REPORT

A Just Transition in the European Car Industry

A Comparative Analysis

John Szabo

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Alt-Moabit 91
10559 Berlin
+49 (030) 8900068-0
office@adelphi.de
www.adelphi.de

Authors: John Szabo

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Abstract

The European automotive industry has embarked on a transition of unprecedented scale as it moves from manufacturing internal combustion engine (ICE) vehicles to their electric counterparts. We launched the EUKI-backed Just Transition in the European Car Industry Project in 2020 to explore how the transition will affect labour relations in Germany and a handful of Central and Eastern European (CEE) countries, namely, Croatia, Czechia, Hungary, Poland, and Slovakia. The automotive sector plays a prominent role in all of these countries and, thereby, the shift will deeply impact the structure of their economies and employment. This report conveys a comparative analysis between national case studies and contributes to the literature by scrutinising the strategies of three groups of key actors: corporations, governments, and labour unions.

Findings suggest that while OEMs are seeking to execute a “just transition” by reskilling the labour force and diversifying their production, other actors lack strategies and capacities to actively manage the direction and aim of the mobility industry’s transformation. Maintaining (or improving) employment is much more plausible in Germany, because all actors are focused on maintaining high value added processes domestically and developing education to meet newly emerging needs. In the CEE, corporations have begun to adapt to electric vehicle (EV) manufacturing and the foreseeable parallel production of ICE and EVs dampen the impact of the transition. Governments responded by doubling down on the transportation sector but diversifying within it; for instance, effectively all governments promote battery manufacturing. Re-skilling is much emphasised by both corporate and government strategies in CEE but has made little progress. Lastly, unions have a limited influence on events in the region and are typically pre-occupied with short-term objectives (e.g. ensuring members receive their salaries), but have begun to develop forward looking strategies that emphasise re-skilling. All actors tend to emphasise education and the diversification of economic activities, but cross border competition tends to overshadow cooperation despite the aligned agendas of countries.

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List of Abbreviations

CEE	Central and Eastern Europe (excluding Germany, including Croatia)
EU	European Union
EV	Electric Vehicle
FDI	Foreign Direct Investment
GHG	Greenhouse Gases
ICE	Internal Combustion Engine
OEM	Original Equipment Manufacturer
GDP	Gross Domestic Product
SME	Small- and Medium-sized Enterprises
VDA	German Association for the Automotive Industry

1 Introduction

A combination of climate policies and market forces are driving technological change on the global automotive scene as manufacturers transition from producing cars with internal combustion engines (ICE) to alternative propulsion systems, including (plug-in) hybrids, hydrogen, and battery electric vehicles (EVs). The shift fundamentally disrupts existing supply chains and forces all actors, including original equipment manufacturers (OEM), their suppliers, governments, and labour unions to adapt. A change of such magnitude poses a challenge to the European Union's (EU) automotive sector which employs 6.1% of the workforce and its turnover accounts for more than 7% of gross domestic product (GDP) (Demitry, Koepke & Mewes 2022). In principle, EV manufacturing is less labour-intensive and requires different skills in comparison to ICE vehicles. The challenge is thus not only to maintain the competitiveness of European firms as decarbonisation unfolds but to ensure a sufficient number of good jobs. The transition of the automotive sector is still in its infancy, but there is a rising awareness that action needs to be taken to ensure a just transition. This report contrasts and compares the strategies key corporate actors, governments, and unions are taking in Central and Eastern Europe.

This paper draws on the findings of the Europäische Klimaschutzinitiative-backed (EUKI) Just Transition in the European Car Industry Project which we – a team of researchers – executed between 2020–2022. Our work focused on the EU's general framework within which we analysed Croatia, Czechia, Germany, Hungary, Poland, and Slovakia[1]. Our selection of countries was driven by their economies' strong reliance on the automotive sector. We gathered data through a literature review and analysed strategic documents published by relevant actors. We also conducted a total of 74 interviews (6 in Croatia, 10 in Czechia, 14 at the EU-level, 21 in Hungary, 12 in Slovakia, 8 in Germany, and 3 in Poland) with relevant experts and organised a co-creation workshop with key stakeholders in each country as well as final workshop during the spring of 2022.

This report synthesises the research's output by discussing how national cases relate and compare to one-another. Following this brief introduction, it turns to the EU context of the transition, section three then explores stakeholder strategies by exploring the actions of corporations (3.1.), governments (3.2.), and unions (3.3.). Based on this, section four draws conclusions and offers policy recommendations.

[1] In the following we will refer to Croatia, Czechia, Hungary, Poland, and Slovakia as Central and Eastern Europe (CEE), and we consider Germany as a separate entity. This is not only based on geographical location but the characteristics and role of their respective automotive industries require differentiation.

