

# THE POLITICAL ECONOMY OF ELECTRIFICATION IN THE EUROPEAN CAR INDUSTRY



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Vol. 3: Actors' strategies and institutional frameworks

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## 1. Introduction: setting the stage

The car industry as we have known it in Europe since at least WW II is unlikely to exist in a decade. The Covid crisis may have raised significant doubts about both the prevailing business and production models, but the structural push has come from the need – and the increasing political will – to address the climate emergency. Decarbonisation, increased competition from newcomers with effects on sales and profits, technological acceleration, the Covid-19 pandemic, and fragile supply chains have conspired to produce the perfect storm for the industry. This report analyses the main economic and social aspects of the process of vehicle electrification in the European automotive industry (here meant to encompass both car manufacturers and their main suppliers) in light of this historical, technical, political and structural background. We concentrate on the key actors in the transition – the car manufacturers (or original equipment manufacturers, OEM henceforth), suppliers and supply chain effects more generally, business and employers associations, trade unions and workers representatives and government policies and strategies. We examine the European (mainly EU) car industry, and focus on industry leaders in Germany, France, Italy and Central Europe, in that order, at the start of 2022.

Our findings do not make for easy reading. The electric vehicle (EV) transition will be a rough and bumpy one. Put bluntly, the industry actors are now paying the price for their procrastination, including the failure of self-regulation of the industry, over the past decade and a half<sup>1</sup>. Since at least the Stern Review (Stern 2007) and the IPCC's (2007) UN Report on Climate Change, which put the problem on the political agenda in a way that made it impossible to ignore, very little has changed in the way the main actors have approached the issue of CO<sub>2</sub> reduction. In fact, OEMs have increased their sale of high-emissions vehicles (larger cars and SUVs), with the complicity of governments and the EU Commission, whose CO<sub>2</sub> standards adjust targets for vehicle weight. Suppliers are equally unprepared, having consolidated their competencies in internal combustion engine (ICE) based technologies, only recently starting to diversify. While organised labour may now be aware of the potentially devastating employment consequences of the shift to EVs, the first comprehensive report on the introduction of EVs, published by the United Automobile Workers in the USA (UAW 2019), is less than three years old. Finally, governments have recognised that the automotive industry requires support to master the transition but the scale and scope of these initiatives vary widely across European car-producing nations.

The combination of time lost, the sudden carbon awareness among politicians, the Dieselgate scandal in Germany, and the Covid shock, has caught the industry unawares. A

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<sup>1</sup> See Mock (2018) for more detail on the evolution of voluntary and mandatory CO<sub>2</sub> emission targets in the EU.

transition that would have been challenging if spread out over two or three decades is now compressed within ten years – starting, as it were, yesterday. Industry players are therefore blowing hot and cold on EVs now: while some OEMs are singing the praises of a distant electric future, many ICEV-specific suppliers and industry associations are for technology neutrality (i.e., clean ICEs, driving on synthetic fuels, and plug-in hybrids or PHEVs) as a central policy plank. But the paradox of the adjustment runs deeper than that. For the traditional manufacturers, ICEVs are cash cows, while EVs will be loss leaders for the foreseeable future; car producers therefore have a strong incentive to sell more ICEVs for as long as they can to finance the expensive transition to EVs. Suppliers are also forced to spend vast amounts of R&D money on the shift into the new technology or go under, all while spending possibly equally large sums on development and production of ICEV-specific parts and systems. And while labour union headquarters now appreciate the need to embrace an electric future, with better and safer jobs, shopfloor unionists and regional labour organisations are wringing their hands, lamenting the social consequences of a rapid electrification. In principled declarations, OEMs, suppliers, unions, and regional governments embrace the EV transition, but in practice few of the key actors currently seems more than lukewarm about the forced speed, direction, and cost of the EV transition, and given their individual and collective cost-benefit analyses, a significant adjustment, including a delay, in the introduction of EVs can no longer be excluded.

We document these processes in this report, which analyses OEMs, the main suppliers, and labour in the European car industry as well as related government objectives and policies. The next section presents our underlying methodological and analytical points, and the empirical section 3 examines the four actors' electrification strategies in light of the respective industrial relations frameworks in Germany, France, Italy, and Central Europe. We conclude with a review of the evidence and its implications.

## 2. Analytical framework

This report takes stock of how the key actors in the industry – firms, from car producers to suppliers, and (organised) labour – and national governments prepare for the transition – something about which we have little systematic knowledge. We will not only describe today's processes, but also locate them in the recent evolution of the industry over the past three decades. In this study, we will examine the three main car-producing countries in Europe – Germany, France, and Italy – and Central Europe, where much of the production has relocated over the past twenty years. The first three combined account for about 75% of car production (in Value-Added terms), and the industry is particularly important in Central and Eastern Europe as one of the few sectors with a sustained growth and export profile.

## 2.1. Time inconsistency, collective action, and asset-specificity

We concentrate on the existing and projected costs and benefits for OEMs, Tier 1 and Tier 2 suppliers, and labour in Germany, France, Italy and Central Europe. In addition, we will examine government policies that stimulate EV demand (e.g., ICEV phase-out plans, consumer subsidies or availability of charging infrastructure) and that support firms and workers in their transition. On the industry side, our attention will go to the interaction between the initial financial situation of companies and their burgeoning EV portfolio, and to the links between winding down traditional cars (ICEV henceforth, for internal combustion engine vehicles) and developing EVs. We will examine the interaction between restructuring plans by OEMs and suppliers, and their implications. We will carefully look at employment forecasts and estimates, both in terms of numbers and – equally important in our view to understand the political economy of the transition – the shifts in skill profiles for EV manufacturing. Because of the large losses that employers and workers face as a result of so-called stranded assets – primarily dedicated machines for the first and specific skills for the second – rapid electrification might, we think, act as a catalyst for a coalition between both in favour of a slower, and possibly only partial transition.

Two central analytical concepts in political economy inform this argument: time inconsistency and collective action. Time inconsistency refers to the discrepancy between the immediacy of the visible (large) costs of the transition, and the (equally large or larger) benefits, which lie relatively far in the future<sup>2</sup>. As a result, today's costs are valued much more highly than the long-term benefits. While these calculations might differ slightly for individual actors – OEMs are more focussed on competitiveness and have less to lose than workers or ICEV-specific suppliers – the costs are significant for all industry players. In concrete terms, in the case of the rapid transition to electric vehicles that is currently envisioned (or suggested), workers, unions, OEMs and, in particular, suppliers will likely face large job losses, significant skill depreciation, and massive investment and asset write-offs in the immediate future, while their gains may be decades away, and highly uncertain.

Collective action, in turn, refers to the fact that high costs are concentrated in particular groups, while the (equally large) benefits are diffuse and distributed across many groups.

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<sup>2</sup> This statement requires an important qualification: the narrow economic benefits of the green transition are unclear. In effect, most decarbonisation strategies replace existing markets, but do not expand them: an EV is a car with a different propulsion mechanism, and green electricity is used for cooking, powering, and heating, in much the same way as brown electricity does. All other things equal, therefore, the aggregate net benefits are probably lower than most optimistic assessments assume. While this should have no impact on the long-term economic and (obviously) environmental case for the transition, the presence of a time inconsistency problem, in which long- and short-term costs are discounted differently (a problem Stern (2006) already acknowledges), does mean that the economic case needs to be bolstered. Part of this could simply follow from a clearer definition of externalities – many environmental costs are not or poorly accounted – and part could be accomplished through a shift in relative prices, which would transform the green alternatives from more expensive to cheaper products.

Usually this implies that mobilisation in favour of the beneficial change will suffer debilitating motivation problems (Olson 1965). While wider political mobilisation has partly overcome this problem, the groups that bear the significant costs thus also face a steep incentive to organise to minimise their losses. Again, applied to this case, workers, OEMs and suppliers face steep losses, while the benefits of electrification are (clear but) diffuse, since they cover in principle the whole and future populations.

Combining these two basic concepts in political economy has several implications, which we will explore in this report. First, arguments that invoke future gains will be discounted more heavily than those that invoke current losses. Put differently, the problem and the technological solutions may be clear, as may be the aggregate long-term gains, but that is, at best, a necessary but insufficient condition for political support. Second, and in a similar vein, competitiveness considerations, with uncertain distant returns, face a much higher discount factor: even though going all-electric may well be necessary to remain competitive, the uncertainty and time horizons make it a less than appealing short-term option. Third, since the groups that stand to lose significantly now are already highly organised (OEMs, suppliers, unions and business associations), they could combine into a *de facto* conservative producer coalition' in favour of the status quo or at least a slower transition, as reflected in the many instances of ambivalence toward electrification that we document here: many car producers, suppliers and unions in the industry are singing the abstract praises (including the necessity) of EVs but are sceptical about the concrete implications of such a transition path. None of these points necessarily imply that unions and OEMs cannot be persuaded to embrace EVs wholeheartedly, but we think that this remains very difficult as long as electrification is, or appears to be, a zero-sum strategy. Even if there is little doubt about the long-term benefits of electrification, in other words – something we agree on with most observers and actors in the industry – the steep adjustment costs faced in the next decade will make many manufacturers, suppliers and their workers reluctant to fully embrace the EV revolution without significant accompanying policies that reduce these costs in their many forms.

## 2.2. Industrial institutional frameworks: arenas of adjustment

The second analytical leg of the paper is the role of history, especially as embedded in institutional frameworks governing economic action and adjustment. The electrification of the European automobile industry is not taking place in a vacuum given by technology, but in a (often thick) network of rules, obligations, and relations of power handed down by history. While the short time horizons pose problems for OEMs, suppliers and workers in all car-producing countries, in other words, the different institutional frameworks in Germany, France, Italy and Central Europe will play a crucial role in the shape that national EV transitions might take. Two important factors will determine how employment (and wider social) effects will play out in different settings. First, the large industrial shift will

require internal restructuring measures in many firms along the automotive supply chain. Restructuring can take many forms – from retraining workers over voluntary redundancy schemes to collective dismissals – but it is likely to be managed in a more orderly and socially acceptable way if workers and their representatives are included early on in strategic decision-making processes. Such an arrangement usually follows if organised labour engages with management in frequent negotiations, thus institutionalising trust, and/or if worker co-determination has a (quasi-)legal status under collective bargaining agreements. Second, legal institutions like labour laws determine the power of employees in shaping the transition, as they can dramatically influence the cost of restructuring measures. If a national labour code determines that, for instance, the social consequences of collective dismissals have to be mitigated by social plans paid for by employers, firms are forced to internalise this cost in their decision-making on adjustment. Labour laws that give unions the right to veto restructuring plans or to come up with alternative solutions equally increase the chances for a negotiated positive-sum outcome.

