 3 The share of made in China BEVs in total EU27 BEV sales (2020-24)

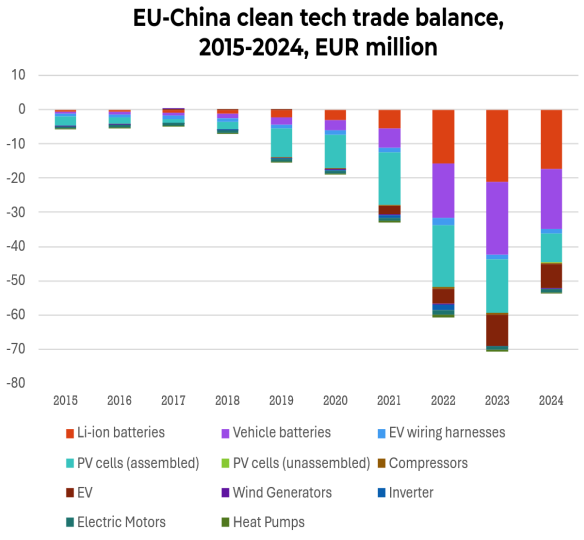


Source: for 2020-2023, ACEA (2024); for 2024, projection by Transport & Environment (2024).

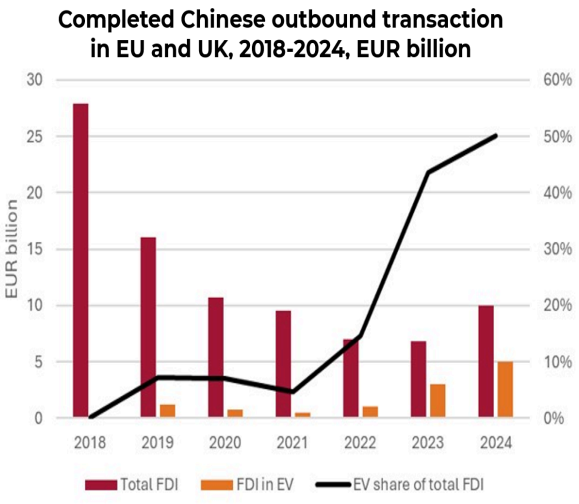
Data by JATO Automotive Intelligence (2025) for the first half of 2025 reveal that new car sales in Europe by Chinese brands have increased by 91% compared to the same period of 2024, while sales by BYD grew by 311%. A detailed breakdown of Chinese new vehicle sales by type of fuel is not yet available for this period, but a significant part of this increase appears to be in vehicle segments that are not subject to the EU's countervailing duties, like hybrid, plug-in hybrid and petrol cars.

As regards EU-China clean technology trade, the EU trade balance has deteriorated significantly in the last couple of years with Lithium-ion batteries, vehicle batteries and electric vehicles being the main items (left side of figure 4). The right side of figure 4 shows that the share of electric vehicles has grown considerably in Chinese FDI in Europe reaching 50% in 2024.

Figure 4 EU-China clean tech trade and Chinese FDI in Europe



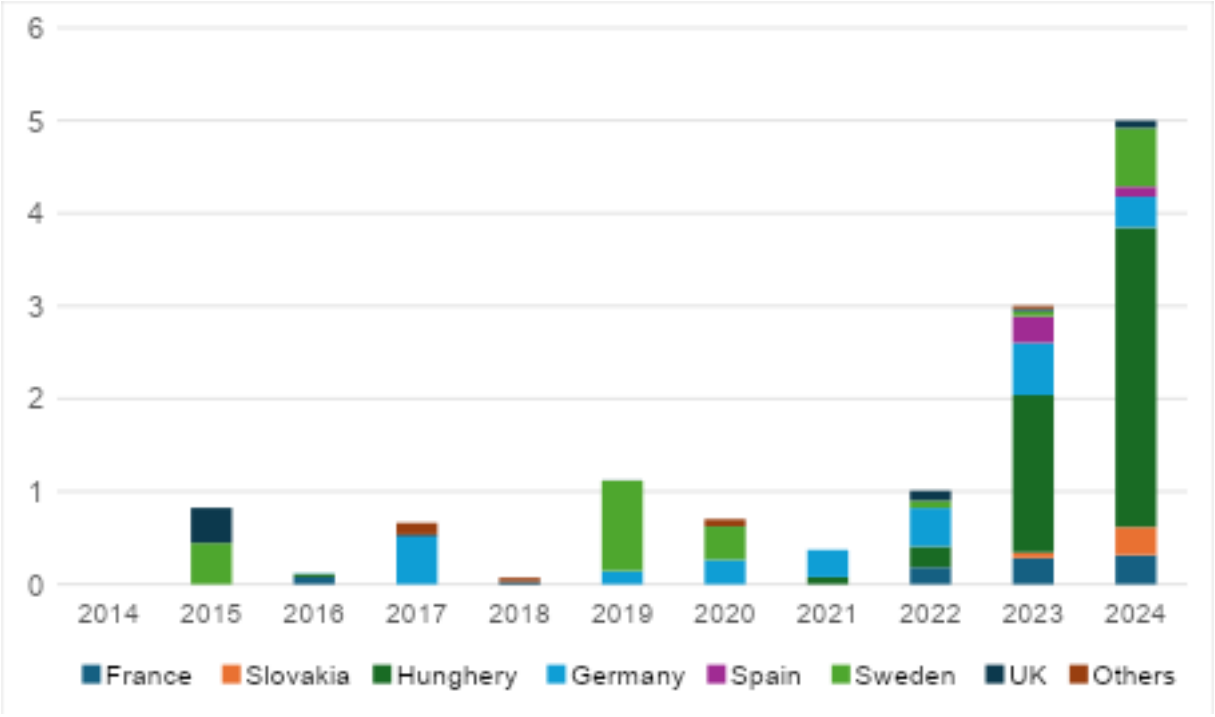
Source: ECCO based on Eurostat.



Sources: MERICS and Rhodium Group.
Note: Major transactions include transactions above $5 million only.

Within Chinese EV sector investment to Europe (figure 4 right side), in 2023 and 2024 Hungary's share reached 2/3, while its share in total Chinese EV sector investment in Europe in the last decade was 1/3 (figure 5).

Figure 5: Chinese FDI in the EV sector by country (EU27 + UK), 2014-2024, EUR billion



FR SK HU DE ES SE UK other

Source: MERICS Institute (country labels below the colour symbol; order of countries (left to right/ bottom to top)

Market share loss by European manufacturers also results from their choice to focus business strategies on premium market segments, abandoning the production of smaller, more affordable entry-level electric cars. If the European automotive industry cannot produce affordable clean cars, this will not only add to inequality in clean mobility but also pose a threat to high-quality jobs in European automotive manufacturing.

Some publications by the ETUI (Galgóczi 2023; Pardi 2022) had already warned of this threat and recent developments unfortunately show that this scenario was not hypothetical. The decision of Audi management to stop the production of its top of the range electric car, the Q8 e-tron sports utility vehicle (SUV), at its Brussels plant led to its closure in February 2025 with a loss of 3,000 quality jobs (De Ruiter 2025), while Ford announced the closure of its Saarlouis plant in Germany by the end of 2025 with a loss of 3,600 jobs (Sauer 2025). At the same time, Volkswagen continues to struggle with the transition to electromobility. In an unprecedented move, in early September 2024 management announced that it was considering two plant closures in Germany, putting aside the employment guarantees contained in its 'Pact for the Future' that stood as an example of codetermination and responsible just transition practices. It is scrapping two crucial model launches: one (a compact SUV) that was seen as the saviour of the Wolfsburg plant; the other being the Trinity model in Zwickau in east Germany (that was seen as a pioneering model with advanced autonomous drive functions) (Jolly 2024). In December 2024, final agreement between Volkswagen AG (2024), IG Metall and the group works council was reached on a socially responsible reduction of the workforce by more than 35,000 across Volkswagen's German locations by 2030.

Battery manufacturing is a key segment of the electromobility value chain and has been in the focus of EU industrial policy with the objective of developing a strong and homegrown European battery landscape. Sweden's Northvolt was supposed to be Europe's great battery success story, a European champion capable of competing with the Asian giants. Northvolt was hopeful of capturing 25% of Europe's battery market by 2030. However, in March 2025 Northvolt filed for bankruptcy (Norran 2025) after months of job cuts, restructuring and several failed attempts to raise capital. While a US battery start-up, Lyten has bought out the remaining assets of Northvolt from the bankruptcy, including the manufacturing site in Skellefteå, this does not mean that all previous operations of the former battery hopeful are saved (Connolly 2025).