2 A Just Transition in the Global and EU Context

The strategies of European car manufacturers are deeply shaped by the EU's regulatory and policy framework. The EU has sought to position itself as the leader in the battle against climate change, which it has pursued by introducing an emission trading system and effort-sharing mechanisms that forces the reduction of greenhouse gas (GHG) emissions in non-ETS sectors, including transportation. In parallel, euro standards force the reduction of various tailpipe emissions of vehicles, but the weight-based targets allows the European vehicle fleet to grow heavier and more powerful. Thus, cars effectively became more efficient but more material-intensive in recent years (Pardi 2022). This is paired with the overall growth of the European car fleet driving the "rebound effect" which offsets a part of efficiency gains and slows the shift to a low carbon transportation sector (Demitry, Koepke & Mewes 2022). Furthermore, the Volkswagen emissions scandal introduced a layer of uncertainty regarding the "true" emissions of vehicles. Cars may meet standards, but systematic cheating erodes trust in ICE vehicles – diesel cars in particular – ultimately undermining the credibility of EU climate goals.

The EU has rolled out increasingly ambitious climate goals, despite setbacks in its ability and credibility to achieve those. Policy recently shifted from a gradual approach to ICE vehicle emission reductions to the outright ban of non-CO_2 neutral vehicles beyond 2035. Although European car manufacturers export a substantial portion of their production, such a tectonic shift in their domestic markets forces them to fundamentally redesign their strategies and substitute ICE cars with EVs in their portfolios. The EU's policies take effect in tandem with a changing global automotive market, where an emphasis on decarbonisation supports the rise of electric vehicles, which is the select technology of many manufacturers to provide low carbon vehicles. This unprecedented technological shift also offers a market opportunity for a number of new actors, be those Chinese firms or US Tesla, which can compete with traditionally well-positioned European manufacturers. However, some experts have raised questions whether EVs will indeed be the technology of the future. An interviewee in Slovakia articulated this poignantly when noting: "[i]n our view on what is happening in Europe, it is difficult for the car producers to adapt on the changes required. The fuel engine has been developing for 100 years and now we want to switch to electromobility in 9 years"[2]. A shift is being pushed by global market forces and EU policy, but how successfully OEMs can adapt remains an open question.

European automotive corporations develop their strategies in response to broader national and supra-national political-legal frameworks, but their strategies develop in tandem with policy. European governments and EU institutions have sought to maintain policy that generally favours dominant automotive OEMs given their dominant role in economic competitiveness and vital role in employment. Consequently, it is a national interest to introduce comprehensive policy that sustains the sector vis-à-vis Chinese, other European, Japanese, South Korean, and US companies amidst a transition. EU institutions have also adapted to facilitate the transition both to meet climate grounds and ensure necessary industrial policy that enables a transition while maintaining the competitive edge of companies and employment levels. EU policy-makers are gradually working to introduce the missing pieces of a comprehensive framework, because the shift from ICE passenger cars to EVs requires the alignment of climate, educational, employment, industrial, and market policies (to name a few). Measures introduced so far (e.g. Fit-for-55, the Smart and Sustainable Mobility

[2] Interview with manager at OEM, 02.02.2021.

Strategy, or the Battery Alliance) are crucial components of this broader framework which is not yet exhaustive.

A key component of the transition is how it will affect employment and thereby labour relations. Unionist already began to develop a concept of a "just transition" in the 1990s to help identify and support the communities that would be adversely affected by environmental protection measures especially in relation to governments and enterprises closing coal mines (Rajković & Domazet 2021). This was included in the Paris Climate Agreement to affirm "the imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities" (TUED 2019: 52). The concept has since been included in EU and member states' policy objectives and, broadly speaking, calls for a comprehensive cross-sectoral framework to ensure a fair transition to a socio-ecologically sustainable society. Its meaning is, however, quite broad and vague which runs the risk of it being "hollowed-out and over-stretched" (Galgóczi 2019) as well as subjugated to corporate or other interests.

We have identified four major gaps in the successful execution of a just transition in the European car industry: geographical, skills, timing, and attractiveness. The geographical gap refers to the regional challenges of the transition, as reliance on the automotive sectors varies region-by-region as does local actors' ability to adapt to a transition. This may include factors, such as a reliance on external foreign direct investment (FDI) and the role of foreign firms in creating local jobs which shapes a government's ability to tackle the matter at hand. Consider table 1 below, which conveys that not only are the number of automotive jobs higher in Czechia but they rely on foreign firms leaving the country in a much more vulnerable situation.