A final note on method. Our report is primarily based on existing studies and analyses, ranging across academic work, consulting reports (of which there are remarkably many, though sometimes of varying quality, not least because opinions on the future will always have a large speculative dimension), and newspaper articles. Where possible we have, as is common in such research work, triangulated sources – mainly to avoid bias and give an overdue weight to short-term, ad hoc, reports. We also corrected our interpretations by asking colleagues and experts for comments on studies and discussions that fed into our report.

### 3. Preparing for electrification: Country studies

This part of the paper presents the empirical point of gravity, where we examine how OEMs, suppliers, labour and governments have engaged the EV transition in Germany, the most important European car-producing country, France and Italy, the second and third, and in the new automotive region Central Europe. While we will concentrate on similarities, especially in the definition of the problem, these four production locations enter electrification from historically, economically, and socially different starting points that have a long shadow over current developments.

#### 3.1. Germany

The German car industry starts the electrification process in a slightly ambiguous position. After a wave of consolidations and the dual shocks of the financial and Covid crises, the industry is today easily the strongest in Europe, posting stable results and significant employment growth. Three domestic automotive groups have survived the shake-out of the

last two decades: VW, Daimler, and BMW. Suppliers to the car industry have also thrived since the start of the millennium, able to upgrade significantly and expand their business. And unions remain strong, which hands them an important role in the electrification debate and process.

At the same time, the German automotive industry has been caught off-guard by the rapid shift in technology towards EVs. While all actors have voiced support for low and zero carbon emissions, they seem equally concerned about the speed and the increasing costs of electrification. Foreshadowing our analysis, the central problem that the industry, including workers and suppliers, seems to face is how to handle the imminent loss of very sophisticated ICEV technology-specific assets such as skills, engineering, and manufacturing technology, without a short-term alternative income stream. After years of lobbying against more stringent emissions, the new German government is willing to back the industrial shift with large-scale financial support. However, despite the technological capabilities of OEMs and suppliers, and the skills and willingness of the workforce, the short time horizon makes a carefully negotiated transition very difficult.

We start this review with a brief outline of the German industrial relations framework, against which we will then analyse the strategies of the main OEMs, the costs and benefits for suppliers, the position of (organised) labour and relevant government policies before concluding.

### 3.1.1. German industrial relations – a conflictual partnership

In Germany the settlement between workers, management and owners follows what the unions call ‘conflictual partnership’ (Streeck 2016). The term means that the unions see the fates of both sides of the industry as inextricably linked but within a wider framework where the interests of one side are different from those of the other. This basic set-up – where worker co-determination (Mitbestimmung in German) plays a guiding role – has important consequences for skills, social peace and, therefore, industrial adjustment. When companies need to restructure, which usually involves significant workforce reductions, the process typically starts with an announcement by management of the reasons for restructuring and its implications for the company to the workforce through the works council (Betriebsrat or BR henceforth), which has a legal right to challenge the plans. In many cases, the (union-controlled) BR will try to revise the plans while staying within the financial portfolio.

The BR is, however, only the first line of negotiation in the German industrial system. If management and BR cannot find agreement on how to proceed, a second procedure kicks in, which includes social plans negotiated between unions and management, under the (distant) auspices of the Ministry of Labour who must approve the plan. The company

invariably pays all or most of the costs of retraining and layoffs, including sometimes significant legacy pension costs. Generous contractual notice periods, negotiated by strong unions, can mean several years' severance pay for a laid-off worker, and a significant contribution to their final company and sectoral pensions – something that can easily run into €100,000 or more per head, and which is in principle fully borne by the company – drive up costs so much that management is forced to consider the BR's alternatives very carefully. In addition, pushing through large workforce reduction programmes against the will of the BR would have the negative effect of undermining the long-term experience-based trust at the basis of the functional flexibility necessary for future adjustments.

### 3.1.2. The inside track for the traditional car makers

For a long time, German car manufacturers were able to exploit loopholes in EU emission regulations, enabling them to produce ever more powerful, heavier and, thus, polluting cars. EU emission targets for individual manufacturers are adjusted for the OEMs average vehicle fleet weight – the heavier the fleet, the higher the allowed CO<sub>2</sub> emissions. From this perspective – and based on carmakers' significant lobbying power and political clout – it is hardly surprising that the majority of German OEMs were late in switching to EVs. However, the very strict emission targets for passenger cars in Europe and increased competition from new market entrants forced all German OEMs to actively engage with the electrification of their fleets. In its NEW AUTO strategy, the VW Group projects EVs to make up 20% of global sales in 2025, 50% by 2030 and close to 100% in all major markets by 2040 (Kane 2021). The VW brand's Accelerate strategy even foresees EVs to account for 70% of their sales by 2030 in Europe and 50% in the US and China in the same period (Randall 2021a). Mercedes-Benz, partly due to their renewed focus on the luxury segment, is ready to go all-electric as early as 2030, where market conditions allow it (Mercedes-Benz 2021). After its early market entry with the i3 in 2013, BMW is now taking the slowest route to electrification among German OEMs. The company plans 50% of their sales to be fully electric by 2030 (BMW Group n.d.).

While all German OEMs are nominally committed to producing and selling EVs, most of them have not set a fixed ICEV phase-out date (Usine Nouvelle 2021). Audi and Mercedes both announced that they would stop developing new generations of pure ICEVs but they insist on selling already existing designs for the foreseeable future (Randall 2021b). BMW outrightly rejects an ICEV sales ban, arguing that, by keeping older cars on the roads for longer, the ban is actually harmful for the environment (Fasse 2021). Generally speaking, more than just continuing to sell their legacy technology, all German OEMs are investing in the development of plug-in hybrid vehicles (henceforth PHEVs), which are seen as a valuable transition technology at least until 2035 but potentially even beyond that date. The VW Group alone, for example, plans to invest around €11bn in hybridisation, leading to approximately 60 different models by the end

of the decade (on top of about 70 all-electric models that will be sold by the Group's brands) (Volkswagen Group 2020).

The reason for the relative ambiguity by OEMs towards the accelerated electrification is painstakingly simple: the transition to EVs is costly, as it requires new plants, machines, R&D and skills. For example, between 2020 and 2025, the VW Group plans to spend roughly €35bn on the electrification of the conglomerate (23% of total investments in this period) (VW Group 2020). ICEVs, on the contrary, can be produced with existing R&D as well as physical and human capital and, hence, continue to be cash cows for the OEMs. Without a short-term alternative, OEMs, therefore, plan to finance a large portion of the transition to EVs with cashflow from the sale of ICEVs.

The shift towards mechanically simpler EVs coupled with a reduction in vehicle hardware complexity also offers carmakers an opportunity to cut costs by increasing the share of automated production while reducing employment. However, given the strong position of works councils and unions in the German automotive industry, supported by the legal and institutional framework of industrial relations, German OEMs will find it hard to implement significant job cuts. VW, for instance, was quick to dismiss potential downsizing scenarios of up to 30,000 jobs that had been brought up by the Group's CEO Herbert Diess, after a massive public outcry by workers representatives and politicians (Menzel et al. 2021). The powerful position of German workers is therefore likely to incentivise the country's OEMs to transfer a considerable part of the job losses to their non-German plants.

Alternatively, OEMs could use their planned vertical re-integration to pay off unions. By focussing on EV-related tasks that would have traditionally been outsourced – such as the development of batteries – they can shift positions from traditional vehicle assembly to new areas, reducing net employment losses. This also allows OEMs to produce a significant portion of the EV value added – which is largely driven by batteries – in-house, increasing their EV profit margins. All German OEMs and their international partners are actively investing in battery R&D and production plants. However, since EV-related technology is still relatively volatile and requires large up-front investments in machinery and human resources to acquire the necessary expertise as quickly as possible, the continued sale of combustion engine-based vehicles (i.e., pure ICEVs or PHEVs) will remain the only viable short-term financing option for the green transition of German car producers.

### 3.1.3. Fragile resilience among German suppliers

If the shift to EVs creates a significant challenge for OEMs, the transition is closer to an existential threat for the German automotive supplier industry. The sub-sector employs roughly 300,000 workers and is characterised by a distinctive mix of large companies with international locations and small and medium enterprises (VDA n.d.). Employment figures range from thousands to less than ten workers per firm and are usually in line with

the degree of diversification: the smaller the firm, the more specialised its portfolio. While (automotive) manufacturing SMEs are widely praised as the backbone of the German economy, the larger suppliers dominate the world market. In 2018, three out of the top five global suppliers – Bosch, Continental and ZF Friedrichshafen – were German companies (Berylls 2020).

For many suppliers – especially smaller ones – too much of the political attention has gone to the big OEMs that publicly embrace the shift to EVs (Kurmayer 2021). Especially combustion engine (parts) specialists and their workers fear the worst. While large suppliers remain vocal in their support for ICE technology, they have the financial and strategic capacity to hedge their bets. Bosch, for instance, claims that the company will continue to invest in combustion engine technology for at least another 20-30 years but, at the same time, has already invested €5bn in e-mobility technology and is building up its hydrogen capabilities (Miller 2021). ZF Friedrichshafen, planning to cut up to 15,000 jobs, has created its own retraining facility for 30,000 employees and – in a bid to reduce its reliance on combustion engines – acquired multiple smaller companies in areas like autonomous driving and wind energy (Franz 2021). However, many smaller and financially weaker suppliers can simply not afford the conversion. The metal company Selzer, for instance – who has supplied parts for combustion engines for over 100 years and relies on the technology for more than 80% of its business – has cut its workforce by half since 2018 and stopped all apprenticeships in 2020 due to the industry's move to e-mobility (Miller 2021). For these firms, the once-distant risks of the shift to EVs have long become reality.