The case was a bitter experience that has put Europe's ambitions in lithium-ion battery manufacturing at risk. Among the explanations, stiff competition (in particular from Asia), overspending and the lack of venture capital and of state support were seen as the most important factors. At a time when Northvolt was failing to meet its targets and losing major clients, Chinese battery firms made deal after deal with European carmakers: for example Gotion's partnership with Volkswagen and CATL's joint venture with Stellantis to build a lithium battery factory in Spain with an investment of 4.1 billion euros (Meunier and Ponsa Sala 2025). The end of Northvolt does not mean that the fight for a strong European battery ecosystem is over, however. According to experts and industry representatives, the

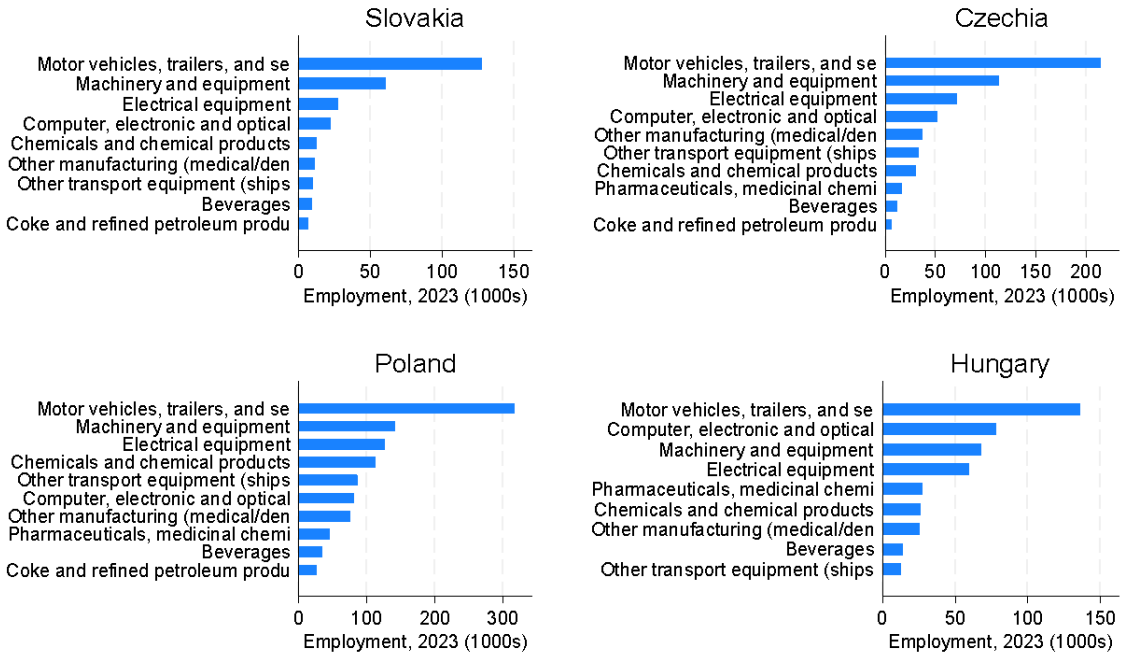
EU faces two options: collaborate with Asia's industry giants (Financial Times 2024) or build a stronghold in the next frontier of battery technology (IEA 2025).

2025 has also brought a new frontier into the precarious condition of the EU automotive industry: US tariffs. From August 2025, the government of the United States has imposed a 15% tariff rate on all EU car exports (somewhat reducing the earlier announced sectoral tariff of 25%). With nearly 40 billion euros in annual car exports, the US is a major market; losses there would add to the mounting challenges already in place and would come on top of the heavy reductions in market share that EU carmakers have been suffering in China as well as the shrinking EU market.

While it is Germany and Italy that are most exposed to US exports and therefore having a significant share of industrial jobs that depend on exports to the US, countries in Central-Eastern Europe have also high employment in sectors with export dependence, also to the US.

Figure 6 shows the sectoral breakdown of employment for CEE countries that takes the absolute size of their economy and/or export shares to the US into account. It is clearly visible that the automotive sector is the most affected in all four Visegrad countries (V4).

Figure 6 Employment in sectors in V4 countries that are most exposed to exports (2023)



Source: Eurostat

2. EU level industrial policy initiatives

Although fast-track electrification is a policy-driven process, it has already set out a business case for the industry, since the future competitiveness of each automotive location depends on its capability to embrace the new technology.

2.1. Clean technology industrial policy

A revival of industrial policy has been on the European agenda for quite a while, first with the 2014 Communication of the European Commission (2014) 'For a European industrial renaissance' that proposed the modernising of Europe's industrial base, seeking to secure access to energy and raw materials at affordable prices and combining EU and national funding to pursue innovation, investment and reindustrialisation goals. Nevertheless, the EU continued to rely on Russian oil and gas even after the Russian annexation of Crimea in 2014. Under the European Green Deal, the European Commission (2020) also launched a 'New industrial strategy for Europe' that narrowed the focus to clean, low-carbon industries, but it did not reflect on the geopolitical urgencies while the general objectives set out in 2014 were still unrealised. During this decade, the situation of European industry in the global context has only deteriorated, with mounting concerns about deindustrialisation.

It took Europe almost a decade to rediscover the importance of having a functioning industrial policy in order to keep key industry competences and quality jobs. This recognition has, however, only appeared after facing the geopolitical pressures posed by the war in Ukraine and then by the United States (US) Inflation Reduction Act (IRA). At the same time – with more than a decade delay – China's ongoing control of critical raw materials and its dominance of key clean industry segments have also become apparent.

In response to these and other challenges, the European Commission (2023) presented its Green Deal Industrial Plan (GDIP) with the objective 'to enhance the competitiveness of Europe's net-zero industry and support the fast transition to climate neutrality'. This consists of the Net-Zero Industry Act (NZIA) and the Critical Raw Materials Act (CRMA) with an amended Temporary State Aid Crisis and Transition Framework and the Important Projects of Common European Interest initiative.

The two key EU legislative initiatives – the CRMA and the NZIA – establish a strategic framework to secure the supply chains and scale up the manufacturing capacity key clean technologies.

The CRMA[1] addresses the strategic dependency of the EU on imported materials vital for clean technologies, including wind energy. It establishes a list of critical and strategic raw materials, many of which – such as neodymium, praseodymium, dysprosium, and samarium – are essential for manufacturing permanent magnets used in wind turbines. The Act introduces ambitious benchmarks for 2030: at least 10% of annual EU consumption of critical raw materials to be sourced from domestic extraction, 40% from EU processing, and 25% from recycling. Additionally, it caps the share of imports from any single third country at 65% for each strategic material. Wind turbines, as products incorporating permanent

[1] Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11 April 2024 establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) No 168/2013, (EU) 2018/858, (EU) 2018/17

magnets, will be subject to labelling and traceability requirements, and will gradually be required to meet minimum recycled content requirements. Strategic projects – such as those involving the refining or recycling of raw materials – may benefit from streamlined permitting and access to EU financing. The CRMA is designed to strengthen the resilience and autonomy of supply chains for key clean-tech sectors.

The NZIA[2] frames a broader list of 19 strategic technologies ('net-zero technologies') critical to achieving net-zero goals and electric vehicle batteries are one of these. The Act aims to strengthen energy security, reduce reliance on external suppliers, and support the transition to net-zero emissions. It places a strong emphasis on expanding domestic manufacturing capacity for onshore and offshore technologies and their components. To meet its 2030 energy and climate targets, the EU needs to significantly increase technology deployment. The NZIA establishes a regulatory framework to help manufacturers remain competitive and expand their market presence.

Batteries

The 2023 Batteries Regulation, which replaced the previous Batteries Directive, introduced life-cycle sustainability standards to support circularity, secure raw material supply, and strengthen EU industrial capacity. The CRMA complemented this by tackling recycling inefficiencies and mandating innovation in material recovery. The NZIA identified batteries as a strategic technology, aiming to expand EU manufacturing and reduce external dependencies for the green transition. The EU supports battery development through several funding instruments. Under the Innovation Fund, the IF24 Battery Call allocated EUR 1 billion as part of a broader package (EUR 3 billion) to accelerate battery deployment. Horizon Europe, through the BATT4EU Partnership, supports R&I across the battery value chain (EUR 925 million). The Important Projects of Common European Interest (IPCEI) initiative has also mobilised significant investment. The first battery IPCEI combined public funding (EUR 3.2 billion) and private investment (EUR 5 billion), while the second IPCEI (European Battery Innovation (EuBatIn)), provided state aid (EUR 2.9 billion) to leverage private funding (EUR 9 billion). Member States complement these efforts with national financial instruments supporting battery and energy storage technologies–focused on scaling manufacturing, boosting research and development, and supporting the wider green transition.

Net-Zero Industry Valleys

With the Net-Zero Industry Act, the EU has implemented a strategic toolkit with the aim of upscaling domestic production capacities in key technologies, such as batteries, electrolyzers and wind turbines, and achieving a climate-neutral future. One element of the toolkit is the idea of promoting new regional production clusters for net-zero technologies termed "Net-Zero Acceleration Valleys"[3].

To avoid a distortive subsidy race among Member States and regions, cluster policies require cooperation and coordination at EU level. To this end, the Net-Zero Europe Platform is developed into a governance institution. Its ultimate goal would be the establishment of a

[2] Regulation (EU) 2024/1735 of 13 June 2024 on establishing a framework of measures for strengthening Europe's net-zero technology manufacturing ecosystem.
[3] cepStudy_Net-Zero_Industry_Valleys_in_Europe_01.pdf

network of production hubs that optimally exploits the comparative advantages of regions across the EU.

Recent analysis indicates that regions with a strong base in high-tech manufacturing — such as south-western Germany, northern Italy, the Netherlands, Denmark, and the Czech Republic — have favourable starting conditions for developing Net-Zero Industry Valleys. It also notes however that in eastern Member States, lower per capita incomes and weaknesses in knowledge infrastructure may limit similar development despite strong industrial employment potential.