Table 1: Job creation by foreign and domestic firms 2005–2016

Country	Total jobs	Domestic firms	Foreign firms	% of foreign firms	% of domestic firms
Czechia	72,598	3,725	68,873	94.9%	5.1%
Germany	50,926	47,591	3,335	6.5%	93.5%

Source: (Pavlínek, 2020)

The skills gap refers to the different skills which are required by EV production versus those for ICE vehicles. For instance, an expert noted that emerging "jobs are mostly not blue-collar jobs, meaning classical manual manufacturing work, but white-collar, office jobs that require a higher level of education" (Demitry, Koepke & Mewes, 2022: 19), but few governments have sufficient programmes in place to equip employees for the shift as jobs are not necessarily "compatible with each other"[3]. We have also found that timing will be crucial in the sector as actors need to deploy strategies to adapt to a changing the context; however, the pace of change is not entirely clear, posing a substantial challenge for industrial and employment policies. Lastly, the attractiveness gap stems from the industry's (in)ability to establish jobs in a sector that has partially been unionised and offered above-average pay, while "[m]any of the jobs created in the transition of the automotive industry nowadays have lower pay levels, might not be unionised and therefore are less attractive than the existing jobs in the automotive industry" (Demitry, Koepke & Mewes 2022: 23).

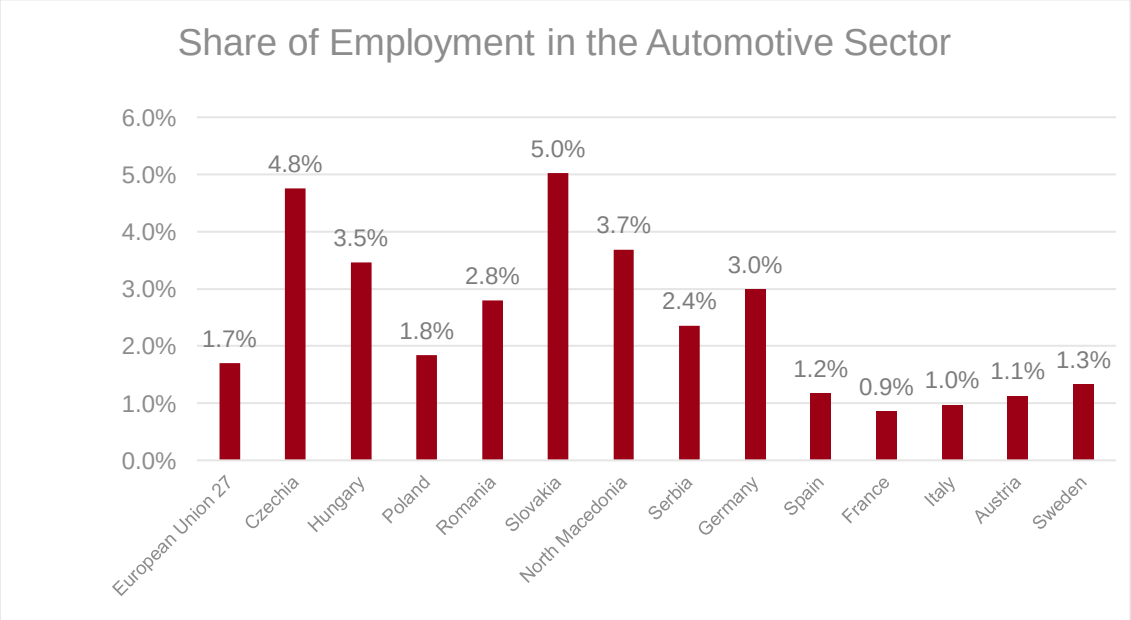
[3] Interview with civil society representative, 12.03.2021.

3 Stakeholder Strategies

3.1 Private Companies

The strategies of OEMs respond to a global policy and economic environment which trickle to influence the supply chains of the European automotive industry. Decisions regarding strategy pertinent to both technology and respective manufacturing originate in the headquarters of OEMs – primarily Germany in the case of this study. Thus, the German Big Three – BMW, Mercedes-Benz Group (formerly Daimler), and Volkswagen – adapt their product portfolios that leads to alterations in the products that subsidiaries and suppliers manufacture in Germany and across Europe. The chain of command in these cases is effectively unidirectional originating from OEM headquarters and determining the output, thereby, employment in a number of other countries. An expert remarked that "entrepreneurial strategies evolve from the multi-national corporation strategies decided in the home country" (Martišková 2022: 21) and then trickles down to entities lower in the supply chain. OEM subsidiaries in the CEE typically only have an understanding of what to expect in the forthcoming 2–3 years. Albeit, a handful of exceptions exist, such as "Škoda [which] still has more autonomy in this than the more recent greenfield developments, which are entirely controlled by head offices" (Gažo, & Thomas 2022: 18). Nonetheless, Škoda is rather the exception as opposed to the rule, as most OEM subsidiaries can only influence manufacturing processes and technologies.