The elephant in the room for suppliers is if and how OEMs will reorganise after decades of vertical disintegration. The relatively high cost of battery production (including new plants and R&D) incentivises OEMs to reintegrate traditional supplier tasks. In addition to battery packs and modules – which are already manufactured by some OEMs – most carmakers also plan to design and produce battery cells in the future. German companies are racing to attract key personnel or set up joint ventures with battery cell manufacturers to gain the required company-wide battery experience as quickly as possible. The big emerging winners in this race are existing Asian battery suppliers as well as new start-ups which gain investments from OEMs. As part of its effort to build six battery cell gigafactories, the VW Group has already entered joint ventures with China's Gotion and Swedish start-up Northvolt (Eddy 2021). Mercedes initially announced a global network of battery assembly plants (Mercedes-Benz 2019) but has since also entered a joint-venture, called Automotive Cells Company (ACC), with Stellantis and TotalEnergies to produce battery cells in European locations (Halvorson 2021). Only BMW deems the technology still too volatile to bring it in-house with the exception of a battery cell R&D centre (Waldersee and Amann 2022). Hence, while the European battery market is not yet fully

saturated, existing German suppliers will find it increasingly difficult to find lucrative conversion opportunities in the area, as OEMs and new market entrants are pushing hard to gain much of the profitable market for themselves.

#### 3.1.4. Monitoring the social cost of electrification: Organised labour

Union strategies have to be understood in light of the recent evolution and immediate future of employment. Direct employment in the German automotive industry increased by almost 20% from 2010 to 833,937 employees in 2018 (IG Metall 2021). However, in part resulting from the impact of the Covid-19 pandemic, the workforce has been shrinking already in the early transition phase and at the end of 2020, the automotive industry had lost 25,000 jobs compared to 2018. While the number of projected net job cuts varies depending on the assumptions regarding the 2030 EV share, productivity increases and EV-related job creation, a wide array of studies agree that tens of thousands of jobs related to combustion engine technology could be lost in the coming decade (Amelang 2021). IG Metall, the dominant union in the German automotive industry, warns that by 2040 the industry could lose up to 300,000 jobs, with an employment reduction of up to 45% in the particularly at-risk drivetrain jobs (IG Metall 2021).

While the Covid pandemic acts as a multiplier of the (employment) effects caused by the structural shift, IG Metall maintains its just transition approach, emphasising the need to urgently decarbonise the economy, but also stressing the importance of keeping the social consequences of the transition in check. Put differently, the union is somewhat unique in Europe: keenly aware of the need for EVs for environmental reasons and market developments but simultaneously deeply concerned about employment effects.

Yet when it comes to the practical implementation, the union's tone is more pragmatic. In 2021, the head of the leading IG Metall district of Baden-Württemberg expressed concern that ICEV-dominated regions such as the Stuttgart area could end up with a few small Detroit's (i.e., derelict towns built on the ashes of a once powerful industry) if the transition away from combustion-engine production advances too rapidly without creating new EV-related opportunities (von Leesen 2021). Similarly, the Mercedes works council sees the shift to e-mobility as inevitable but also acknowledges that employees are doubting their company's decision to fully shift the focus away from ICEVs in favour of EVs in the near future (Luhmann 2021).

More generally, IG Metall sees battery cell plant development of paramount importance to balance aggregate job losses but remains wary of regional employment effects and argues that the potential lack of raw materials remains a constant risk – and one which is hard to mitigate, since many of the raw materials arrive from outside the EU. Furthermore, changes in required skills will lead to wide-spread upskilling, retraining and/or relocation

requirements for employees. In Germany alone, about 800,000 jobs in the (wider) automotive industry require additional training (BCG 2021). For approximately 500,000 of these, which are expected to remain in the same company with slightly different job requirements – e.g., assembly line workers— on-the-job training will be sufficient but necessary. Another 200,000 workers who could shift to a similar industry or job profile – e.g., from gearbox production to electric motor assembly – will require retraining. Finally, about 70,000 employees will have to change industry and/or job and thus require full-on retraining, leading to requalification and often relocation. However, the novelty (and volatility) of battery and other EV-related technologies means many skill profiles are not yet formally defined and might shift further with future technological development, which could create major issues in retraining workers sufficiently quickly.

In sum, the transition to EVs creates a dilemma for workers in the German automotive industry and their representatives. Clinging to ICEVs is not an option for national unions, as IG Metall has made clear, but simply letting go of thousands of jobs – the source of the union's political power – seems an unlikely alternative.

### 3.1.5. Threading the needle: Government strategies

As all other actors, the German government is pursuing a delicate balancing act which tries to reconcile environmental objectives with economic and social realities in the domestic automotive industry. For decades, German governments have lobbied against tighter emission restrictions to protect their domestic automotive industry – in 2013, Chancellor Merkel even convinced fellow heads of EU member states to delay a vote on fleet emission reductions after a deal had been agreed by the EU Council and Parliament (Keating 2013). The new government, in contrast, is supportive of the EU Commission's proposal to reduce fleet CO<sub>2</sub> emissions to 0g/km by 2035 and plans to have at least 15 million zero-emission vehicles on the country's roads by 2030, alongside an increase from roughly 49,000 charging spots in 2021 to 1 million public chargers at the end of the decade (SPD, Bündnis 90/Die Grünen and FDP 2021). However, the governing parties did not agree on a specific phase-out date for ICEVs and instead referred to the EU's 'Fit for 55' proposal, which would stop the sale of ICEVs from 2035 onwards (Neißendorfer 2021). And the Green party's plan to ban the production of ICEVs from 2030 was blocked by the worker-friendly SPD and the business-friendly FDP, while the latter was also successful in pushing for further investment in synthetic fuels (so-called e-fuels) to enable (existing) combustion engines to become zero-emissions vehicles (Euractiv 2021).

Nevertheless, the German government is prepared to stimulate e-mobility demand. Government support for the nascent product type comes in the form of direct one-off subsidies for EV buyers and ongoing tax breaks, which – depending on the type of low-emission vehicle – can rise to between €15,000 and €20,000 over the lifetime of an EV (Hubik et

al 2021). Originally introduced by the previous government, the new coalition has confirmed the extension of the current subsidy scheme until the end of 2025 (Appunn 2021).

That is not the whole story, however. The national planning group for the future of mobility ('Nationale Plattform Zukunft der Mobilität') – a forum for representatives from OEMs, suppliers, unions, civil society groups and independent experts – discovered that of the 70 automotive clusters in Germany, between 20 and 30 face considerable challenges in the transition, as they host a disproportionate amount of (small) ICEV-specific suppliers without a clear transition strategy (Zeit Online 2021). To support these firms and workers, the government has set up a €1.5bn stimulus plan for the period 2021-2024, which will subsidise investments in R&D, human capital and the upgrade of machinery and production systems (BMW 2021a). In the same time frame, the government's €1bn future fund for the automotive industry ('Zukunftsfonds Automobilindustrie') supports regional transformation strategies, digital automotive innovations and the development of sustainable and resilient supply chains. Finally, hoping to trigger more than €13bn in private investments, the German government intends to support firms with up to €3bn under the 'Important Projects of Common European Interest' (IPCEI) framework (BMW 2021b), which allows EU member states to grant state aid for Commission-approved projects. In sum, the scope of the announced public support mechanisms for the automotive industry in Germany is the most comprehensive in Europe.

### 3.1.6. Conclusion

The accelerated electrification is a mixed bag for the German automotive industry. OEMs are nominally embracing the shift to EVs but, at the same time, are reluctant to phase out their ICEV models, as the profits gained from these sales continue to finance carmakers' green transition. Furthermore, OEMs are actively engaging with vertical reintegration by investing heavily in battery and e-motor development, allowing them to tap into a profitable market and to appease unions, as combustion engine-related job cuts might, at least partly, be balanced by employment creation in new areas. Suppliers, on the other hand, face an even more challenging future. While larger and financially stronger suppliers could acquire expertise in e-mobility alongside their traditional strongholds (although constrained by the OEMs' vertical reintegration strategies) smaller suppliers are often specialised in ICEV technology and lack concrete transition strategies. For workers and their representatives, the transition to EVs represents a significant risk of drastic job cuts or, at the very least, a shift in terms of qualifications and regional employment. While the German government has announced wide-ranging financial support, given the scale of the challenges ahead, much of the industrial adjustment will be borne by the industry's institutional framework.

This legal, institutional, and political system surrounding German industry is geared towards finding negotiated outcomes that minimise costs for the workforce, managers and owners. The mechanism is simple: forcing the company to fully internalise (at least in principle) the cost of adjustment also forces companies to take a closer, and often more creative, look at their problems in search of mutually acceptable solutions. Since the large-scale introduction of EVs will have significant repercussions on the workforce, including considerable job cuts, German worker representatives will use their strength to convince management to focus their restructuring efforts elsewhere (for example in their non-German production sites).

This does not mean that the industry's transition will be easy – many smaller ICEV-specific suppliers and their workers, for instance, face an uncertain future and the sheer scale of the challenge and the very short time horizons might mean that the shift creates considerably more friction than expected. However, in combination, the comparatively wide-ranging government support, the industry's strategic decision-making power in the European automotive supply chain, and the strong position of workers in the framework for industrial adjustment all point to a negotiated outcome which will likely preserve large parts of the industry.

### 3.2. France

France is in a complicated position on electrification. During and immediately after the Great Financial Crisis of 2008-09, the car industry in the country faced massive losses, a large part of the industry has been wiped out or consolidated, and the country is (like most other car industries in the EU, including Germany) behind the electrification curve. With few cash reserves, the industry is supposed to embark on a gigantic investment programme while scaling down production of the still somewhat profitable ICEVs. Most suppliers, also struggling after the lean years, will have even more problems adapting to an EV future, and many may simply not be able to work through the transition – which has given life to a €300 million special support and adjustment fund for smaller firms in the car industry (Chodorge 2021a). This and other sources of public funding indicate that the government is ready to support the EV transition as a part of its effort to re-industrialise France, although it is unclear if this financial aid is enough to protect the automotive sector.

What follows examines the key actors and the government's electrification strategies in light of the institutional framework that guides adjustment in the industry: we start with a brief overview of French industrial relations and labour regulations, move on to OEMs, suppliers, and workers and end with a review of (announced) government policies. The final section concludes.

### 3.2.1. Industrial relations in France: weak actors, strong adversarialism

In the automotive industry in France, adjustment involving restructuring usually unfolds along very specific lines. First, the basic ideology of industrial relations is one of conflict, not mutual recognition as in Germany. Unions have been as much preoccupied with distinguishing themselves from each other as with understanding management strategies; alternative industrial proposals are often voiced but rarely go beyond wages; and management and unions have often found themselves in an uneasy peace at best. In short, what characterises the basic outlook of unions and employers is adversarialism. In addition, French unions, even those in the relatively well-organised car industry, are effectively very weak in organisational terms, which has historically precluded them from becoming a strong party to management in company decision-making in the first place. Managers, on the other hand, have very often had to defer to government interventions if France's president or ministers deemed their strategic plans against the interests of France (as defined by the politicians in question).