Financial instruments

Under the NZIA[4], EU Member States are enabled to provide state aid to promote the manufacturing of essential net-zero technologies such as batteries, solar panels, wind turbines, and heat pumps. In terms of funding programs, the Recovery and Resilience Facility (RRF**)** has earmarked at least EUR 19 billion to support the acceleration of renewable energy. These include InvestEU, which provides guarantees and de-risking mechanisms for industrial projects; the Innovation Fund, supporting first-of-a-kind manufacturing facilities; the Modernisation Fund, which finances energy transition in lower-income Member States; Horizon Europe, offering grants for research and pilot production lines; and the LIFE programme, which supports demonstration projects[5].

In 2024, the EIB launched counter-guarantee instruments, marking the start of its cooperation with commercial banks through initial signed operations. Complementing this, the Commission used the IF23 call[6] under the Innovation Fund to award six grants to clean manufacturing projects, following an expansion of the fund's scope to include this sector. The CID promises to offer EUR 100 billion to strengthen the competitiveness of clean manufacturing within the EU. All these instruments facilitate the scale-up of onshore and offshore wind technologies manufacturing across the EU.

Whereas in 2019 addressing the climate crisis was the top priority on the EU agenda, in 2025 the framing of the current political cycle is marked by the Clean Industrial Deal (European Commission 2025a) that focuses on industry, competitiveness and security.

The underlying philosophy of the Clean Industrial Deal approach is that the best way to address the planetary boundaries crisis while maintaining welfare in Europe is through a technology and market-driven green growth model. The Commission calls this 'a new plan for Europe's sustainable prosperity and competitiveness'. The central idea is the 'clean technology competitiveness' that is the backbone of Mario Draghi's report (Draghi 2024), feeding into the Commission's work on the Clean Industrial Deal for competitive industries and quality jobs. The report sees opportunities for sustainable growth in Europe, based on the EU's position as a world leader in clean technologies that include electromobility. The report argues that, in addition to closing the innovation gap with the US and increasing security by means not least of reducing dependencies on China for raw materials and

[4] Regulation (EU) 2024/1735 of 13 June 2024 on establishing a framework of measures for strengthening Europe's net-zero technology manufacturing ecosystem.
[5] Regulation (EU) 2021/241 of the European Parliament and of the Council of 12 February 2021 establishing the Recovery and Resilience Facility
[6] European Commission (2023). IF23 Call

technology, there must be a joint plan between all Member States for decarbonisation and competitiveness in the EU.

As part of a broader industrial policy attempt, the Commission took the initiative to impose definitive countervailing duties on imports of battery electric vehicles (BEV) from China following the anti-subsidy probe launched in 2023. The Commission recommendation for duties ranging between 8% and 35% on made in China BEVs (on top of the already existing 10%) was approved by the European Council in October 2024 and took effect from the following month (European Commission 2024b). One flaw in this move was that the duties refer only to made in China BEVs and do not cover Chinese hybrid or petrol cars as China had not shown significant activity (or competitive threat) in those segments. But this has now changed, as the market developments in 2025 shown in the next section reveal.

2.2. The 2025 Automotive Action Plan

In March 2025 the European Commission (2025b) launched its Industrial Action Plan for the European automotive sector with measures to boost demand for European EVs including a law on greening corporate fleets and some measures on encouraging national incentives schemes and social leasing for EVs (see factsheet[7]). The declared objective is to maintain a strong European production base and avoid strategic dependencies, and for this make available €1.8 billion to create a secure and competitive supply chain for battery raw materials to support the growth of the European automotive industry.

Accelerating Innovation and Clean Mobility Transition

Given the multiple challenges the industry is facing and the signs of a crisis, with shortcomings in key technologies, the Action Plan aims to help the industry in the transition towards AI-powered, connected and automated vehicles. A dedicated European Connected and Autonomous Vehicle Alliance would bring together Europe's automotive stakeholders to shape the development of next-generation vehicles and help develop the shared software and digital hardware needed to bring this technology to life. The Commission aims to further develop the regulatory framework for autonomous vehicles. These actions will be supported by joint public-private investments of around €1billion backed by the Horizon Europe Programme over the 2025-2027 period.

The Action Plan is accompanied by a Communication 'Decarbonise Corporate Fleets' encouraging Member States to take further actions to green corporate fleets, which account for around 60% of new car registrations. Instead of encouragement, binding electrification targets for large fleets would be necessary, as these could support EU car manufacturers' investments in electrification while bringing almost 7 million more affordable EVs onto the used car market by 2035 for private buyers.

'Flexibility' for CO2 Standards compliance

Giving concession to lobbying efforts by the industry, the Commission opted to provide more flexibility in relation to CO2 targets. The Commission proposes an amendment to the CO2 Standards Regulation for cars and vans which would enable car manufacturers to meet their compliance targets by averaging their performance over a three-year period (2025-2027),

[7] Factsheet - Action Plan on the automative sector.pdf

allowing them to offset any shortfalls in one or two years with excess achievements in the other year(s), while keeping the overall ambition on the 2025 targets. The Commission will also accelerate work on the preparation of the foreseen review of the CO2 Standards Regulation for cars and vans.

In parallel, the Commission is working on ways to boost the demand for European zero-emission vehicles. The Commission will actively work with Member States to optimize these incentive schemes for consumers.

Supporting Supply Chain Resilience and Workers in the Sector

It is crucial that Europe achieves cost-competitive EU cell production that would cover a large part of the supply of batteries and generate European value-added along the supply chain. The Commission will further support the EU battery industry and help it maintain a strong European production base, with financing under the Innovation Fund. The Commission will also look into direct production support to companies producing batteries and non-price criteria for components such as resilience requirements.

To address the challenges related to skills shortages, mismatches and an ageing workforce in the sector, the European Fair Transition Observatory, as launched with the Clean Industrial Deal, will develop and collate data, to help pinpoint expected future “hot spots” of employment dislocations and skills gaps. The Commission promised to expand the European Globalisation Adjustment Fund for Displaced Workers (EGF) support to make it faster and broader, allowing companies to trigger support and supporting workers threatened by immediate redundancy. Additionally, the Commission will work with social partners and Member States to increase European Social Fund Plus (ESF+) funding for the automotive sector, supporting workers who want to reskill and look for new job opportunities. The Commission will also use the mid-term review of ESF+ to incentivise Member States to reprogramme more funding for the automotive sector. Furthermore, as announced in the Pact for Skills, the Commission will propose a reinforced initiative to support workers in strategic sectors like the automotive industry, focusing on upskilling and reskilling programs.

Boosting the Industry's Resilience to Compete Successfully on a Global Stage

To make the EU automotive industry more resilient to fierce competition from overseas, the Commission seeks to create a level playing field by using trade defence instruments, such as anti-subsidy measures, to protect European companies from unfair competition. At the same time, negotiations with partner countries will continue, to enhance market access and sourcing opportunities for the automotive industry. Additionally, the Commission intends to propose measures to ensure that foreign investments in the EU automotive sector contribute to the industry's long-term competitiveness, while working to reduce the administrative burden on European automakers through regulatory simplification.

With all these positive initiatives, declarations and intentions, the decision to give carmakers two extra years to comply with the 2025 car CO_2 emission targets undermines the EU’s main instrument for motivating them to reduce emissions, and might also undermine their future competitiveness in electromobility, in particular with Chinese BEVs. This can also put future EU automotive jobs at risk. The Commission has also stated that it is exploring support for battery production in the EU, as well as local content requirements, although the grave situation in the EU battery industry (as shown at the example of Northvolt) means that

such vague promises are of little help. In 2024 more than 100 GWh of battery capacity was cancelled (T&E 2025), as European producers struggle to compete with global competition, subsidies elsewhere and the lack of a level playing field. The EU will also consider giving financial support to battery recycling, an industry which has huge potential to reduce mineral imports but is struggling to scale up in Europe.

Unfortunately the Industrial Action Plan, with the declared aim of making the European automotive industry strong, sustainable and competitive, only vaguely mentions support for the battery industry, containing no commitments, and neither does the proposal for the EU's 2028-2034 Multiannual Financial Framework (MFF) put forward by the European Commission (2025b) foresee proper funding. Funds put forward for industrial decarbonisation, a policy window under the European Competitiveness Fund (ECF), are extremely low. The ECF only allocates 67 billion euros for the climate transition and industrial decarbonisation over a seven year period, 40 billion of which is to come from the already existing Innovation Fund. According to Transport & Environment (T&E 2025), the public funding need for cleantech transport manufacturing is 39 billion euros annually by 2030; the current proposal in the battery industry alone could put the creation of up to 100,000 new jobs by 2030 at risk. T&E also estimates that the weaker targets would lead to European carmakers selling up to 880,000 fewer electric cars between 2025-2027 than under the current target and would remove pressure on the industry to roll out cheaper EV models.

2.3. Automotive Package, December 2025: lifting the 2035 combustion engine ban

The EU Automotive package has been launched in December 2025 and follows this latest trend to focus on short-term competitiveness gains. It opens possibilities for plug-in hybrids, range extenders, and ICE vehicles to remain part of the automotive landscape beyond 2035. It adjusts the climate target from full CO_2 neutrality to 90% by the same year. The remaining 10% is flexible if it is offset through low carbon steel, e fuels or biofuels. New cars and vans registered from 2035 onwards can thus have average CO2 emissions of 11 g/km and 18 g/km, respectively, provided these emissions are offset by credits for the use of low-carbon steel and renewable fuels. The International Council for Clean Transportation (ICCT) reckons that by 2030, the share of battery electric vehicles could fall by 17 percentage points, from 61 to 44%. The study also predicts that compared to the total projected car CO2 emissions of 5.3 gigatons over 2028–2050 under the current regulation, emissions would rise by about 1 gigaton to 6.3 gigatons—an increase of more than 18%.