Figure 1: Jobs in the automotive sector



Source: Eurostat lfsa_egan22d, own compilation

The extent of the change also depends on which companies are present in the country and what process of manufacturing they are involved with. Pardi (2022) suggests that high-end brands, such as Audi or BMW are better positioned to shift to EVs as the higher costs of new

technologies only consist a marginal part of the product's price. Premium brands' markets are not at risk from this standpoint, but it remains unlikely that consumers buying cheaper vehicles will be able to afford the added costs the shift to EVs may entail. Audi and Mercedes-Benz in Hungary are, for instance, in a better position to overcome the hurdles the transition poses than Suzuki. It remains unclear how manufacturers of affordable cars will compete, which would be essential to maintain employment and to provide the widely accessible vehicles necessary to meet climate goals in the transportation sector. Furthermore, it is crucial what step of manufacturing plays a prominent role in the country. Hungary's Audi factory has been one of the largest ICE assembly plants worldwide but its gradual shift to electric drivetrain production dampens the impact of the transition. Meanwhile, an expert affiliated with car supplier in Croatia noted that "[n]othing dramatic will happen [in Croatia]. […] When our OEM's start to produce BEV's, engine and fossil fuel production will be at stake, not those who produce bumpers, handrails, consoles and similar things"[4].

The automotive sector's transition will unevenly affect actors, but we found that enterprises in general have pursued a triple-pronged strategy composed of re-education, diversification, and communication to address the four gaps – geographical, skills, timing, and attractiveness – discussed. All three facets are materialising in Germany, while the former two are most prevalent in CEE.

3.1.1 Communication

German firms see communication as essential given that the decisions and strategies of OEMs and Tier 1 suppliers have rippling effects throughout Europe. Companies seek to facilitate dialogue and communicate their strategic decisions with the government, unions, and their suppliers. In principle, this allows for companies to gather input and develop strategy accordingly. Such input is vital since "[u]nion leaders and other executives all noted that to develop production and labour strategies they need sufficient insight into the technological trends and trajectories OEMs are pursuing" (Szabo et al. 2021: 11). Even the limited information subsidiaries and suppliers access is essential to take investment decisions in production processes. For instance, Audi's mega-factory in Győr, Hungary, only has an understanding of Headquarters' decisions affecting the subsequent 1–3 years of its operations, which executives in Győr use to fine-tune their operations and make strategic decisions related to production. There is nonetheless a strong misalignment between OEM headquarters' plans that cover the forthcoming decade or so versus the fairly short-term outlook they share with subsidiaries and suppliers. A misalignment is in part strategic, as OEMs seek to limit the information they share fearing a loss of their competitive advantage if information is leaked, but it also adds contingency to the transition and makes it challenging for actors to adapt and plan in a way that protects jobs.

OEM communication is somewhat changing in response to environment, social, and corporate governance objectives. EU regulations on sustainable finance and pressure from investors to make long-term strategies clear has improved communication. This, in some cases, such as in Germany, has been accompanied with the government forcing companies and providing necessary platforms through which they can communicate more clearly and transparently about their transitionary plans. The government (federal and at the level of the "Lander") can exert pressure and continue to do so because it is a stakeholder in many cases and sits on the boards of OEMs. This is not the case in CEE where governments have little influence on the actions of OEMs. What is more, communication among stakeholders in the CEE about

[4] Interview with representative of a trade union at a TIER 1 car supplier 2021.

their strategies is lacking. One reason is the top down nature of organising production. That is, most of these manufacturing facilities rely on guidance from their headquarters limiting their ability to communicate future plans with governments or unions.

3.1.2 Diversification

The general sentiment within CEE corporations is that the transition to EVs will be gradual, allowing for actors throughout the value chain to adjust. They anticipate parallel manufacturing to sustain in the forthcoming decade as ICE vehicles are phased out and EVs phased in. Companies have begun to respond and diversify production to include a broader range of products beyond components of cars. Companies in Hungary, Poland, and Czechia restarted electric bus and other heavy duty vehicle manufacturing. In addition, Poland has also sought to establish its own national car brand, Izera, to diversify its reliance on Western firms. Croatian and Slovakian firms have generally failed to respond in this respect, as expectations of a prolonged transition inhibits substantive adaptation and the development of respective strategies. Companies in Germany have made investments into autonomous vehicles and car sharing which indicate an attempt to adjust business models, but this still only makes up a fragment of turnover. They also suggest that employment will be maintained through auxiliary services and products such as developing charging infrastructure or mobility services. In general, companies are attempting to venture into sectors that are closely linked to the car industry to harness synergies.