The nature of the French labour law makes a negotiated adjustment even more unlikely. In contrast to Germany, where companies face an obligation to internalise the costs of restructuring and negotiate in good faith with the local works councils, French managers face no such constraints. While talks with unions about restructuring are certainly encouraged, and unions have a right to ask union-affiliated experts to examine management claims and draw up alternative packages, the key de facto negotiator is the Ministry of Labour. A company planning mass redundancies is forced to negotiate a social plan with the Ministry of Labour, who will foot a large part of the restructuring bill if approved. Not only does that allow management to get off almost cost-free, significantly reducing incentives for workers and companies to invest in specific skills thus reinforcing the vicious circle; it also makes any company restructuring plan a highly politicised matter by nature, and cyclically dependent on the political party that happens to be in office at that time. Unions who see the workplace as a political rather than an industrial arena thus implicitly and indirectly negotiate a social plan with the Minister of Labour, often in the street rather than in the Ministry's buildings of the Rue de Grenelle.

### 3.2.2. The rapidly shifting landscape of French automotive production

France has one French-only OEM Renault, and the HQ of PSA, which makes up a large part of the multinational Stellantis group (HQ in Amsterdam). While all car manufacturers have significantly reduced their workforce over recent decades, they have now also concluded ICEV-related restructuring agreements with unions (and government) that include expansions in EV-related activities, recycling centres, new EV-related joint ventures, and R&D and other high value-added (VA) services (Chodorge 2021b).

Against this background, Renault is planning a retraining fund to cover the transition of 10,000 current employees into higher-skill jobs, and 2,500 new hires with higher education backgrounds in high-VA activities in EVs, engineering and software (Chodorge 2021b). This development in human resources fits closely with Renault's market strategy to capture more income from high-VA models: having missed out on that (despite a number of high-end models) because of the recent rise in SUVs where Renault has been weaker, the company sees the EV revolution as an opportunity to increase unit profit margins.

The net drop in number of jobs will be combined with an increase in skill levels that will allow the company to capture higher margins. However, these product market and labour market strategies may actually spell a slow demise: product market segments of this type are, all else equal, smaller than the traditional smaller-car ones where Renault was well-positioned, and which required more but lower-skilled workers. Higher skills, the relative simplicity of EVs, and the zero-marginal cost economics of software, will also inevitably raise the productivity of individual employees. In sum, unless demand for (as of yet unknown) Renault products rises dramatically, the combination of high-VA volume and higher productivity will lead to a dwindling workforce.

PSA, the (French) company that owns the Peugeot and Citroën brands, and which has recently merged with FIAT-Chrysler into the new Stellantis, is in a slightly different position. In July 2021, Stellantis committed to increasing EVs to 70% of its European sales in 2030 – against 90% for Renault (Chodorge 2021c). But in France, Peugeot and Citroën are less dependent on the low- and medium-margin segments that dominate Renault's sales, and its current European market strategy is built on that relative advantage.

Moreover, PSA/Stellantis is very critical of the electric turn in the car industry. Some of the arguments echo those of other car producers (Guillaume 2021). According to the Stellantis CEO, Carlos Tavares, in late 2021 and repeated in early 2022 (Automobil Industrie 2022), the all-electric strategy costs more than the automobile industry can handle. He also suspects that the market does not exist yet, due to the significantly increased costs of an EV and bottlenecks in charging infrastructure, and would prefer a slower transition, with more built-in trial and error stages, to allow manufacturers to have a good product ready at a fair price, and without major industrial and social upheaval.<sup>3</sup>

The different dimensions of the electrification strategies have several implications for our analysis here. One, they explain the relative delay in zero-emission vehicles (the 70% v 90% mentioned earlier), since a large part of PSA's current fleet has relatively large profit

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<sup>3</sup> In an illustration of the prevailing ambiguity towards the EV revolution, Tavares repeated this criticism of the overall EV strategy, while suddenly and unexpectedly performing a U-turn a few weeks later, announcing that Stellantis intends to be all-electric in European sales within a decade (Eisenstein 2022).

margins and therefore remains an important source of revenue. Two, retraining efforts will also be relatively less important, since higher-end cars are usually produced by more highly skilled workers, and retraining for EVs therefore will start from a higher base. Third, since these workers are already more productive, the positive productivity shock associated with EVs will, *ceteris paribus*, be relatively less important as well. And fourth, the integration of PSA, FIAT and Chrysler will produce its own economies of scale and thus lower unit costs. In sum, the electrification strategy that PSA (within Stellantis) has adopted suggests a socially less complicated trajectory than the one that Renault has adopted. The transition is likely to be slower, less costly in net terms, and the skill and employment shock will be more mitigated – though much may depend on how the other companies in Stellantis, FIAT (with a more cost-sensitive product line-up) and Chrysler, which is slated to become an EV-only producer, will adapt.

### 3.2.3. Weak suppliers and rapid change

If the future is, on balance, not very positive for French OEMs, it looks like a downright horror show for suppliers. First, there are very few French suppliers of the calibre of the very large German ones such as Bosch or Continental, and many of the medium-sized companies have already merged or been acquired by German automotive suppliers. Despite several decades of consolidation and upgrading, many French automotive suppliers remain technologically weak companies, especially in comparison with their German counterparts. The reason is largely that the French car manufacturers have regained competitiveness in the 1990s by relying on a modular production model, in which innovative design was the crucial product market strategy, which allowed for parts to be standardised. This systematically pitted suppliers in sub-sectors against each other through price competition – thus securing a decent quality/price relation for the OEM, but effectively also undermining the long-term viability of any individual supplier. As a result, France has a small number of large automotive suppliers (such as Faurecia, Michelin and Valeo), but very few remaining medium small ones (Usine Nouvelle 2021), many of which were acquired by their German competitors. This matters for the evolution of suppliers in France to the extent that the institutions that govern company decision-making in Germany, such the works council and the trade unions will, when pushed, force management to consider cuts elsewhere (i.e., in France) before introducing restructuring plans in Germany. The late 1990s gave us a preview of this among the OEMs, with plant closures and/or capacity reductions in Spain, Portugal and Belgium, when VW and Opel weathered their crisis by concentrating production in Germany.

The future of suppliers in the wake of the EV transition against this background is extremely worrisome. According to a study by PFA and AlixPartners (2021), almost all automotive sub-sectors, from steel casting over steel turning and textiles, will be negatively affected by the EV transition in the car industry. Since the industry makes up a significant part of the turnover of companies in these subsectors (which often also produce for other

industrial sectors), the effects of the EV transition go well beyond the vertically linked automotive industry. For the subsector steel treatment and turning, for example, the car industry makes up more than half of its revenue.

The employment effects will be quite dramatic: under the current scenarios, linked to the EU's Fit for 55 strategy, the sector will lose at least 50,000 jobs (and up to 87,000 in the most extreme scenario) out of currently about 350,000. While new jobs will emerge in often new sub-sectors such as battery production and e-drive trains, most estimates suggest that this number could be only 11,000 (PFA and AlixPartners 2021). Anything other than a deeply brown scenario, in other words, will likely lead to a collapse in employment among key subcontractors to the car industry, potentially with significant regional employment effects.

The only silver lining in this otherwise very dark sky is, perhaps, a turn towards new high value-added technologies, under the assumption that suppliers are able to make the transition from ICEV-based to EV-based products. The problem here, however, is that the employment dynamic in the OEM will not make such a shift very likely, because the car company can use the reintegration of previously outsourced activities to buy a modicum of social peace from unions. Renault, for example, has set up several initiatives alongside EV assembly to transfer or retrain part of its workforce (Chodorge 2021b).

#### 3.2.4. French unions in the electric transition

It makes little sense to talk about a single position of labour in France on the green transition, since all manufacturers have their own strategies and unions respond to those. In fact, union fragmentation means that unions may even have contradictory positions, and employers often exploit those divergences by concluding agreements with a small number of representative organisations, after which the accord is valid. That, then, is usually the subject of contestation by other, non-signing, unions in the adversarial context of French industrial relations, often leading to rejection of the agreement and conflict. Nonetheless, a handful of observations can be made.

As elsewhere in Europe, unions are extremely concerned about the employment effects of the EV transition. Future job losses are estimated to be in the tens of thousands over the decade, with a first wave of 2,500 voluntary redundancies announced in Renault in December 2021 (Guinochet 2021). A prospective study in spring 2021 by the Observatoire Métallurgie (2021), and endorsed by the French car manufacturers association CCFA (n.d.) suggests that between 25,000 and 30,000 more jobs could disappear in the car industry and its suppliers by 2025, and proposes active industrial and training policy to prepare the French automobile industry for the EV transition.

While these numbers are significant, they pale in comparison with the past 15 years. Since the Global Financial Crisis of 2008, about 100,000 jobs were lost in the automotive industry filière (Observatoire Métallurgie 2021), and the twenty years before that were also dominated by restructuring waves. In other words, by the time the combined electrification and Covid pressures hit, the French car industry had already – in contrast to the German car industry – lost a large share of its employees. Those that remained or were hired after the automotive industry's restructuring of the late 1980s have had considerably higher skills – which explains the sharp rise of the middle management-oriented CFE-CGC and CFDT in the workplaces – but which were also much more sector- (for which read ICEV-) specific.

As a result of the recent social history of the industry and the anticipated shocks, union positions toward the EV transition come in two kinds, with one common aim: stop or drastically slow job losses. The first is to propose a slower transition to battery-powered EVs while increasing the share of plug-in hybrid EVs, which require, all other things equal, more workers since they are built on two complex technologies rather than a single simpler one. The second union policy is more proactive: while most unions share this strategy of a slower transition, the CGT in Renault has gone further and has developed, with its members among Renault engineers, a concept for a small, inexpensive EV with a 200 km range for daily use in short rides (CGT Renault 2020).

Importantly, what is not said in this respect is possibly as important as what is. In contrast to Germany, unions in France are, at best, only vaguely aware about the possible more negative longer-term effects of not engaging with EVs, such as a potential loss of competencies and of market share. At the same time, there are so far only a handful of plans for battery production – the only subsector with significant growth potential – and with between 5,000 and 10,000 new jobs at best (Les Echos 2021). As most of the announced plants are located in the northern departments (in the region Hauts-de-France), workers in other ICEV-dependent regions stand to lose out unless they consider relocation.