Regarding corporate vehicles, mandatory targets are set at the Member State level to support the zero- and low-emission vehicle uptake by large companies.

In the run-up to 2035, carmakers will benefit from "super credits" for small "affordable" electric cars made in the EU. Additionally a Battery Booster (with total resources of €1.8 billion that includes €1.5 billion interest-free loans) was launched to accelerate the development of a fully EU-made battery value chain.

This weakening of the zero-emissions target in 2035 opens the door to even the highest emitting combustion engine vehicles, it sends a confusing signal both to the industry and consumers and divert investment away from electrification at a time when European manufacturers urgently need to catch up with Chinese EV-makers. The big challenges of the

industry are not only on the demand-side that can be addressed by (targeted) purchase subsidies, there are serious bottle-necks on the supply side, as well, as lagging behind BEV technology, vertical integration, batteries, software, ADAS, charging infrastructure, with a distorted model supply /SUV/. To address these, the industry needs more innovation and investment.

2.4. Further industrial policy tools under discussion

Given the critical situation of the European automotive industry, further industrial policy tools are being discussed (within the European Automotive Strategy Dialogue, but also as proposals by NGO-s and think-tanks or lobby groups). Measures under discussion include the following:

Demand side measures

- Non-price criteria in public and corporate fleet procurement
- Encouraging alignment and adoption of sustainability and resilience focused EV incentives across member states
- Being ready to activate trade defense tools on Chinese EV imports that include FDI screening framework, Foreign Subsidy Regulation, Non-price criteria (resilience, sustainability)
- Market access conditioned via joint-venture or licensing that also includes technology transfer

Supply-side measures

- Making EU funding and state aid conditional on: Diversified sourcing for critical inputs, mandatory work force upskilling, local R&D

Cybersecurity & data governance

- Apply GDPR, make cybersecurity for connected vehicles a dynamic and evolving regulatory focus, introduce proportional safeguards (which could include Joint-venture requirements and/or EU operational control for data handling) where warranted by risk

Tackle distortions, but keep investing attractive

- Ensure transparency in applying the FSR to greenfield investments
- Address market distortions while keeping the EU investment climate attractive
- Redirect recovered subsidies into an EU fund for EV workforce development and innovation

Among new industrial policy tools, technology transfer and local content rules are the main instruments under discussion.

The announcement that any support for battery production would be contingent on overseas investors sharing skills and technology with EU companies – as European manufacturers have been required to do in China for decades is one of these. The NGO Transport & Environment warned however that the announcement on European content requirements on battery cells is vague (T&E 2025). If the objective 'clean tech being produced in Europe' is taken seriously, financial support focused on scaling and local content requirements are needed now. This support should be open to all producers, but foreign companies must be required to share their knowledge just as European carmakers had to do.

The French automotive thinktank Gerpisa (2025) examined how Europe could rapidly address the lack of Local Content Policies (LCP) for the automotive sector. They analysed the current application in the EU of Rules of Origins (ROO) in Free Trade Agreements (FTA). ROO are local content requirements that only apply on imported and exported goods within a given FTA. They propose to create an ROO (as a local content requirement) for the Single Market for passenger cars and light vehicles which corresponds to a local content requirement of 80%.

They also propose a separate ROO for batteries that will be set according to the EU "Battery Booster package" and the announced target of at least 50% value added along the battery value chain made in Europe by 2030. The new European ROO for passenger cars, light-vehicles and auto-parts will define what is a "made in Europe" car or auto-part, and could be then used in different key EU and national policies: - in trade policies it could exclude non "made in Europe" cars and auto-parts from the free-circulation of goods within the Single Market; in public procurement to effectively implement a 'buy European' procurement plan; in policies for boosting demand for zero-emission vehicles such as social leasing schemes, corporate fleet's decarbonising schemes. The Clean Industrial State Aid framework could define the eligibility criteria for overseas players among others in the FDI screening regulation to regulate foreign automotive production in Europe.

Further policy recommendations

Putting the industry on track with climate policy targets, while safeguarding European jobs:

- As called for in earlier ETUI publications an immediate phasing out of weight-based CO_2 standards for passenger cars is necessary. Technical norms for cars, in particular for BEVs, should also be rethought. Introducing energy efficiency as the key discriminator in shaping both the supply of new cars in Europe, as well as being the main criterion when it comes to receiving subsidies from national governments, should be considered.
- An additional measure such as introducing lifecycle analysis in order to allow consumers to discriminate between new cars not only on their relative energy efficiency but also on their carbon footprint would further push carmakers to make lighter cars, using fewer materials and less energy, and to locate their production in Europe.
- The Industrial Action Plan for the sector launched in March 2025 contains important measures to boost demand for European EVs including a law on greening corporate fleets and some measures on encouraging national incentives schemes and social leasing for EVs. However, the decision to give carmakers two extra years to comply

with the 2025 car CO_2 emission targets undermines the EU's main instrument to advance electrification, while risking further losses in competitiveness with Chinese BEV manufacturers.

- While the Commission has stated that it is exploring support for battery production in the EU, this intention needs to be followed by action.
- The policy window devoted to the electrification of the industry within the Competitiveness Fund under the Commission's proposal for the 2028-2034 MFF foresees an allocation that is extremely low. If job creation in the emerging clean transport sector is meant seriously this funding should be extended.
- While the EU's countervailing tariffs on made in China BEVs allow temporary relief for EU manufacturers (given that US protectionism also increases the pressure on the EU market), these need to be revised (at least as regards hybrid and petrol cars that are not currently covered).
- More importantly the EU needs to find a long-term strategy on how to deal with Chinese competition in the EV value chain. It needs to reflect further on how to regulate foreign direct investment in the sector, as regards criteria for EU content and technological transfer.

Together, these measures should steer the production and sale of new cars in Europe in the right direction: towards greener, more energy efficient, affordable, electric cars that are made in Europe.

3. Just transition challenges for CEE

From a workers point of view, just transition challenges are twofold. One is to cope with labour market transitions in the great restructuring of the industry towards net-zero with view to both quantitative and qualitative aspects employment. Second are distributional effects of decarbonisation policies that also include the affordability and accessibility of ne clean technologies. Some of the dedicated just transition instruments have a dual climate and social focus, linked to the EGD and explicitly intended to promote a just transition *that leaves no one behind*, while others have mixed objectives with a more indirect just transition relevance.

The EU's main just transition instrument, the Just Transition Mechanism (JTM) that also includes the Just Transition Fund focuses on the former and while doing so it is limited to mostly coal regions (carbon intensive regions). The JTM**,** an EU framework which secures €55 billion between 2021 and 2027 to address the socioeconomic effects of the transition in the "most affected regions", which in practice mainly means coal regions. The pivotal mechanism is the Just Transition Fund (JTF), which is part of the EU cohesion policy framework. To unlock funds, Member States have to submit Territorial Just Transition Plans (TJTPs) for Commission approval. As a reporting and allocation mechanism, these plans are an important governance tool in ensuring a just transition. The automotive industry is not covered directly. While just transition practices in the western European core of the automotive industry (see section 4) are more focused on managing labour market transitions, for central-eastern European locations this was not the primary objective. While the region, as an integrated periphery is vulnerable to strategic decisions made at headquarter locations, labour market development in the region's industry were positive so far.

Another mechanism is the Social Climate Fund (SCF). This will provide €86.7 billion between 2026 and 2032 to deal with the social impacts of the new emissions trading scheme for buildings and road transport (ETS2, starting in 2027) on vulnerable households, micro-enterprises, and transport users. It is one of the ways that the revenue from the ETS is recycled. Member States must submit Social Climate Plans (SCPs) identifying how they intend to use the funds. This can include measures or investments to increase the energy efficiency of buildings or decarbonize heating and cooling, or to provide temporary direct income support. The revision of the main emissions trading scheme (ETS1) also envisages a Modernization Fund for thirteen Member States that can be used for just transition objectives, among others.

Alongside the dedicated just transition instruments, there are also other governance tools that are less explicit but in practice equally important for delivering just transition. The Next Generation EU programme and its cornerstone, the Recovery and Resilience Facility (RRF), have contributed both directly and indirectly to just transition governance. The RRF is a funding instrument intended to address the consequences of the pandemic[4] and requires Member States to submit extensive national Recovery and Resilience Plans (RRPs) outlining measures across six priority pillars, including green transition and social and territorial cohesion. These plans were an important step towards more systemic policies. However, studies have shown that, despite some of the funds being used to ensure that people are not left behind in the green transition, the link between social and green objectives is often not made explicit and is not required in the reporting (Galgoczi 2024).

For the region's mobility transition, distributional effects and job quality in the emerging green economy will be the major challenge. For this, the second main EU policy tool, the prospective Social Climate Fund will be key.