A key form of diversification among companies situated in Czechia, Germany, Hungary, Poland, and Slovakia is battery manufacturing. Both newly incorporated firms and existing ones are venturing into lithium-ion battery production – an important component of EVs. German OEMs have poured billions into battery production over the past years, while their suppliers have also become involved with linked activities. However, this diversification of labour capacities will not necessarily yield a just transition. Battery manufacturing is highly automated, limiting labour demand and requires new skills and knowledge from workers. Companies are cooperating with governments to establish educational programmes, but the matter is still in its infancy in all the countries assessed. It is also unclear whether workers will be able to shift to jobs that are equally valued as those they currently occupy. A Hungarian interviewee noted that the lower labour requirements coupled with automation and OEMs keeping R&D in their home countries entails that labourers will shift down the supply chain, meaning that those responsible for simple assembly tasks may become repairmen, those currently managing more complex and automated line jobs will supervise machines that substitute human labour and those involved with R&D will take on the most complex tasks of production[5]. Moreover, there are a number of health related concerns with regard to battery production, which decreases the quality and attractiveness of these jobs.

A pipedream of CEE companies is increasing added value which would create high-paying jobs. This has been a focus of all strategies in the past but has never materialised at scale. It continues to be a crucial element of a successful and just transition, as many see the technological shift as an opportunity for local companies to become involved with higher value added processes, but this happening on a large scale seems unlikely as innovation has typically remained concentrated near the headquarters of companies, typically in Germany. Isolated success stories, such as Rimac in Croatia, support the narrative that start-ups, new firms, or branches of existing firms can become key technological innovators but scaling this has not materialised. An expert in Slovakia suggested that the “[a]utomotive industry is

[5] Interview with former senior ministry official, 12.03.2021.

incredibly innovative, but innovations are prepared elsewhere, outside Slovakia. To be able to do it here, we need conditions, it means research institutes and people able to work in there. However, in the last 30 years we have mostly ruined education in the research and development area, so who would do that today?"[6]. Investment into research and development is undertaken, but innovation generally speaking remains limited and pre-concludes the region's role in supply chains.

3.1.3 Re-skilling

The third leg of strategies companies pursue is re-skilling to overcome the skills gap. This does not necessarily fall within the purview of what is typically deemed as a core activity of companies, but the cases show that executives have become involved alongside governments in education programmes. These may materialise within the manufacturing halls themselves or can extend to the classrooms of secondary or tertiary educational institutions. Major OEMs developed working relations with local educational institutions, such as Audi's in Győr, Hungary or Škoda's in Mladá Boleslav, Czechia or VW in Bratislava, Slovakia. In Germany, companies have even begun to support secondary educational programmes to provide them with the needed labour in forthcoming years as a shortage of skilled labour in many sectors has become an increasing concern. However, as noted by Slovak respondent, while OEMs have the know-how and economic capacity to transform production and support the (re)education of their workforce, suppliers from lower supply chain tiers are in a riskier position and do not have capacities for re-skilling programmes. They also have difficulties in previewing their future skill needs as their understanding of new technologies is limited. It is worthwhile to note that labour markets during the period assessed were generally tight in the region, especially with regard to the skilled workforce, prompting companies' involvement in resolving a problem essential to their activities.

In addition to re-education, diversification, and communication, large corporate strategies to achieve a "just transition" may hinge on consolidation. German OEMs are pressured by local and federal politics to maintain employment, which can be exerted through the Lander's holding shares of companies and being included on their boards. Consequently, they and their subsidiaries in CEE countries have taken on mandates to maintain employment levels. On the face of it, this enables a just transition since jobs will not be lost, but since EV output requires less labour "to maintain current employment levels, German OEMs have three options: (1) increase output, (2) involvement in non-impacted areas, or (3) deepen production" (Szabo et al. 2021: 7). Deeping production entails incorporating activities carried out by suppliers into the activities of OEMs. Employment is maintained within OEMs, but it renders a large number of SMEs effectively redundant and can drive them out of business as OEMs usurp their core activities. This poses a challenge for both the SMEs and also the governments that need to introduce measures to save jobs.

3.2 Government

Government strategies are generally based on three pillars: facilitating communication, shifting the structure of their economies, and providing support for SMEs. While all of these approaches materialise in all countries, the relative emphasis governments place on them differs. Facilitating communication in the strategy development processes has been especially

[6] Interview with a representative of an employer´s association, 10.12.2020.

prominent in Germany and Slovakia. However, this can also materialise because of the relatively powerful role unions play, in the former's case, which are able to balance out companies' interests and make communication a prerequisite to the trajectory of the transition. Nonetheless, how these positions transpire into government policy varies, as the voices of large OEMs are influential at the level of the Lander, the national scene, and the EU-level (the latter through the German Association for the Automotive Industry, VDA for short). German policy has also increasingly emphasised the development of additional exchange formats, including strategic dialogues between policy-makers and industry representatives from diverse backgrounds (not only large OEMs) as well as innovation and exchange networks to connect suppliers and off-takers or companies facing similar transformation-related challenges. Slovakia's case is quite different, since the government has only begun to explore potential strategies to tackle the technological shift and it has thus welcomed positions that it may or may not include in policies.