### 3.2.5. Government strategy: In support of 'Made in France'

The French government around President Macron has embarked on its own *grand écart*. The Macron government initially rejected the EU Commission's proposal to reduce emissions by 2030 by 55% compared to 1990 and zero emissions from 2035 in support of demands by Renault, the sole French-only OEM, for a slower transition. The French proposed a 55% emissions target by 2030 relative to 2021 levels and a continuing role for PHEVs after 2035 (Bell 2021). Yet, while treading gently on the international scene, France is also poised to become an e-mobility leader, including in battery production. In the context of the government's €30bn 'France 2030' investment plan, €4bn of which should go into the automotive sector, President Macron declared that he wants 2 million EVs and PHEVs to be produced in France by 2030 (Randall 2021c).

The French government aims to re-invigorate the country's industrial competitiveness – especially in the automotive sector – by investing in future technologies and re-shoring production to domestic locations (Élysée 2021). The announcement came after the introduction of an €8bn aid package in May 2020 to mitigate the consequences of Covid-19 on the country's automotive industry, mainly consisting of subsidies for EV buyers and a €5bn loan for Renault, which was conditional on the company maintaining a significant proportion of its production in the country (DW 2020). The subsidy programme for EVs (up to €6,000 for private buyers and up to €4,000 for commercial use) and PHEVs (€1,000), has been extended until at least mid-2022, albeit with slightly reduced sums (Randall 2021d). In addition to the so-called eco-rebate, the government offers a scrapping premium of up to €5,000 for buyers who scrap an ICEV and buy an EV instead and a separate additional €3,000 EV purchase incentive for low-income households.

Alongside Germany, France was the second coordinator for the ICPEI battery projects, which allows participating member states to grant public funding beyond the EU state aid thresholds to firms along the battery supply chain. Within this framework, the French government supports the establishment of a battery gigafactory in the North of France, run by the Franco-German Automotive Cells Company (ACC), with a €680m grant (Autovista 2021), and plans to invest €200m in a second €2bn battery plant in the region (Pelé 2021). Moreover, in December 2021, the government announced a €300 million plan for suppliers in the automobile industry, specifically to address weaker regions that would be hard hit by the EV transition. One third of the money is destined for large diversification projects (>€1m) by larger SMEs that could have significant effects for smaller companies downstream and anchor innovative activities in the region (Chodorge 2021a). Regions that could or would benefit from the EV revolution but may lack resources in terms of skilled workforce or infrastructure, in contrast, will have to rely further on the existing regional development funds. All this leaves little doubt that the French government is ready to step in and heavily support its automotive industry in the transition to electric mobility – but this optimism of the will is likely to conceal a heavy cost in social adjustment.

### 3.2.6. Conclusion

This picture of the main actors in the French car industry leaves little doubt that the industry is facing dark days. All in all, significant restructuring in the French car industry over recent decades has drastically reduced OEM employment as well as the strategic decision-making capacity within the wider European automotive supply chain. Not only did the sector start from a position of financial weakness after the losses since 2008, but it is also technically and organisationally underprepared for the challenges that the EV transition is setting up for OEMs, suppliers and workers. All three actors seem to live, and

want to live, in a world that is as close as possible to the comfortable ICEV-based production system and are intent on pursuing that line as long as possible.<sup>4</sup> While the sector's relative weakness might imply that there is less to lose, an accelerated electrification will have heavy social consequences if executed without a wide-ranging accompanying transformation strategy. To support the industrial shift, the government has introduced subsidies for consumers to increase EV demand, substantial financial support for transitioning OEMs, and incentives for private investments in the establishment of a domestic battery supply chain.

However, the support for suppliers is relatively low and OEMs might cut jobs regardless of government funding, as indicated by Renault's recent redundancy announcements (Van Overstraeten 2021). Additionally, many French firms in the automotive value chain have been acquired by or merged with German-headquartered firms over recent years. This is important for the French automotive transition, as the strong German institutional framework will force management to consider job cuts elsewhere rather than domestically. In combination with the French framework for industrial adjustment – characterised by a politicised environment in which weak unions and equally weak managers often fail to arrive at a negotiated outcome – the risk of mass dismissals quickly becomes relevant again. As the Ministry of Labour is the main funder of social plans that which mitigate the social consequences for dismissed workers, employers are not forced to internalise the costs of redundancies and therefore not incentivised to consider alternative plans. Unions can only resort to industrial action, in the hope of convincing the Ministry of Labour that has to approve the collective redundancies. The political, rather than strategic, nature of industrial adjustment therefore has the potential to derail an orderly transition, which would increase the social costs for workers and, ultimately, intensify the pressure on public finances.

### 3.3. Italy

The problems that the Italian car industry faces are very similar to those of its French counterpart. It has not digested the two crises since 2008 very well, is therefore low on cash, and in a weak competitive position, despite the efforts under the (late) dynamic

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<sup>4</sup> This does not mean that there are no silver linings – but they are very small, highly speculative, and extremely contingent on a complex combination of factors beyond the control of the key actors in the industry. For example, the Renault Flins plant will retrofit 45,000 existing cars annually from ICEs to lower-carbon alternatives (Ruffo 2020). Yet that makes up only 1.5% of the total planned car production in the country – increasing it to reach production volume of a standard medium-size car plant (c. 100k vehicles per year) would double that share to a mere 3%. The government is also planning – like in all other European countries – a strategy to increase electric charging infrastructure. Since the French state has often overpromised and underdelivered in industrial policy, these initiatives should be taken with the proverbial pinch of salt. But even if this plan works, it would not have significant effects until a decade or longer from now – and then almost solely for newly registered cars.

CEO Sergio Marchionne to redress FIAT. Largely as a result, the company, and the rest of the related industry, had a very slow start into EVs. Three features characterise the situation. One, a huge ICEV overhang: recent investments to modernise production had only just begun to bear fruit when the transition appeared on the horizon. Two, the solution to amortising that investment was found in increasing economies of scale through mergers (the FIAT-Chrysler-PSA merger Stellantis), which inevitably will have a negative effect on the revenues of suppliers. And three, the industrial relations system is confrontational (though less so than in France), but also split between a rigid centre and plenty of local pragmatism. Many parts are therefore moving, but the overall system seems packed with problems for the industry in the EV transition. While government announcements indicate a willingness to support the sector, apart from support for one battery cell plant, there are few concrete initiatives in that regard. In addition, the multinational character of the mother company of FIAT<sup>5</sup> means that Italian interests will sometimes take a back seat in restructuring plans.

We begin the following review with an overview of the Italian industrial institutional framework, which is the background against which we will then explore the key actors and government's electrification strategies. The final section concludes.

### 3.3.1. Industrial relations framework

Industrial relations in the Italian automobile industry have long resembled their French counterparts in many ways although Italian unions have been firmly anchored in the workplace for several decades. This setting had two consequences. One, Italian unions were always attuned to the needs of companies and the workforce in the companies, even when engaging in social conflict and political opposition. Two, the strength of workplace union organisation meant that employers were forced to confront unions in the workplace. The 'March of the 40,000' in October 1980, when FIAT middle management organised a massive demonstration against the union (Locke 1992: 236) was the turning point: FIAT workers cast aside union demands for a generous social plan in response to mass layoffs, and effectively banned unions from the factory floor. Throughout the 1980s, chastised unions changed tack and developed a more cooperative approach to industrial restructuring. By the mid-1990s, they accepted significant reductions in the workforce, cooperative arrangements in new plants (in the south of the country), and eventually a shift in wage setting to accommodate the low-inflation regime in the run-up to the single currency. As a result, today Italian employers and unions in industry are engaged in much more constructive social dialogue than many deemed possible in the 1970s.

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<sup>5</sup> We ignore here the super cars, as produced by Ferrari and Lamborghini, since they have almost no impact on the overall economics of the industry. Note, though, that both have scheduled new EV models for the near future.

Against this background, the EV transition unfolds. While companies have to inform the works council, trade unions and the local labour inspectorate of their plans, as long as company restructuring can be justified in terms of economic necessity, there is no legal obligation to consider alternatives in the case of collective dismissals. (EMCC 2019). If a first consultation between worker and company representatives yields no results, the local labour office can reconvene the parties and make suggestions towards a deal. Employers are not obliged to conclude an agreement with worker representatives and there is no traditional redundancy compensation for Italian workers (EMCC 2021a). Despite these formal weaknesses, unions nevertheless play a relatively important role in Italy's industrial framework, since plant-level collective agreements usually specify procedures to alleviate restructuring measures and negotiations between workers and management, including redundancy alleviating or conversion and requalification measures (EMCC 2021b).

### 3.3.2. FIAT's lonely place

While the Italian car industry may not be in a strong position at the start of electrification, FIAT – the company at the centre of the process – now has its main crisis and subsequent restructuring behind it. Sales and market shares stabilised before the Covid crisis, and even though employment fell after 2008, it has been stable since (adjusting for Covid). That said, productive capacity and employment in the revived FIAT is much reduced, even compared to the earlier crises in the 1980s and 1990s.

The main effect of the crisis and the adjustment that followed may be expressed in numbers but is likely to be qualitative rather than quantitative. The restructuring imposed a large measure of internal orientation: how to improve skills and technology, how to raise productivity and profitability, and how to translate this into rising market share. As a result, FIAT – and with it much of the rest of the Italian car industry – missed a chance to engage with the EV revolution early on and build EV development and production into its new blueprint. Instead of becoming a leader, therefore, it is now a (slow) follower. In mid-2021, FIAT announced its intention to become all-electric sometime between 2025 and 2030 (Randall 2021e). However, the announcement left the exact date open, as the company plans to transition to an EV-only producer not before electric cars have reached cost parity with ICEVs. Until 2025, FIAT plans to introduce a model family based on the previously redesigned and all-electric FIAT 500 and another new product family which should follow the Panda's character of robustness (Randall 2022a). The latter will include at least a B-segment "supermini" and a small SUV, although FIAT has not yet revealed any details about these and likely further models; additional product updates beyond the 2025 timeframe are also not yet in sight. In comparison, Renault has planned 10 new electric models by 2030, the VW brand 9 as a part of the VW Group's plan of roughly 70 new all-electric models by the end of the decade (Volkswagen n.d.; Randall 2022b; Volkswagen Group 2020).

Stellantis' stance on the continuing importance of ICEVs does not help in this regard. The CEO's insistence on continuing traditional cars, and run down the investments associated with that, adds to the weak position of FIAT and of the rest of the industry in the country altogether.

Combined, therefore, the car manufacturer(s) in the FIAT group in Italy are in for a very bumpy ride. They are financially weak, have very few future EV-related projects, and will have to live with decisions made outside the country.