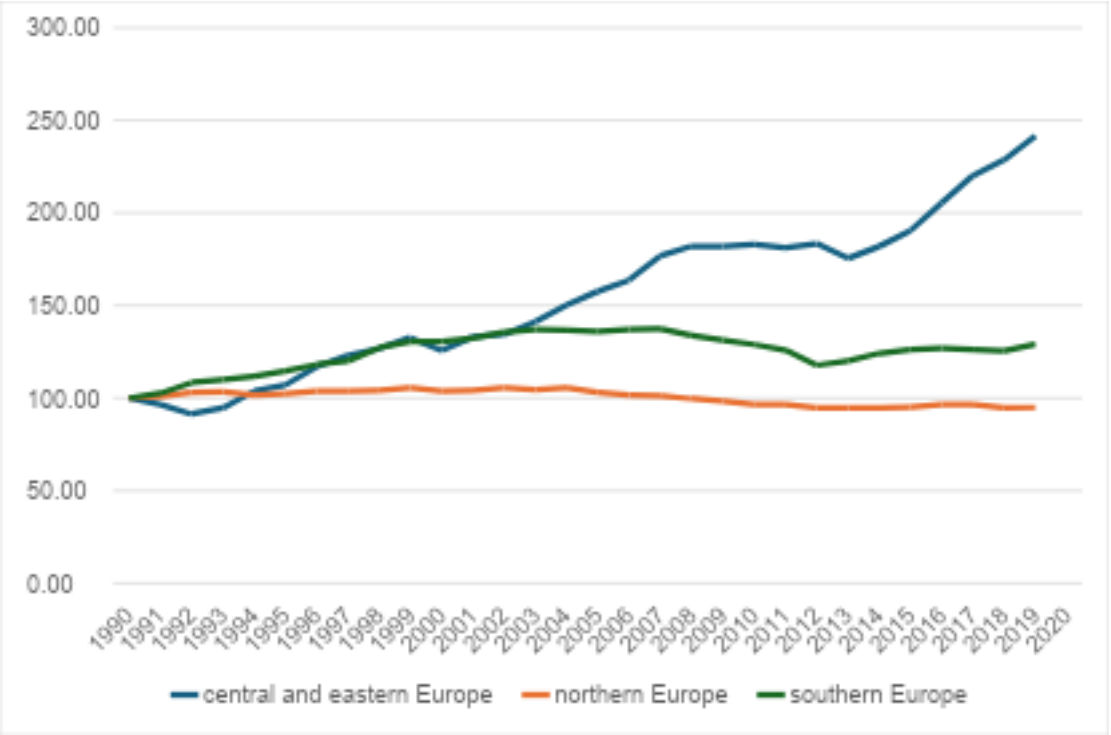
3.1. Distributional effects of the decarbonisation of transport

There is a growing divide between northern countries and southern, alongside central and eastern European ones, as figure 7 shows. In northern Europe, since the early 2000-s, the number of years required to renew the whole car fleet grew 'only' from 13 to 20 years; in southern Europe, where purchasing power is lower, it grew from 13 to 29; and in central and eastern Europe, it grew from 31 to 48. The result of these divergent dynamics is an increasingly polarised access to recent cars: 67% of the car fleet of less than two years, and 65% of the car fleet of less than ten years, is located in northern European countries; in contrast, 74% of the car fleet older than 20 years is located in southern and eastern European countries where cars older than 30 years can represent up to 30% of the car fleet (Pardi 2018).[8]

It is precisely in those countries that have the least access to recent models that CO_2 emissions from cars have increased the most during the last thirty years: +241% in central and eastern European countries and +47% in southern European ones, compared with a drop of 4% in northern Europe.

[8] Source: Greenhouse gas emissions by source sector (EEA).

Figure 7. Greenhouse gases from fuel combustion by region (cars) - 1990-2019, EU27



Source: Eurostat.

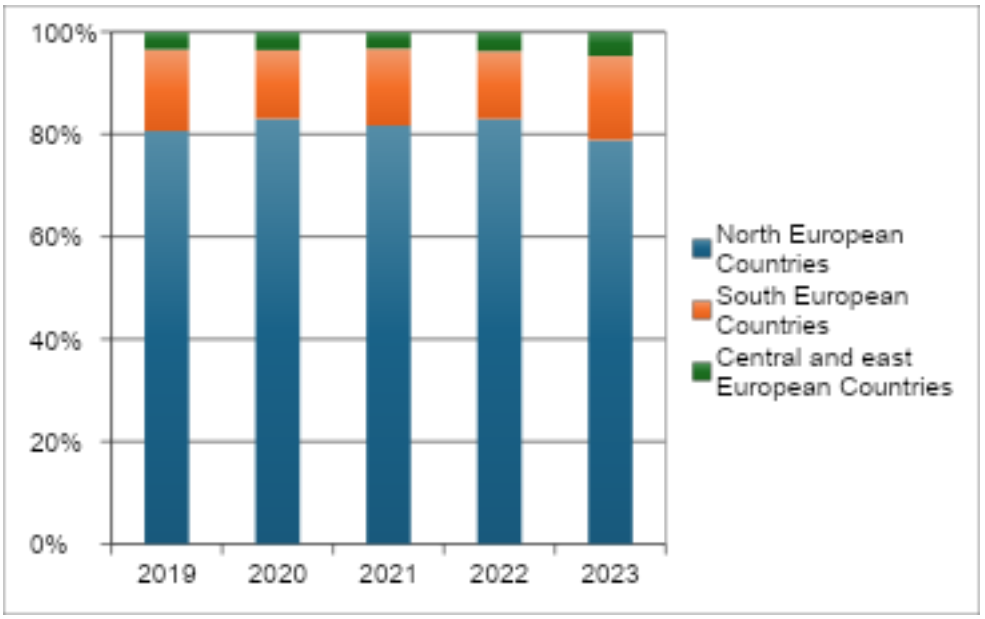
Since upmarket drift is increasing with electrification, this means that access to new cars becomes even more difficult in these countries, leaving them without viable solutions to decarbonise their car fleets and meet the 'Fit for 55' targets.

3.2. Social consequences: a growing divide between rich and poor countries and households

Between 2019 and 2021, the average price of a new car sold in Europe increased by 9% compared with an average euro area inflation rate of 2.8%. This acceleration in upmarket drift was driven by electrification. The increase has been partially absorbed by the subsidies given by states to promote the uptake of EVs. In 2021, 12.5 billion euros were given to buyers of EVs, an amount that represented 3.5% of the total official price of all cars sold in Europe that year. On average, each EV sold saw its owner receive 5,100 euros: 11% of the average price of a BEV (48,000 euros) and 9% of that of a PHEV (58,000 euros) (Bibra et al. 2022: 47).

These subsidies were concentrated in northern European countries: between 2019 and 2023, 82% of EV sales were located in northern European countries that represent 49% of the EU population, compared with 18% in southern European countries and central and eastern ones that, together, represent 51% of the EU population (see Figure 8). In terms of EV stocks, the divergence is even wider: 86% is concentrated in northern Europe, 13% in southern countries and just 1% in central and eastern European ones. In addition, these subsidies went mainly to the wealthier households even within northern European countries, given the extremely high prices of EVs.

Figure 8. Share of groups of EU countries in total EU BEV sales (2019-2023)



Source: ACEA.

This means that the divide between wealthier and poorer countries and wealthier and poorer households in Europe is increasing when it comes to access to greener mobility. It is the reverse of this that is urgently needed to achieve the 'Fit for 55' targets.

Furthermore, despite the subsidies, the accelerated upmarket drift combined with electrification is making new cars much less affordable in general, affecting the level of sales and the car fleet renewal rate. In the period 2020-22, it was difficult to measure this impact due to the Covid-19 crisis and the global shortage of chips. In 2023, however, the market was back to almost normal conditions and, while total new car sales have been growing, these were still 13% below their 2019 level in northern Europe, 17% in central and eastern Europe and 35% in southern Europe. At these levels of sales, it will take 18 years to renew the northern European car fleet (compared with 13 years in 2000), 26 years in the southern European one (13 years in 2000) and 43 years in central and eastern Europe (31 years in 2000).

3.3. The challenge posed by the ETS2 for CEE countries

The social consequences of this increasing divide in accessing recent cars are already visible. As the supply of new and/or recent models shrinks, consumers tend to keep their old ICEVs longer.[9] Amongst the negative side effects of this trend are more safety risks, higher fuel costs and higher maintenance costs for those who cannot afford new cars or more recent models.

But as electrification spreads amongst the richest countries and households, there will be further negative consequences for those excluded from this greener mobility. On the one hand, a growing number of large and medium-sized cities have already started to ban older

[9] Between 2019 and 2021 the average age of the European car increased by 4%, or 6 months (from 11.5 to 12 years) (source: ACEA).

cars from their roads and, eventually, only BEVs or low emissions vehicles will have access to city centres. On the other hand, even in EU Member States and cities without such measures, from 2027 (or 2028, if fuel prices are exceptionally high) all owners of ICEVs will be exposed to the effects of the European carbon market (ETS 2) for transport.