Inclusive communication is not universal, in Poland, for instance, we found that "[t]he most important problem noticed during the project is the lack of dialogue between the public administration and the automotive industry" (Chrzanowski, Fabiszewska-Solares, & Krawiec: 2023: 18), while Hungarian experts from the public sphere noted that ambitions to facilitate communication is somewhat in-tact but decisions are typically taken behind closed doors and terms tend to be dictated by enterprises. In Czechia, an expert noted that "[employers] care about the business, and unions care about people. Well, the third player in the tripartite dialogue is missing because he is asleep. This is neither the fault of trade unions nor employers. The legislators have other worries now"[7]. However, a lack of focus entails a risk of insufficient dialogue with regard to the transition which hinders the success of a just transition.

Diversification has been central to government strategies in all the countries we explored. This has typically taken one of two forms: backing other branches of the transportation sector or the battery industry. A prominent pathway taken by multiple governments is developing battery production and luring Far Eastern investors to develop facilities. Here, too, the sheer scale of investment favours Germany, where there are twelve large projects planned, while the entire CEE region combines for a further six (En-former 2021; Transport & Environment 2021). Absolute numbers are somewhat misleading, given the size of the Germany economy, while they also hide the high ambitions many CEE governments have articulated in this regard. The Czech government's policy, for instance, has been extremely supportive of battery manufacturing, which it applies through favourable policy, subsidies, and as a majority shareholder of ČEZ which has taken a leading role in related activities. Most notably, the Czech government not only prescribes battery production, but aims to launch lithium mining to support the country's role throughout the supply chain; albeit, the project has seen some delays. Thus, diversification in this case extends well-beyond manufacturing and to the mining of natural resources.

Other CEE countries also have high, if not higher, ambitions for their domestic battery sectors. The Hungarian government has rolled out a battery strategy and enthusiastically welcomed investment into respective production, as a number of companies ranging from South Korean Samsung to Chinese CTAL are investing billions of euros into the sector. These have been framed as an attempt to save jobs, but research highlights that the projects are problematic given the energy-, labour-, and water-intensity of battery production, all resources which are increasingly scarce in Hungary or certainly not available at the scale such megafactories would require. Poland has also invested heavily in the technology, with battery exports now comprising 2% of its total exports. The matter is somewhat more muted but present in

[7] Interview with trade union representative, 2021.

Slovakia, while it is absent from the Croatian scene. There may be interest from politicians and corporations in a host of countries, but public opposition is mounting in Czechia or with regard to the CTAL investment in Hungary which tamper ambitions.

Governments have also heavily supported the diversification of products, which has been most pronounced in Czechia, Germany, and Slovakia. Leaders have chosen to invest substantial funds in reviving, adapting, and developing the production capacities of buses in Hungary as well as buses, trucks, and street cars in Czechia. Hungarian strategies materialise in a bouquet of actions, including the Jedlik Ányos Plan (e-mobility), the Hungarian National Battery Strategy (electric bus production and use), and the Zalazone test track (autonomous vehicle development). The Czech government has noted that the future of Škoda, for instance, is of national interest and diversifying the activities of large automotive actors is essential, but a clear strategy as to how policy will support this remains to be articulated. In Germany, the government has supported both start-ups and private sector research on component development and other innovation, continuing its legacy in the sector. Actions are thus government backed, but company driven. Poland is an exception in that it lacks a comprehensive government strategy, especially with regard to the transformation of its heavy duty vehicle production. Interventions are haphazard and the country's overall carbon-intensive energy mix further weighs on its ability to adapt to a low carbon setting.

Government strategies also reflect a strong orientation to develop industrial policy that supports SMEs. These employ a large part of the workforce in the automotive sector in all countries. Maintaining their competitiveness is essential for a just transition and maintaining economic output – an objective of all governments. The German government has channelled substantial funds to support SMEs in the transition, as SMEs are considered the backbone of the German manufacturing sector. Moreover, it has complemented financial support programs by measures to provide and finance consultancy services to define strategies for the transition. Most other governments have also heavily subsidised SMEs in an attempt to maintain competitiveness and, where possible, increase technological prowess. A key question in these cases pertains to how effective these endeavours are and whether they will facilitate a just transition, since forcing companies to maintain good jobs after receiving government funds is challenging as labour unions are effectively absent in this segment throughout CEE. The odd one out is Poland, where there is a lack of action dedicated to smaller suppliers which points to the larger problem of its insufficient involvement in paving the way for a just transition.