### 3.3.3. Woefully unprepared suppliers ...

Most suppliers to the car industry are, because of FIAT's late turn and current weak position, entirely unprepared for the electric transition (Armellini 2021). According to a recent study of suppliers (Moretti and Zirpoli 2021), spending on R&D, considered as one of the key forward indicators of preparedness among Italian suppliers, fell for the first time in 2020, and other preparations to support a successful transition to EVs have been very few and very slow. Revenue among over 2,000 firms in the component industry fell by almost 12% in 2020, a big drop in an industry that consists mainly of small, often family-owned high-end manufacturers (Moretti and Zirpoli 2021). Covid-19 was obviously the main cause for both the drop in R&D and turnover; nonetheless, the narrowing financial base and falling investment at a moment of expensive transition in the industry means that Italian suppliers enter the EV revolution from a very weak position. Furthermore, the recent absorption of FIAT in the large multinational Stellantis, heralding the company's increased search for economies of scale among suppliers, has made many of the latter uncomfortable. Like everywhere else in Western Europe, therefore, the (often somewhat ignored) victims of the EV transition will be found among the SMEs that supply the car industry with parts.

The Italian situation is a little more complex, however, than this linear crisis scenario suggests. There is little doubt that a large part of the current Italian suppliers may simply disappear, especially the smaller ones, because these are not very attractive partners for large EV-focused car companies. Yet some suppliers are investing in EV-related parts and R&D to keep up with their demanding clients in southern Germany and are developing new organisational arrangements to enter the electric vehicle era (Armellini 2021). In a move to counter these processes, some have therefore – helped by local entrepreneurs and governments – built tight cooperation networks in which they co-develop, produce, and offer complete systems instead of single parts. This structure resembles the district-like systems that existed in the area before, though vertically organised this time rather than horizontally within one product line; its advantage is that it makes the complex traded product more competitive while safeguarding individual companies.

In sum, Italian car suppliers, like car manufacturers, face significant short- to medium-term challenges if the promised EV transition within the next ten years goes ahead as sketched out in EU and national plans. Having missed the early EV train, for many suppliers the question about costs and benefits of the transition has become a question of life or death. And even those strong SMEs in the industry that are relatively well positioned now will face a steep mountain if their northern Italian and German customers move towards producing only electric cars.

#### 3.3.4. ... And organised labour

While Italian unions are ideologically divided, their fragmentation is less pronounced than in France; slightly schematically, this reflects the schism between euro-communism in Italy and the democratic centralism that prevailed in French communism. Employers are also more pragmatic than in France, as epitomised in the 1993 social pact (Molina and Rhodes 2007). A negotiated future is therefore also more likely, but that will emerge against the structurally problematic background of the late and hesitant entry into EV market of Italian car makers.

The problem for labour is its defensive position and a lack of viable alternative plans. FIM CISL, one of Italy's major manufacturing unions, and business association Confindustria warned in late 2021 that up to 60,000 jobs could be lost in the industry due to the transition to e-mobility (Landini 2021). However, the labour and business representatives have not (yet) presented a wider study to substantiate their warning, which could be used to start a large-scale campaign about the future of the Italian automotive industry. Because the Italian automotive industry has already seen significant consolidation and restructuring efforts in its recent history, workforce adjustment might not be quite as dramatic as in France. Nevertheless, the shift from high demand for semi-skilled workers in powertrain manufacturing to more highly trained electrochemical, electromechanical and software engineers and technicians represents a considerable challenge for (organised) labour in the Italian automotive industry. This shift will have to entail a large-scale skills initiative ranging from (on-the-job) upskilling measures to retraining for workers who have to change industry and/or job. However, the extent to which upskilling efforts can prevent unemployment also depends on the successful establishment of an EV supply chain in the country.

The newly formed Stellantis has already started its restructuring programme with job reductions in four of its Italian sites in order to accelerate the transition to EV production. So far, local unions have been successful in negotiating concessions – including recruitment plans for young employees, generous redundancy payments, commitments to (some) Italian locations and employment guarantees – in return for agreeing to job reductions (La Repubblica – Torino 2021; Longhin 2021; Greco 2021). However, Stellantis is still pushing for further job cuts, which leaves local unions concerned.

The lack of strategic leadership by national unions – which should also inform the wider national e-mobility strategy and industrial support policies – therefore creates significant risk for further restructuring measures (including collective dismissal). In addition, while FIAT remains in Italy, its parent company Stellantis is headquartered in the Netherlands and corporate decisions are heavily influenced by the strong PSA, under pressure to maintain employment levels in France. And the highly multinational nature of large automotive suppliers means that many workers are employed by foreign (often German) companies, most of which will be forced to reduce employment in Italy rather than at home. Overall, therefore, the Italian automotive workforce depends on strategic decisions that are made elsewhere, and while local unions have been able to fend off some of the (initial) pressure, the lack of strategic leadership by national unions might mean that local labour representatives risk becoming overwhelmed by these restructuring initiatives. Finally, because of the absence of developed alternatives by national unions on the adjustment of the Italian automotive industry and the establishment of an EV supply chain, the country will fall further behind in the electrification race.

#### 3.3.5. The Italian government's missing strategy

Italy's government – in line with EU phase-out plans – has decided to ban the sale of ICEVs from 2035, but still argues for a technology-neutral approach, considering also the role of hydrogen and biofuels, for which the country plans to build a domestic supply chain (Randall 2021f). Furthermore, the government is pushing for an exemption from the ICEV ban for domestic sports car producers. While the Italian government wants to have 6 million low-emission vehicles (4 million EVs and 2 million PHEVs) on its roads by 2030, official plans say little about anticipated support for the transitioning industry and focus instead on the development of a fast-charging network and innovation of the fuel distribution network (Council of Ministers 2021). Italy was also a member of the two battery-related IPCEIs, which allow member states to fund Commission-approved projects under EU state aid rules, but the government has not opted to fund large-scale battery cell factories within this framework. In a subsequent bid to support an ACC battery cell plant in the South of Italy, which should create at least 500 new jobs by 2030, the Italian government pledged €369m of public money (Automotive News Europe 2022). Other than that, Italy's main efforts to promote demand for e-mobility are focused on consecutive funding rounds for EV subsidies. In the latest round, which started in October 2021, the government made another €100m available to subsidise EVs and PHEVs with up to €6,000 (including a scrapping bonus for old ICEVs), but also earmarked €15m in support for buyers of new or used fuel-efficient ICEVs (Randall 2021g).

Overall, in terms of support for the automotive industry, the Italian government is essentially missing in action – as lamented by the country's major manufacturing union FIM

CISL and business association Confindustria (Landini 2021). Government measures are mainly reactive and passive. And private and public investment into the emerging battery supply chain will help alleviate some of the EV-related job losses, but the lack of large-scale (financial) government support for the wider sector means that a lot of the industrial adjustment will have to fall back onto internal restructuring measures to safeguard competitiveness during and after the costly shift.

### 3.3.6. Conclusion

The Italian car industry is facing an existential crisis. Less than a decade after FIAT's spectacular turnaround, the company merged with PSA and is now part of the large conglomerate Stellantis, thus effectively surrendering autonomy over the future course of the company. Suppliers face a similar wave of extinction – with the caveat that Italian SMEs have a long history of surprisingly surviving in market niches and through organisational arrangements that have eluded others. But even so, the future of the industry does not look very bright. Unions have also been caught by surprise. They have yet to understand, it seems, that the world is changing and develop new strategies in response – but that also allows for the possibility of a hot few years ahead, if the Italian car industry collapses and job losses pile up. In short, more than any other national industry of any size, perhaps, the Italian car industry enters the green transition in the industry in a very difficult position, without much of an exit option.

While the Italian government seems willing to implement the accelerated electrification in the automotive industry, wide-ranging support measures are largely absent – except for subsidies to EV buyers and announced backing of one large battery cell plant. Therefore, the stage is set for socially painful adjustment which can only be mitigated by the Italian industrial relations framework. Labour politics in Italy is considerably less confrontational than in France and puts emphasis on negotiated outcomes between employers and unions similar to Germany – but without the important legal obligation of a social plan. Nevertheless, as companies can implement collective dismissals also without the approval of unions and there is no mandatory redundancy pay, the sole incentive that firms face to avoid or mitigate redundancies is the continuation of trust between management and workers. While the latter has been important for the Italian automotive industry since the turnaround in the 1980s, most strategic decisions are made outside the country and will be influenced by other considerations beyond Italy. Negotiated outcomes – as exemplified by the recent dismissals in the Italian Stellantis plants – might remain the norm, but the increased international dependencies, and concomitant reduction in strategic autonomy, has made workers more vulnerable to collective redundancies.

### 3.4. Central and Eastern Europe

Since the mid-1990s, Central Europe has become one of the main locations for automotive manufacturing in Europe, essentially supplanting Belgium and Spain as secondary locations for German car producers. Following a short, sharp shock after the Global Financial Crisis, the industry rebounded quickly and grew rapidly, reaching its pre-2009 capacity level again in the mid-2010s (Myant & Drahoukoupil 2018). While the evolution of the industry brought significant capacity and employment growth in the region, it also meant that the local industry, in the Visegrád 4 (i.e., Poland, Hungary, Czech Republic and Slovakia – henceforth V4) and Renault-owned Dacia in Romania, lacks strategic decision-making capacity. Wages in the automotive sector have traditionally been higher than in the rest of the CEE economies, which meant that workers' wage claims have been less reliant on national unions – which were already weak after the post-1989 transition and never gained significant strength – and companies are generally quite oblivious to them. Therefore, as the shift to e-mobility puts increasing pressure on employment everywhere, worker representatives in the core (i.e., in Germany or France) are likely to force managers to cut jobs in the periphery. Suppliers face a similar problem: not only are they often subsidiaries of foreign multinationals, and dependent on the foreign-owned assembly plants in the region, but because of the proximity to German plants that they supply, capacity decisions in the German plants in the centre of the European car industry also have direct effects on the suppliers in the region.

The establishment of an EV supply chain, including battery production, might be a silver lining for the region and governments are trying to attract foreign producers with financial incentives. Yet it is unclear if the region – historically weak in the production of public goods such as the required EV-related skills – can retrain workers quickly enough to prevent them from becoming unemployed while providing new firms with a sufficiently large qualified workforce. Our analysis of recent developments in the regional industry and preview of things to come starts with OEM strategies in the region, moves on to suppliers and trade unions and finishes with an examination of government support strategies.