The purpose of this second carbon market, introduced with the 'Fit for 55' package in 2023, is to guarantee that Member States will keep their commitments in terms of CO_2 reduction in the transport and housing sectors. The EU will auction CO_2 emission permits, or allowances, to local fuel distributors, corresponding to the right to emit one ton of CO_2. The supply of these will diminish in time according to the 2030 EU 'Fit for 55' intermediate target (a reduction of 42% on the 2019 level) and the carbon neutrality objective of 2050. In an EU Member State where fuel consumption does not diminish fast enough, local fuel distributors will have to buy more permits. On the contrary, in a Member State where fuel consumption diminishes at a faster rate, local distributors will be able to sell permits to those who need more. Depending on the interplay between diminishing supply and the overall level of demand, the price of the allowances will increase in time by a lesser or larger amount.

Up to 2030, the price for one allowance is expected to be kept below 45 euros, but after 2030 it will be for the market to decide. It has been calculated that a price of 50 euros per ton will result in an average additional annual cost of 363 euros per European household, equivalent to 0.6% of average disposable income (but up to 1% in central and eastern European countries). During this period, ETS 2 will thus work as a more or less mild tax on CO_2 for ICEV owners. Several experts have pointed out, however, that the price control mechanism does not prevent spikes above 45 euros as it is activated ex post should such spikes occur, and could prove insufficient if the decarbonisation of road transport does not progress fast enough.[10]

In any case, the main question is what will happen after 2030, when the market freely dictates the price of the allowances, in particular in those countries that cannot or would not be able to electrify their car fleets fast enough.

The example of the first ETS market, created in 2005 for reducing CO_2 emissions in the energy and heavy industry sectors, can be used here to illustrate some possible scenarios. For a long period of time, the ETS 1 price for one ton of CO_2 remained very low (around 10 euros) due to the oversupply of allowances. This was due in particular to the 2008 financial crisis, whose impact on manufacturing activities reduced the demand for energy. However, ETS 1 was reformed in 2018 so that, in the case of oversupply, surplus allowances, including future ones, are permanently cancelled (the same mechanism will apply in ETS 2). Following the further reform of ETS 1, when in 2021 the economy started to grow again in the wake of the Covid-19 crisis, demand rose back quicker and stronger than expected. Gas prices increased and energy producers started to buy more allowances anticipating the need to burn more coal to produce energy. The price of one allowance spiked in 2021 from 20 euros (for one ton of CO_2) to 81 euros, and then again from 67 euros in 2022 to 105 euros in 2023 due to the energy crisis triggered by the Russian invasion of Ukraine (a ten-fold increase by comparison with 2018).

[10] See for instance: https://www.euractiv.com/section/road-transport/news/eu-carbon-market-gas-petrol-prices-could-spike-from-2027-experts-say

In the case of ETS 2, similar spikes are possible. The market share of EVs, and in particular of BEVs, must grow significantly to meet the 2030 CO_2 target of 49.5g (a drop of 55% on the 2021 level). At least 60% of the market will have to be fully electrified (BEV) but, as mentioned earlier, most European car groups have already announced that, by 2030, they will only be selling BEVs so this percentage is likely to be higher. Under the associated conditions of a slowdown in the fleet renewal rate, it will be almost impossible to meet the CO_2 emissions reduction targets for fuel consumption in cars (a reduction of 42% between 2019 and 2030), all the more so when considering that the European car fleet keeps growing, in particular in central and eastern Europe where CO_2 emissions are also growing (see Figure 2 above).

The result of these dynamics will be a significant increase in the price of ETS 2 allowances, whose supply will be reduced by 5.38% annually from 2028. For instance, the European Consumer Organisation (BEUC) has not excluded that the price for one allowance could spike at 250 euros as early as 2030.[11] If that were the case, it would result in an average additional annual cost of 1,815 euros per European household, equivalent to 3% of average disposable income (and around 6% in central and eastern Europe) (Abrell et al. 2022; Platteau 2023).

Also, this price increase will not be homogenously spread across Europe. As mentioned earlier, countries where CO_2 emissions are diminishing the least will be those with the highest price increase because their fuel distributors will have to buy more allowances. The consequences could therefore be dramatic for southern European countries and central and eastern ones: rapidly ageing car fleets, growing CO_2 emissions and fast rising fuel prices with no viable solutions to reduce them.

That this scenario is possible and even probable can be deduced from the EU's decision to allocate 25% of the revenues generated by the sale of ETS 2 allowances to a newly created Social Climate Fund (SCF) to support vulnerable households and small businesses to cope with fuel price increases. The other 75% will go to Member States that will have to use it to finance social climate measures, notably to facilitate access to electric cars (although only 25% of this amount could be used to reduce the impact of price increases). The money will be redistributed progressively so that those countries that are the most vulnerable to fuel price increases will receive a higher share of the SCF. However, the total amount available has been capped at 59 billion euros for the period between 2027 and 2032, when the SCF will be discontinued. Such an amount corresponds to 8.4 billion euros available annually to 27 countries. By way of comparison, the policies put in place in France alone to reduce the impact of energy price increases between 2021 and 2023 amounted to 85 billion euros.[12] Furthermore, the ETS 2 mechanism will first raise the price of fuel for consumers and only after that can national governments intervene to address such increases. How efficiently they will do it and with what delays remains to be seen.

[11] A recent survey of modelling based on European CO_2 emissions targets suggest a range of price between 175 euros and 300 euros for ETS 2 allowances from 2030 (Abrell et al. 2022).
[12] Source: https://www.vie-publique.fr/en-bref/290156-aides-la-consommation-denergie-un-cout-estime-85-milliards-deuro

To summarise, if European Member States are on the right track to decarbonise road transport, then ETS 2 will have a limited impact on fuel prices but, thanks to its redistributive effect via the SCF, it will do something to help laggards catch up. This is the rationale behind its implementation. However, if accelerated electrification coupled with regulatory upmarket drift proves socially unsustainable, in particular in southern European countries, as well as central and eastern European ones where CO_2 emissions from cars have increased the most in the last 30 years, then ETS 2 will lead to sharp increases in fuel prices while its redistributive effects will not be sufficient to address the social and political consequences of such a development.

3.4. Job quality in the emerging green economy

Job quality, in particular, in the emerging battery manufacturing sector in CEE is a major concern, most apparently in Hungary but with relevance to the entire region. A recent study by the Somo Institute (Merk et al. 2024) provides an insight into the bleak reality of battery jobs in Hungary, one of the key locations for the EU's emerging battery manufacturing sector. Details of the wage structure and highly flexible working-time schedules reveal high pressures put on workers. Hungary's battery industry also exposes workers to significant health and safety hazards. Between January 2019 and June 2023, Samsung SDI received 57 penalties from the Hungarian authorities for violating fire safety and hazardous material regulations and putting workers' safety at risk. At SK On's Komárom facility, 50 workers were exposed to elevated levels of nickel, a known carcinogen, with some showing nickel concentration levels in their organs three times higher than EU safety thresholds. The operations of the South Korean owned SungEel Hitech battery recycling firm in Hungary have also been marred by safety violations and fines. In 2023, a grinder explosion at the plant resulted in two worker fatalities.

Moreover, the global battery supply chain is largely controlled by corporations with headquarters in China (CATL and BYD) and South Korea (LGES and Samsung SDI), countries that are known to obstruct unionisation and collective bargaining rights (Merk et al. 2024). Labour standards in battery factories under Chinese ownership are strongly influenced by standards in the low-wage electronics sector, where worker representation and trade unions are characteristically weak. South Korea's Samsung is notorious for its anti-union stance both domestically and internationally, and (according to reports) has obstructed workers' rights at its factory in Göd, Hungary.

Considering this anecdotal evidence, whereas jobs in the shrinking carbon-intensive industries were characterised by higher pay, regulated working time, open-ended regular contracts, relatively high coverage by collective agreements and higher unionisation, many newly created green jobs are of inferior quality in these aspects. It took labour movements a century to fight for labour rights and a secure and decent quality of jobs in the traditional industries. These struggles should not have to be fought again from scratch in the newly emerging green industries, including in solar energy, wind turbines or battery manufacturing. Securing proper job quality in these expanding sectors is an important aspect of just transition for CEE countries. The initiative of the European Commission for a Quality Jobs Roadmap is a good starting point, but it should be based on a legally binding framework that includes a Just Transition Directive.

4. Just transition examples from Western Europe

Based of several research projects at the ETUI company level case examples for just transition practices in the automotive sector are briefly presented here based on three western European core automotive locations, France, Germany and Italy. Some of these practices might provide ideas for a just transition toolbox to be developed for the CEE region.

4.1. France

For the trade unions, the green transition is an opportunity to formulate alternatives that envisage a just transition. Together with the objective of preserving jobs, social dialogues in the French automotive sector practically means finding an 'acceptable' way of managing the decline.

Manufacturers to negotiate collective agreements that are unfavourable to workers, using the argument of preserving jobs: to compete with the premium German car manufacturers, French original equipment manufacturers claim that they must continue to reduce production costs, which means continuing to squeeze labour costs as much as possible.

The rationale behind these 'job preservation' agreements is to obtain concessions from the unions in exchange for maintaining production and not closing plants (Carbonell 2019). What lies behind this 'job preservation' is relatively ambiguous, as agreements rarely refer to employment levels but rather to the non-closure of sites or to industrial investment or changes in production volumes. The aim of these agreements is therefore less to halt the decline than to accompany or manage it, since the production and employment curve in the automotive industry continues to fall despite the signing of numerous such 'job preservation' agreements. Finally, it should be added that these agreements are also instruments of competition between workers in different countries since the allocation of new models, volumes or investment is conditional on unions signing the agreement under the threat of production being relocated to countries in the integrated periphery.