3.3 Labour Unions

In the countries we assessed, apart from Germany, the role of the unions in the automotive sector is limited since governments and companies generally obstruct their formation and have developed labour laws that limit their ability to shape policy or corporate strategies. This is not to say that unions do not play a role, since unionisation within the labourforce of OEMs is generally present, but their relative power in comparison to company leadership and the state's is limited and unionisation below the OEM and, occasionally, the Tier 1 supplier level is effectively non-existent. In contrast, unions have played a long-standing and powerful role in Germany. Half of all employees in Germany were covered by collective bargaining agreements and historically unions, such as IG Metall – covering the automotive sector – play an influential role in ensuring labour rights and shaping various realms of policy. However, here too, cross sectoral cooperation to articulate the will of employees and facilitate the execution of just transition across the board remains limited; as an expert noted: "[w]hy doesn't IG Metall, for example, join forces with Ver.di and say okay, a socio-ecological structural change would

mean expanding the service sector, the care sector. And now we go out on the streets together and we are fighting for it together"[8]. With such cooperation unions could push for flows between sectors that would facilitate a shift to a sustainable and fundamentally restructured economy that overcomes prevalent path dependencies.

Union strategies have noticeably shifted from opposing the transition to addressing it. German unions are well aware that the shift to EVs is inevitable and other unions in the CEE region are not against the transition even though they are sceptical whether EVs offer a palatable alternative to ICE vehicles. They also, much like a number of suppliers in CEE, presume that the transition will unfold at a pace that allows for all actors to adapt. Unions have increasingly reflected on the transition during the research period and we saw tremendous progress in how much emphasis a just transition in the automotive sector receives from union leaders. Unions in Hungary, Slovakia, or Croatia were all becoming more attentive to long-term changes even though they still tend to be more generally focused on day-to-day activities and expanding their base. Union action is moving from reactive and sceptical – "[t]he EU will give the deadline: 'Then and then it will be ready'. And they will launch it quickly, and it will not be sufficiently prepared at all"[9] – to proactive and hands-on – "[t]he unions should not start dealing with this when it happens because then we are in the role of, as they called it, firefighters, trying to put out what we can at the last minute. We need to proactively try to inspire the management in some way right now, so that the employees are already starting to educate, requalify and so on"[10].

Unions in Czechia were also driving an important by pushing for international solidarity amongst workers (e.g. a four-day workweek) and supporting more balanced competition within the EU as a way to dampen the negative implications of the shift. In general, to stimulate a just transition where workers' interests and needs are fulfilled, greater involvement of stakeholders outside of company and government structures is necessary and trade unions themselves will need to size up their capacities to take the lead in these transformational processes. Union leaders we spoke to were well-aware of the need for such action and they had such inclinations, but capacity limitations impeded their ability to engage accordingly.

Labour union strategies in Germany and CEE countries reflect a push for the development of (re-)education programmes. Our Czech colleagues found that these organisations are effectively becoming "learning organisations" where "unions have a main role in ensuring the transformation in long-term education of the employees"[11]. This was a clear priority in effectively all countries. In Germany, unions' goals included applying pressure for governments to develop long-term forward-looking strategies that includes re-skilling and thereby educational programmes. Similarly, unions in Czechia, Hungary, and Croatia back the development of educational programmes which can be formalised and tailored to the changing needs of industry. Moreover, they have supported educational programmes that are held within and by corporations for those typically low-skilled workers whose jobs are becoming redundant as the transition and automation unfolds. In Poland, the situation is similar in principle, although the support is more in the nature of an indication on the direction to be pursued. In Slovakia, unions and the government clashed over which actors should fund educational programmes as the former underscore that education is a public good while the latter has been slow to respond.

[8] Interview with civil society representative at the EU-level, 12.03.2021.

[9] Interview with trade union representative, 2021.

[10] Interview with trade union representative, 2021.

[11] Interview with a representative of a trade union in the road transportation sector, 2021.

4 Conclusions and Recommendations

The automotive industry is moving away from the production of ICE-propelled vehicles to EVs, which has prompted governments to pursue action that claims to ensure the execution of a just transition. In a narrow sense, a just transition focuses on providing good jobs for those that may otherwise be dispossessed due to the low labour-intensity and automation that emerges with the transition. The actions of large OEMs is, however, shaped by international market forces; thus, these corporations need to compete on global markets. States have also been involved in supporting these corporations, because the latter's success underpins employment in constituencies and making the issue ultimately a deeply political one. The transition and its justness for workers changes on a country-by-country basis, but, generally speaking, the strongest divide is between those in which OEMs are incorporated (e.g. Germany) and those where it has established subsidiaries or extensive supply chains (e.g. CEE countries).