#### 3.4.1. Industrial relations in CEE: Weak and deliberately ignored

In Central Europe unions, employers, business associations and states are still recovering from the shock of transition and EU accession. Largely dependent on western foreign direct investment (FDI), their socio-economic model mixes policies and institutions from many sides. As the FDI-dependent model has prioritised the preferences of companies, unions – which were already weak after the post-1989 transition – have been significantly side-lined in industrial relation frameworks in the region, and firms generally ignore them. Industrial relations in the automotive sector, which is dominated by foreign multinational companies (MNC), are relatively more cooperative than in the rest of the economy but

due to the dependence on decisions that are made in MNC headquarters outside the region, neither management nor unions in local branches have the capacity to set a strategic agenda. Emblematic for the weak position of (organised) labour in the region, Hungarian labour law changes – the latest of which has been dubbed as ‘Slave Law – ’ often not only side-line unions but put emphasis on an ever more flexible workforce in order to sustain the government’s aggressive FDI strategy (Gagyi and Gerocs 2021).

Organised labour’s weakness becomes particularly evident with regards to collective dismissal procedures in the region. Formally, employers have to inform the works council (and/or trade unions) before the planned restructuring and consult them on alternatives to (partly) avoid redundancies or mitigate their consequences with social plans. However, firms are typically not bound to seek effective measures, while dismissals are not contingent on worker representatives’ authorisation. As a result, labour’s role in restructuring is usually marginal or non-existent. In many CEE countries, employers are obliged to announce collective dismissals and discuss mitigation strategies with local labour market offices but the approval of authorities is usually not required. Large and generous social plans are generally not mandatory and even publicly co-funded mitigation measures are often inefficient, as firms which fail to achieve the anticipated social results are hardly ever sanctioned. Overall, the non-mandatory nature of social mitigation schemes in a large part of collective dismissal procedures in the region means that social plans are usually only implemented in firms with strong existing social dialogue and collective bargaining regimes.

#### 3.4.2. The red thread: Structural dependency and the EV revolution

While central Europe is among the most important regional automotive production systems in the world, its fortunes depend almost entirely on decisions made outside its borders (Bernaciak & Scepanovic 2010; Scepanovic & Bohle 2018). Since the investment wave started in the mid-1990s, multinational companies, primarily German-headquartered, have bought plants, brands or built new production facilities. Initially attracted by low wages (relative to skills) to produce smaller cars, managers rapidly realised the potential for high-VA, semi-customised skill- and labour-intensive production, and located models with higher margins in the region, while also setting up sophisticated supply chains. After the Global Financial Crisis, the local car industries rebounded quickly, and against a background of medium-low unemployment, job shortages in the industry before Covid-19 have had a pacifying effect: most actors were more concerned with the status quo than with the potential employment effects of the green and digital transitions.

The EV transition takes place against this structural background, but with a twist. In the politics of industrial adjustment as they come into relief today, two logics collide in electrification. The first is the familiar one based on low costs (Bernaciak 2010); the second

one built on the power of German works councils in negotiating production location and capacity. The latter dynamic was central in the industry between 1995 and the early 2000s in Western Europe: faced with large losses, many (German) OEMs scaled down production outside the borders to save jobs in the core – often helped by works councilors willing to negotiate lower wages (Hancké 2000). In the 1990s, the mass producers VW, Opel, and Ford closed most plants or reduced production to symbolic levels in Portugal, Spain and especially Belgium to save jobs in Germany. Between the high point in the early 1990s and the start of the GFC in 2007, many jobs were lost in the West-European automotive industry, redistributed to Germany, where employment remained stable, and CEE, where it grew.

While this dynamic suggests that the future of the Central European car industry does not necessarily look bleak, works councils in the core plants face an important constraint that could upend this evolution. Assuming, as many suggest, that the assembly of EVs is less skill-intensive, then the prospect of stable or rising profit margins for OEM producers should imply lower wages to match the lower productivity rates that follow these lower skill requirements. Either German wages fall, in other words, or much of the production of EVs will find its way into Central Europe. That internal political dynamic in Germany might therefore have large negative consequences for CEE plants in the industry.

That then, opens the question of which of the two logics will prevail. While there is, as of yet, no indication of large-scale production plans in CEE, if recent history serves as a guide, local negotiators in Germany and in Central Europe might engage in competitive bidding for capacity. Even though the playing field is not level across both jurisdictions, with German works councils having a constitutionally stronger place in their operations, the outcome of that collusion is far from a foregone conclusion. For now, FDI in CEE plants has not suffered from the German-centred decision-making: Škoda is expanding, Daimler is investing in Hungary, while BMW has opened a new plant for electric car assembly in Eastern Hungary. But a combination of local works council politics in Germany and Covid-19 and war-related supply chain problems may change the basic parameters of these decisions.

### 3.4.3. Two trajectories for suppliers: dependence in old and surge in new markets

The domination of the industry in Central Europe by foreign companies sets up two (probably complimentary) EV-related scenarios for suppliers. Because the fate of standard suppliers is connected to the fate of the car plants in the region, and since their future is far from certain beyond the mid-2030s, suppliers – both the indigenous ones and the foreign owned – are likely to go the same way. In fact, the possible relocation of much of the value chain near the actual car-producing plants or to regions with even lower wages (e.g., Balkan countries or Northern Africa), leaves little doubt about the potentially dark future for local suppliers. There are currently no visible large-scale national initiatives to

address the foreseeable decline of industry, local governments seem worried but lack resources, and very few existing suppliers have given (even soft) assurances that production will outlast the ICEV era. In short, unless the large OEMs decide to continue their presence in Central Europe, subcontracting companies, and jobs in them, will suffer.

But even those assurances by individual OEMs may not be enough to stabilise the local economies, because the dynamics of growth turn into dynamics of decline when reversed. Supply networks grow, as the name suggests, through network effects: one OEM's suppliers increase the possibility of other OEMs locating in the same area to benefit from the existing industrial capabilities. But that logic plays the other way around as well. Put bluntly, the departure of one OEM reduces the value of the supply network for the remaining OEMs. The positive network effects in the rise thus swiftly flip to negative if this dis-agglomeration dynamic gathers pace. In addition, this devolution does not follow a linear pattern: the departure of two OEMs produces a larger negative effect than the sum of their individual effects. When one OEM decides to pull the plug, in other words, the incentives for all other to do the same increase significantly. The rapid growth of the car industry and its suppliers after 1995 thus harbours the seeds of its own demise.

In short, the future of the existing suppliers in CEE, specialised in ICEV-related technology, does not look very good, with many gross job losses factored into the scenarios. Such OEM-centred analyses may, however, conceal one important alternative scenario for Central Europe, which builds on attracting new companies in other EV-specific product lines. The increasing possibility of CEE-based suppliers occupying niche markets higher up in supply chains may make the net growth and employment effects considerably both more palatable and more likely. It might also help to partly stabilise OEM employment if network effects can be recreated in the e-mobility supply chain<sup>6</sup>. While this is far from certain – the time inconsistency and collective action problems that organise this paper militate against it, and many of the necessary rare materials are controlled by autocratic regimes (Halliday 2022) – a more active approach by governments and other actors including trade unions and chambers of commerce may lead to a more positive future for the car industry in the region. Much depends, therefore, on how policy, from innovation and technology over training to industrial relations, is reshaped. We pick up this thread again throughout the remaining two sections.

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<sup>6</sup> Note that developments in the EV supply chain are still uncertain and any assessment remains speculative in nature. While investment announcements in some CEE countries paint a more optimistic picture, planned and real capacity are not the same, and many bottlenecks — such as raw materials, CO<sub>2</sub> accounting in transport, availability of skills while winding down ICEVs, etc. — are often beyond the control of countries and even OEMs or suppliers.

#### 3.4.4. Left out: Organised labour

Organised labour has never been a big player in Central Europe. Tainted by the affiliation with the former workers' states, they never fully recovered from the collapse of real existing socialism. While in most of Central Europe the law gives them a role in industrial relations, the action is rarely in those formal channels, but in local negotiating committees, usually set up by large foreign firms. As a result, organised labour is engaged in a form of co-management but from a position of weakness. While this leads to social peace by default, the lack of union strength leads to a lack of strategic capacity and, therefore, to important risks regarding the shift to e-mobility.

Although comprehensive studies of employment losses due to the introduction of EVs are not (yet) available for the entire CEE region, estimates from Poland are instructive. In total, the Polish automotive industry and related sectors – starting with an employment of roughly 397,000 workers in 2020 – are set to lose about 17,000 jobs by 2030 (PSPA and BCG 2021). The shift to EVs alone will lead to a loss of 23,000 jobs in this decade. While battery production, charging networks and related services might create up to 21,000 new jobs, many workers will require retraining and/or will have to shift industries. Overall, approximately 100,000 workers who can stay in their positions will require retraining in the companies, while about 29,000 employees will have to transition to a similar industry and/or job profile, requiring minor to medium requalification efforts and potential relocation. Finally, another 29,000 workers from the extended Polish automotive industry will have to change industries and/or job profiles which is related to high requalification efforts and possible relocation. In short, predicted job losses are modest<sup>7</sup>, but roughly 40% of the existing workforce will require (profound) re-skilling.

Even under optimistic employment scenarios, reskilling large parts of the workforce presents a considerable challenge for the CEE region. As a further consequence of their weak position, unions occupy only a small role in the production of collective competition goods such as skills. The equally marginal role that governments play in skill production implies that workers are almost entirely dependent on training programmes designed and implemented by large foreign-owned firms. Audi, for example, has set up a faculty in cooperation with Budapest Technical University and Daimler recently founded a vocational training school in Hungary. This lack of formally organised training poses a significant bottleneck when Central European countries' try to attract investment in the regional EV supply chain, mainly built around batteries, for which workers will need at least a basic

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<sup>7</sup> It is important to point out here that this is (as far as we are aware) the first and only study of the EV-related employment impacts on the Polish automotive industry. Comparable BCG reports in the German context also show relatively modest employment losses, which stands in stark contrast to other studies that predict more pronounced job cuts. As these calculations rely on various assumptions and input factors, it is advisable to take the results with the proverbial pinch of salt and triangulate them with other (future) sources.

understanding of basic electrochemical engineering. Because of the risk of poaching, MNCs are unlikely to engage in such basic training and the likely outcome is a low- instead of a high-skill equilibrium.