This system has been described as 'managerial social dialogue' (Groux 2010) or 'concession bargaining' in which collective bargaining is based more on economic imperatives, becoming an instrument for cost-cutting and competitiveness to the detriment of workers in central and peripheral countries. Trade unions have mainly adopted defensive postures in the face of these agreements, systematically presented by management as a necessary condition for 'saving' companies from bankruptcy in the post-crisis context of 2008. Then, in the mid-2010s, once the situation of French OEMs had improved, they negotiated agreements that aimed to strengthen the 'competitiveness' of the company. In this context, unions managed to obtain some of their demands. However, the trend continued to be one of deterioration in working and employment conditions.

One of the first strategies adopted by carmakers in France was to form subsidiaries to create 'pure players', devoted entirely to the manufacture of EVs, through the use of existing instruments of social dialogue.

Renault

This was the choice made by Renault which, in June 2021, decided to group together three sites in the north of France within a subsidiary called Electricity to develop an 'electric

division' (Renault Group 2022). The creation of the Electricity industrial complex was accompanied by the negotiation and signing of an ambitious collective agreement in June 2021, the aim of which was to maintain production at the three threatened sites while lowering labour costs. The idea behind the agreement was to offer the unions the allocation of a B-segment vehicle at Electricity, the installation of a battery housing production in Ruitz, the installation of a battery factory in Douai and 700 new hires in exchange for concessions on wages and working conditions. This agreement, signed by all six representative unions in the three plants involved the introduction of compulsory overtime, an increase in the number of working days per month and a harmonisation of pay between the different sites – which indirectly implied a reduction in annual pay.

This agreement is in line with 'job preservation' agreements negotiated in the automotive sector from 2012 onwards, but this agreement also introduced new elements since it initiated a transition towards the electric vehicle by changing the company's structure through the creation of a subsidiary and joint ventures.

The importance of the agreement also lies in France having little or no tradition of collective bargaining on technological change (or on work organisation or product architecture) or on the company's economic strategy. At most, social and economic committees are consulted and informed over the major decisions taken by company management, but without having an actual impact on them. Trade unions themselves rarely formulate positions on technological change, work content or product architecture, preferring to confine themselves to negotiating on the issues that are compulsory under labour law: pay, bonuses, working time, job preservation, skills and gender equality (Béthoux and Laroche 2021).

Given this absence of negotiation tradition on company strategy, the negotiation of the agreement to create Electricity appears to be an institutional innovation. A paradoxical innovation though, since, as discussed earlier, electrification appears to be more a tool in the hand of OEMs for managing the decline of the French car industry rather than a tool for reindustrialisation.

In order to manage the drop in labour requirements linked to the transition to electric powertrain plants, OEMs have resorted to another relatively new mechanism in labour law, 'ruptures conventionnelles collectives' (RCC – mass voluntary departures). This is a new type of agreement introduced in 2017 that encourages voluntary severance, enabling companies to avoid the social and political cost of 'economic layoffs', otherwise known as compulsory redundancies.

PSA Automobiles (in the process of becoming Stellantis) negotiated an initial RCC with trade unions in February 2022 to implement a scheme to transfer group employees to the ACC gigafactory in Douvrin, then still under construction. This agreement, signed by three trade unions, was negotiated in the context of the closure of an engine manufacturing joint venture between Renault and PSA.

On joining ACC, employees are guaranteed their basic salary as well as a 13th month salary for manual, technical and administrative staff. Employees also receive a sum of money intended to compensate for the loss of several thousand euros in seniority payments, however workers would see their pay fall by 20-25% due to the loss of bonuses and seniority.

RCCs have become an instrument for managing employment as part of the green transformation in the automotive industry. For OEMs, RCCs are a means to avoid the social and political costs of the 'economic layoffs' associated with the phasing out of ICEVs, particularly in the sites dedicated to ICEV parts production. For unions, RCCs are a way of mitigating (albeit only partially) the negative effects of electrification on employment. However, it should be said that transfers of employees from Stellantis or Renault to the new joint ventures do not guarantee that employees' benefits will be maintained. As said before, the electrification of the French automotive industry could mean a deterioration in working conditions for employees working in the new mechanical engineering and battery plants.

4.2. Germany

The cases in this section provide examples how worker representation institutions in Germany are responding to the dual transformation of the automotive industry.

An expansion of codetermination and thus of the institutional power resources of works councils is associated above all with the new instrument of future-oriented agreements. In contrast to typical plant agreements, future-oriented ones give works councils the opportunity to develop potential utilisation concepts for sites beyond combustion engine technologies, in conjunction with management and at an early stage; that is, before a crisis occurs. This involvement of works councils in shaping the future of sites also extends codetermination rights at plant and company level beyond what is provided for by the law. This practice provides proof that managing change in a forward looking manner is possible. Future-oriented agreements are not a guaranteed success. The latest developments in Volkswagen (Jolly 2024), where management has withdrawn from longstanding job security commitments, is a demonstration of this warning.

IG Metall and works councils attempt to expand their existing repertoire of collective bargaining and company policy instruments in order to be able to co-manage change. 'Collective agreements for securing the future and competitiveness' – in short, 'future-oriented agreements' are the main example. The 2021 round of collective bargaining in the metal and electrical industry provided works councils, IG Metall and management with a collective framework to regulate 'measures to realise innovations, improve competitiveness, reskill employees and achieve their continued employment' (Köhlinger and Fay 2022: 177). Similar to traditional company competitiveness pacts, employers agree to refrain from collective dismissals of operational personnel while employees in return make concessions on working conditions and elements of pay. The future-oriented agreement is an innovative instrument because it goes considerably further than these competitiveness pacts in two important respects, particularly in the context of the dual transformation.While plant agreements are generally a reaction to already advanced crisis situations, future-oriented agreements are, at least according to IG Metall's calculations, anti-cyclical in nature: the core idea is to work together at an early stage on future utilisation concepts for locations beyond ICEV technology, as long as there is still demand and the plants are working at full capacity, i.e. before the crisis has occurred.

The second difference concerns the scope for codetermination at plant and company level. By involving works councils and IG Metall in the joint elaboration and development of company concepts for the future and allowing them to make their own contributions, the

codetermination rights of representatives are extended beyond the legal framework. However, it is also clear that unilateral decision-making power remains with management.

There are a number of other innovative collective bargaining and workplace instruments and forms of action that are also being used. These are innovative because they go beyond the previously dominant patterns of regulation, both in terms of strengthening the institutional and organisational power resources of works councils and trade unions and in terms of the means of action they deploy. Table 1 provides an overview of the innovative instruments identified and the companies and businesses in which they have been applied. These include innovative collective bargaining instruments, such as future-oriented and collective social agreements; IG Metall projects to tap into new, previously unorganised workers, such as at the Tesla factory near Berlin; creative and disagreement-led company target-setting processes, such as at the Mercedes site in Marienfelde, near Berlin; as well as the success of works councils in expanding the scope for codetermination, also at Mercedes.

Table 1 Innovative instruments in approaches to the transformation

Instrument	Innovative element	Company
Future-oriented agreements	Involvement of works councils in the elaboration and development of future operational concepts Embedding of processes in intra-company coordination	Volkswagen (2016), ZF (2019-22), Bosch (2022-25), Mahle (2022-25), Musashi (2022-30)
Collective social agreements	Increasing severance payments and other compensation benefits above the usual level achieved through the right to strike Strengthening associational power	Musashi, GKN Driveline, individual Continental locations, Ford Saarlouis
Company-centred organising campaigns	Establishment of trade union structures in strategically important companies	Tesla Grünheide
Disagreement-led operational goal-setting processes	Preventing plant closures with the help of associational power	Mercedes-Benz (Berlin-Marienfelde)
Expansion of company codetermination	Strengthened right to information and right of codetermination for the general works council in strategic decisions on investments and innovations	Mercedes-Benz Group

Source: Boewe and Schulten (2025)

The initiative for the future-oriented agreements came from the works councils seeking a proactive approach to deal with corporate strategy at an early stage and drawing the appropriate conclusions in regard to the trends in employment. It was important that the works councils were supported in this process by IG Metall. This took place via the union's 'Team Transformation' established on regional basis. This is a group of specialist trade union officers who support works councils in handling both small and large tasks involved in transformation processes.

The companies were anything but open to this new style of instrument, rather preferring traditional company negotiations without the involvement of IG Metall, but pressure by protests and warning strikes convinced them.

In terms of content, the agreements comprise three elements: first, concessions on the part of employees, for example on the subject of working hours; second, a temporary exception of redundancies in operational areas; which, third, forms the framework for the negotiations conducted jointly by management and works councils on the future use of the individual sites. Although these processes are organised at plant level, they are integrated into the coordination structures operating within the company.

At the heart of such agreements are operational processes, divided into four phases that include operating plans with milestones. The first is an impact analysis, in which the initial situation of the site, as well as particular competencies or weaknesses, are recorded. The second main phase serves to develop future concepts and the inputs required for implementation on a joint basis. This concerns both the calculation and the selection of possible products, alongside the necessary investments and training measures. The conclusion of the second phase is the development of target-setting processes by a coordination committee made up of works council and employer representatives. In the third phase, the future concepts are approved by the decision-making group set in place for the overall project. This is a committee made up of management, works council members and IG Metall representatives at group level, responsible for monitoring the entire process. The fourth and ultimate phase is used for the final coordination and approval of the future concepts.