In our research, the Germany-CEE differences illustrated how groups of actors can be affected differently and, possibly, to the detriment of one-another. Technological progress supports this dynamic, as high value added processes are already concentrated in the headquarters of OEMs and, with advancing automation, a widening gap between low and high value added processes in Germany and the CEE, respectively, can deepen. The transition forces companies to change their activities, to which a key answer has been diversification of activities. Typically, in Germany this includes OEMs expanding ventures in technologically-intensive activities. CEE countries have also pursued this path as there is interest from corporations and governments, but their success has been limited. Our research suggests that there is a deep need to facilitate cooperation between all actors. While this is unfolding within Germany with a positive effect on innovation and the ability to execute a just transition, there is insufficient communication between OEMs, their subsidiaries, governments, suppliers, and labour unions about long-term plans. This pits all actors against one-another, introducing fierce competition to the detriment of all actors. Establishing EU and regional platforms for cooperation and dialogue is essential for a just transition.

There are key endeavours by both OEMs and their home countries as well as CEE countries to increase production and sustain jobs, but there is a risk that OEMs will deepen their production at the cost of CEE SMEs. Companies, governments, and unions have sought to tackle the issue in most cases, but long-term planning is a major challenge in the CEE region. Despite OEMs typically developing long-term strategies, other actors do not have access to this and can only anticipate changes emerging in the subsequent 1–3 years. Developing long-term plans and expanding capacities accordingly is challenging given the vast contingency of the transition, which then introduces instability as to how many jobs they can provide. Yet again, many of these issues can be addressed by introducing programmes and policies that connect countries and actors, facilitating cooperation as opposed to competition. Moreover, governments should develop long-term forward looking strategies based on input gathered from all the actors involved in the automotive sector. This would address haphazard interventions and provide a tool for further targeted subsidies and technological incubation.

The three key groups of actors our research focused on – governments, private corporations, and labour unions – all conveyed an understanding for the need to initiate re-skilling and educational programmes that support a just transition. This is in favour of both the companies that have already invested in the region and seek to maintain or increase output, while it also comes to the benefit of employees. How advanced countries are in this process varies case-

by-case: Germany is spearheading the process, Czechia and Hungary have taken some but insufficient actions, while Croatia, Poland, or Slovakia are still working on policies. Nonetheless, there is a corporation-led endeavour backed by governments and state authorities to introduce up-to-date educational programmes. Unions have also been essential in pushing for re-skilling as the low-skilled workforce is the most susceptible to the negative ramifications of the transition. Unions have also been very active in this front, despite their limited capacities. There is a rising understanding regarding the skills that companies need and cooperation between private and public entities has been ongoing – this should be continued, supported, and facilitated by all actors involved. This is the most important realm where all actors need to invest substantial capacities to allow for re-skilling programmes to scale quickly. Union input on this is essential and something that governments in CEE need to acknowledge, since they have a deeper understanding of how employees see their jobs and what positions they are seeking to move towards.

Another key form of action is diversification. CEE countries have not been particularly successful in this regarding, despite government interventions targeting the matter. The countries in which OEMs are incorporated tend to usurp the highest value added activities and offer little room for others to grow. This does not deter CEE governments and companies from pursuing research, development, and innovation, but impedes their success. A common response is the pursuit of a much less technologically intensive set of activities: battery production. These may be automated, but their added value is quite low and has become a linchpin of government and corporate policy in the region. This is the field where it is the most evident that CEE countries are pitted against one-another as they seek to usurp FDI from one-another. Political cooperation that allows for them to intervene in the transition and shape it according to their interests is limited. The actions that governments in the region take are reactionary at best, delayed, and typically non-cooperative. In principle, the EU could offer a platform to mediate but this has not yet been pursued.

As a final call for further research and policy intervention is to consider the inherent sustainability of the transportation system the EU is pursuing under the presumption of a just transition. As an interviewee succinctly captured: “[t]hose who deal with regulatory framework and legislation will need to tackle an issue that will appear alongside with electro-mobility and this is battery second life. That is a question of circular economy and requires a comprehensive regulation which tracks a product from its beginning to its end and places it within the context of sustainability”[12]. We have found that it goes well beyond batteries and expands to all elements of the transportation system. The strategies we identified during the course of this project support the shift from one mode of individualised transportation to another, which remains extremely resource- and space-intensive while perpetuating social injustices as divisions between countries, their labour forces, and corporations expand. Strategies and the policies they underpin need to take a holistic socio-ecological approach that supports a just transition to *sustainable practices*.

[12] Interview with representative of the executive body of a TIER 1 car supplier, 2021.

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