As a result of the marginal position of organised labour in CEE, in other words, unions are as far from the driving seat on the journey to e-mobility as they can be. On the one hand, they have virtually no influence on strategic decisions in their plants, which are to a large extent made in foreign (mostly German) headquarters. Employment effects related to the electrification of the automotive industry could, therefore, be significant in the region. On the other hand, unions (and governments) play only a minor role in the region's skill production systems. The semi-privatised training arrangements that thus have emerged, usually tailored to the very specific needs of multinationals, may make it harder for governments in CEE to attract sustainable investments into the emerging battery supply chain, especially if the availability of a skilled talent pool is a strong condition for these new firms to establish themselves.

#### 3.4.5. Governments

The attitude of CEE governments towards the domestic e-mobility launch seems ambiguous at best. Besides the EU Commission's 'Fit for 55' proposal – which foresees a sales ban for ICEVs in the EU from 2035 – there are currently no binding or announced ICEV phase-out dates in the V4 countries. Czechia's ex-PM Babiš was fiercely opposed to the ICEV-ban (Manthey 2021) and the country, alongside Slovakia, currently does not offer any EV purchase incentives for private consumers but focuses on (less generous) tax breaks for EV owners (ACEA 2021). Poland, Hungary and Romania have an EV subsidy scheme besides their EV-related tax incentives (Razvadauskas 2021; ACEA 2021).

At the same time, however, Romania and the V4 states recognise the importance of not falling behind in the production of EVs (or related parts). The Polish 'Electromobility Development Plan – 'agreed by the Council of Ministers in 2018 – foresees 1 million EVs on Polish roads by 2025 and 30% of the related value added should be generated domestically (Ministry of Energy 2018). Hungary, which has been aggressively pushing for automotive foreign direct investment over recent decades, is set to maintain production capacity also in the age of EVs. The Hungarian government has supported investments in EV production plants by BMW (Debrecen plant), Audi (Győr), Daimler (Kecskemét) and Suzuki (Esztergom) (bne IntelliNews 2021). Slovakia has also attracted EV production by VW, Kia and PSA (bne IntelliNews 2021), although the country had to deal with considerable job cuts during the pandemic and – due to more attractive incentives and higher R&D levels – BMW and VW have chosen Hungary and Czechia, respectively, as large EV production locations (Gabrizova 2021).

Governments in the region are also actively trying to attract investments along the EV supply chain, in particular regarding battery production. The Czech government agreed to back a €2bn investment into the establishment of a domestic battery plant by the majority state-owned energy company CEZ and announced that it was prepared to support international partners with significant financial incentives should they decide to join the project (Randall 2021h). Poland is already the fifth-largest global supplier of lithium-ion batteries and battery parts and large-scale investments in new and existing battery plants by LG Chem and Umicore will further boost this position (Kość 2021). Korea's SK Innovation already operates a battery plant in Hungary and – incentivised by a €90m subsidy – is establishing two further factories in the country (Randall 2021i and Randall 2021j). Samsung SDI and Japanese GS Yuasa have also picked Hungary as their European hubs due to the country's favourable conditions for foreign investors (bne IntelliNews 2021). The Romanian government, which so far was unsuccessful in attracting any investments for large-scale battery (cell) plants, plans to re-open three decommissioned mines that offer access to untapped rare earth deposits in a bid to enter the lucrative battery market (Timu and Vilcu 2019).

If CEE countries want to realise their growth potential in the EV market through the production of EVs, batteries and charging infrastructure, their workforce requires new and specific skills in areas such as high-voltage cables and operating systems as well as software-driven applications (Theisen and Hubatka 2021). While the Hungarian government recently signed a memorandum of understanding with the European Institute of Innovation and Technology – an EU body – to re- and upskill workers (EIT 2021), skill production is a sore point in CEE, in large part because of the fiscal crisis of the early post-transition years. Over the past decades most of the responsibility for industrial skills production in CEE was therefore effectively outsourced to MNCs who trained their workers in plant-level training programmes – which led, somewhat predictably, to complex collective action problems that required intervention by Chambers of Commerce to find a solution (Hancké 2012). But that means that the underfunded and underdeveloped domestic education and training systems are unprepared for this new skills offensive. The official educational arrangements will almost certainly reach capacity quickly – assuming they can teach the skills that an EV-driven automotive sector requires. The private sector is unlikely to take over the baton. In a parallel to what happened in the car industry almost twenty years ago, investment in skills for battery production in company A is likely to entice company B to poach the trained workers rather than train them. The likely outcome is, again, a stalemate – but this time without the deep and strong political actors that coordinated efforts in the car industry.

### 3.4.6. Conclusion

The defining feature of the car industry in Central Europe is its dependence on strategic decisions made elsewhere. This could become particularly problematic in the transition to EVs, as the political subservience of the Central European plants in the corporation, and the institutional weakness of the employment system that governs them – with weak training systems and collective bargaining systems – will not trump the deeply-rooted co-determination systems in the western European headquarters. The future of the automotive industry in Central Europe may not be as rosy as its recent past, therefore. How exactly this will play out is unclear, but it will involve increased competition between plants, in which the Central European operations of German (and French) companies have one hand tied behind their backs this time.

Yet, in an ironic twist, it might be precisely this weakness that opens possibilities for the region, as some governments and companies seem to have grasped. The CEE region could carve out a different place in the EV-related value chain and concentrate on some of the high-end parts and systems that will find their way into the electric car of the future, such as batteries and drive train systems. Many proverbial ducks will have to get in line for that, not least in basic advanced training. However, if governments plan now, they could build the supply-side conditions in areas ranging from skills over technology transfer to infrastructure for a powerful supplier industry that is no longer as dependent on foreign headquarters. Taking responsibility for such an industrial revival will require two elements that have not been strong in the region, however: long-term strategic planning and the inclusion of wider stakeholders: regions, trade unions, local schools, and chambers of commerce all stand to play a role in the mobilisation of resources for adjustment.

## 4. Comparative analysis and conclusion

Building on what we know now (this paper was written in the first quarter of 2022) about the automotive industry's electrification strategies, what has the recent past been and what does the future hold? While historical path dependencies play a role in the strategic adjustment of the industry in Europe, the shift in the automotive industry is fraught with often unpredictable difficulties and dynamic interdependencies between actors within and across national borders. *Caveat lector.*

### 4.1. Different national trajectories

One important conclusion of the analysis in this study is that all countries and actors in the European car industry are facing problems, regardless of the strength or weakness

in their financial, technological or institutional position. Against that background, however, the electrification of the car industry in Europe seems to follow three distinct trajectories.

Having weathered a wave of consolidations, the financial crisis and emission scandals, the German car industry is by far the strongest in Europe, posting stable results and significant employment growth. The country's OEMs and suppliers are known for their innovation systems and technological leadership, while the strength of organised labour, representing the industry's skilled workforce, safeguards social peace and workers' influence on strategic decisions. However, the industry has been caught off-guard by the accelerated electrification and as the shift to e-mobility implies significant short-term costs for all actors. While employment reductions are possible and even likely, the multinational character of German automotive firms, paired with strong labour representatives that can convince management to cut jobs elsewhere, might start a restructuring cascade in the entire European car industry.

France and Italy are on a slightly different trajectory, based on similar problems. The tumultuous last two decades have hurt the countries' OEMs significantly and a considerable share of their supplier industry has been merged with or acquired by foreign firms. Furthermore, there is only limited cooperation between (often international) managers and domestic worker representatives in Italy and even less so in France. Both countries are behind the electrification curve and their automotive industries are unlikely to come through the EV transition with flying colours. While the future is impossible to predict in this dynamic process, the French and Italian car industries are set to take another big blow. The uncertainty of the transition, and its potentially dramatic social costs, may force governments to intervene to save their semi-domestic industries (as far as this will be possible under EU state aid rules).

The prospects for the automotive industry in Central and Eastern Europe are even more uncertain – in both senses of 'unknown' and 'dangerous'. While countries in the region have built up considerable strength over the last two decades, much of their success is dependent on (mainly German) foreign investment. Given the practically in-existent influence of labour on strategic company decisions – put into relief by the power of German works councils – firms might decide to cut jobs in CEE to safeguard employment in Germany. The complexity of the EV transition (even in Germany) may, however, give the region a second chance as producers of high value-added parts in the EV supply chain. But that would require a concerted effort from governments, OEMs, suppliers and labour to lay the groundwork – a process of multi-party coordination with which CEE countries have no or only little experience.

## 4.2. Conclusion

The debate about the automotive industry's ecological responsibility has dominated much of the discussions in the recent decade. While that argument has conclusively been won by proponents of electric mobility, the political economy of this shift – the distribution of gains and losses of the transition and its implications – makes its presence known. The initial debate has taken a long time, with the result that the transition has to be completed within a mere 10-15 years; yet due to relatively long lead times in the industry, most of the preparatory steps will have to be implemented in the next few years.

As a consequence of the wholesale shift in the automotive industry, OEMs and suppliers face tremendous up-front investments in new plants, technology and skills to remain competitive in the new era. In addition, the accelerated electrification also changes the underlying production and supply chain arrangements with potentially dramatic repercussions for employment in OEMs and suppliers. In the short run, employees are likely to pay a large price. The remaining social costs – such as for social plans and redundancy payments, upskilling, retraining or unemployment – will at least partly have to be met by companies in the sector. Winding down old industries and skills while starting a new industry based on new competencies is an immensely expensive process, and these costs have to be stumped up today. Since they lack alternative income streams in the short term, OEMs face the perverse incentive to sell more ICEVs by 2030 – especially larger ones where profit margins, but also emissions, are higher – so they can use the profits to cover EV-related investment and social costs.

This discrepancy in the time horizons between the large, concentrated costs today and the (most likely greater but also more diffuse) benefits in the distant future militate against change, however necessary it might be. In addition, many local trade unions and regional (as well as national) governments – fearing the potentially dramatic negative effects on employment and regional economies, and wary of producing a new generation of left behinds – are less than wholeheartedly engaged in the EV transition. Unsurprisingly given the enormous financial, social and political costs, the main players on all sides of the industry have raised serious questions about the speed, cost and nature of the EV-exclusive transition. The accelerated EV revolution is therefore far from a done deal. And even if EV-friendly decision-makers on the EU or national level or in OEMs are successful in pushing through a more rapid electrification, the falling concrete support from many actors on the ground means that a 'just transition' that promises to avoid losses and an orderly adjustment is unlikely to materialise. What we may have to develop, instead, is a constructive, proactive approach to limiting and compensating losers of the transition.

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