Works councils are supported not only by IG Metall during their work on the establishing target-setting processes; they can also draw on the work of external business consultants, the costs of which are borne by the employer. If the works councils and the employer representatives cannot agree on a concept, the employer has the final right to decide.

A second type of agreements, 'collective social agreements' are not a new collective bargaining instrument, but one that has experienced a revival in the wake of transformation-related pressure on workforces and site closures. This is demonstrated by recent collective bargaining disputes at various Continental and Vitesco sites (Ebenau et al. 2022); the Ford plant in Saarlouis, where production comes to an end in 2025; at the Japanese supplier Musashi; and at the supplier GKN Driveline. The collective social agreement that has been concluded by IG Metall for the closure of the Ford plant in Saarlouis is one of the most comprehensive and generous among such agreements in Germany (Sauer 2025). Out of the 3,600 employees, 1,000 will be kept until at least 2032 assigned for different projects (among others Ford car parts and battery recycling), 1,400 workers will move to a transfer company for further qualification and skills development (18 to 24 months

with a compensation of 80% of their previous salary). The rest of the workers are entitled to severance payments.

To mitigate the consequences of operational change for the employees affected, German law provides for negotiations between the company and the works council on the reconciliation of interests and the development of a social plan. Collective social agreements have the same subject matter but are concluded between the company and the trade union. They give the latter the opportunity to increase pressure on the employer to meet its demands by means of strike action. According to current case law, a collective social agreement may actually only be required where it aims to compensate for the economic disadvantages of a business decision, for example by making high severance payments or financing a transfer company to avoid unemployment. Union demands must not be directed against the business decision itself, i.e. the closure of a location or the reduction of jobs (Ebenau et al. 2022: 189). Trade unions therefore hope that collective social agreements, and the extended right to strike that goes with them, are a means of increasing the level of severance payments and other compensation for economic disadvantages. In the case of the conflicts over the Continental sites, this was successful. IG Metall was also able to 'obtain modifications to corporate measures' and postpone individual site closures for a few years (Ebenau et al. 2022).

4.3. Italy

In Italy, the production of passenger cars has collapsed (a reduction of 66% between 1996 and 2022) and the resilience of the production of commercial vehicles, and of parts and components, has only slowed the destruction of employment. A massive use of social shock absorbers contributed to alleviate the effects of this collapse on employment. The use of Cassa Integrazione Guadagni (CIG; short time working compensation scheme) provided by Istituto Nazionale della Previdenza Sociale (INPS; National Social Security Institute) has absorbed the majority of potential job losses in the sector.

On the one hand, the use of those mechanisms has allowed the maintenance of a significant number of jobs; on the other, however, it has for years impoverished the wages received by workers in the sector. The reduction in employment in the final assembly of vehicles has not been compensated for by the growth in jobs in the production of parts and components. On the contrary, these two phenomena have led to a structural change in the composition of the sector's employment, with a predominance of employment in components (over 50%). Moreover, Italy, unique among western European countries, is characterised by the presence of a single large manufacturer (formerly Fiat-FCA, now Stellantis). FCA's industrial plans of 2010 and 2014 focused domestic production mainly on the high-end segments (Maserati and Alfa Romeo), on vehicles of US origin (Jeep) and keeping the Panda as the only mass market model (the electric version of which is expected to be produced in Serbia in the future). The production of mass market vehicles has, furthermore, been increasingly delocalised abroad, particularly to countries with low labour costs (Serbia, Poland, Türkiye, northern Africa).

One result of the merger between Fiat Chrysler Automobiles and the French PSA into Stellantis is that most of the Italian plants (Fiat or Alfa Romeo) have been placed in a vulnerable position due to the loss of central management functions to the French corporate headquarters. It has only been the resilience of the industry segments dealing with the production of commercial vehicles and of parts and components that have slowed the

draining away of employment. A massive use of social shock absorbers while contributing to the slowdown of job loss, it does not offer a future perspective for the industry. Just transition in the Italian automotive sector was limited to managing its decline and fend off a part of its social effects in a defensive way.

5. Conclusions: what is at stake for the European automotive industry?

The particular challenge for the automotive industry is that, besides decarbonisation, many other changes are happening coincidentally: the digitalisation of both product and process, the automation of production and the complete reorganisation of automotive value chains are also underway. This is resulting in fierce competition between production locations for new developments, decisions over which are often focused on labour costs and result in relocations and job losses.

How do actors, in particular trade unions, works councils and governments, are dealing with these challenges in the automotive sector? When looking at France, Germany and Italy as core countries and Central-Eastern Europe as integrated periphery on the other hand, just transition practices in the sector look rather disappointing. Only one country, Germany, has shown elements of a functioning just transition policy for the sector. As regards France, the picture is bleak with practices of 'managing the decline', where agreements between trade unions (better said: some trade unions) and management, backed by the government, provide some cushioning for employment losses. In other cases, trade unions are having to accept making concessions over wage levels and working conditions to prevent the relocation of production to cheaper locations. As regards Italy, since most Italian plants are in a vulnerable position due to the loss of central management functions to the Stellantis headquarters in France, the Italian trade unions have lost their leverage over decision-making. Passive measures such as the short-time working compensation scheme provide some relief, but cannot offer a future perspective.

As regards Central-Eastern Europe, no just transition policies or practices are visible in the automotive sector. Actors at company level have no leverage over decisions made at foreign company headquarters. Trade unions and works councils are weak and national industrial relations systems do not provide opportunities for a meaningful involvement of social partners in shaping restructuring processes. Newly established production locations, in particular in the supplier sector, have no or very low unionisation rates and workers are exposed to high flexibility, low job quality and often also to increased health and safety risks.

Germany, on the other hand, demonstrates that innovative instruments in industrial relations can indeed make a difference, although the most recent developments highlight that they do not guarantee success. One particular case stands out as offering exemplary good practice for just transition, even if it is linked to a company closure: that of Ford in Saarlouis. The collective social agreement that was concluded by IG Metall for the closure of the plant in early 2025 is one of the most comprehensive and generous among such agreements. Out of the 3,600 employees, 1,000 will be kept until at least 2032 and assigned to different, future-oriented projects (among others: Ford car parts and battery recycling), while the majority of workers are moving to a transfer company for further training and skills development with a compensation level of 80% of their previous salary.

The industry needs to face the reality that its past success in combustion engine technology offers no template for the future. How workers can shape the complex restructuring processes of the European automotive industry is decisive for making this transition just, but ultimately making zero-carbon mobility achievable. It was shown above how and why the EU regulatory framework, with the CO_2 emissions standards for cars and vans, is in conflict with EU climate policy targets while creating new inequalities and ultimately posing a threat to the future-proofing of European automotive jobs. It was also stressed that electromobility (with its lower labour demand) is the lesser threat to EU jobs; what is most important is how (and how far) EU manufacturers are managing to keep up with delivering clean mobility solutions. In line with the priorities of the EU's 2024-2029 policy cycle, this is indeed about re-defining the competitiveness of a key industrial sector in the new era of electromobility under geopolitical pressures from both the East and the West.

Now that the EU has announced protective countervailing duties on battery electric vehicles imported from China, the big question is whether and how the EU automotive industry will be able to benefit from this protective measure. Carrying on the old business model of building ever bigger, heavier and more expensive cars (even if often under hybrid or plug-in hybrid cover) would be a huge failure. Doing so under the protective umbrella of tariffs would also do no service to consumers and to social justice, and it would also threaten the achievement of road transport emissions targets. Giving up already binding legislative commitments, like the 2035 exit from the combustion engine, would be the worst option not only for the climate but also in respect of the medium and longer term future of European automotive jobs.

However, policy also needs to push towards a more comprehensive transformation of mobility systems. The whole system of national subsidies for both the production and sale of BEVs must be reconfigured to support not only affordable BEVs but also more affordable electromobility services, with a clear priority for those social groups that are the most dependent on cars and the most excluded from recent car ownership.

For a just transition in the automotive industry:

- The automotive industry and the regions that are dependent on it should be subject to dedicated just transition policies with appropriate levels of regeneration funding. The current Just Transition Fund should be expanded accordingly. The MFF proposal that intends to scrap the Just Transition Fund and make it part of national and regional plans without dedicated funding would make this even more difficult.
- Strict social and labour conditionalities need to be applied in terms of public procurement, state aid and investment subsidies in any project that involves public funding related to the automotive industry. Environmental conditionalities are, likewise, essential, in particular when support for large-scale battery manufacturing investments is concerned.
- A legal framework for a just transition must be developed at European level that guarantees the essential role of collective bargaining in anticipating and managing change and which maximises the transformative potential in the industry while ensuring just transition and quality jobs.
- Consequently, full respect is needed for the right to collective bargaining based on the prerogatives of trade unions as the bargaining agent for workers, as recognised by

the Directive on Adequate Minimum Wages in the EU. Specific initiatives must address support for collective bargaining and social dialogue in those Member States that do not yet have a strong framework.

- The new US tariffs on EU car exports would hit the industry hard and might lead to tens of thousands of job losses. Affected workers need to be supported and EU instruments such as the former SURE mechanism, but also the Globalisation Adjustment Fund, need to be activated.

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