

Determinants of union strategies towards the twin digital and green transitions in the German and Belgian automotive industry¹

Valeria Pulignano

Centre for Sociological Research (CeSO), KU Leuven, Belgium

Marco Hauptmeier

Cardiff University, UK

Dorien Frans

Centre for Sociological Research (CeSO), KU Leuven, Belgium

Summary

This article examines union strategies towards the twin digital and green transitions, comparing the German and Belgian automotive industries. The drive towards net-zero and more digital economies is manifested through the move from fossil fuel-powered cars to electric cars, engendering a reorganisation of production, work and employment among car manufacturers. We identified two strategic union response patterns. While German unions are developing proactive strategies and proposals to influence and shape the ongoing transition of the automotive industry, Belgian unions are more passive, reacting primarily to management proposals and focusing narrowly on employment and working conditions without a broader strategy on how to influence the transformation of the automotive industry. We explain the observed cross-national differences by two factors: the importance of national institutions, i.e., the varying integration of labour into management

¹ This paper has received funding from the FWO - Flemish Research Council (Project Number G073919N) on "Precarious work in the online economy. A study on digital workers in Belgium and the Netherlands" and the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme - ResPecTMe-project (grant agreement n° 833577)

decision-making, and the role of union knowledge regimes. The latter refers to internal union organisations and structures such as research departments, research institutes and foundations tasked with providing own research and funding external research on change topics from a union perspective, publishing studies and developing programmatic agendas, and disseminating the knowledge to union members through training, workshops and conferences.

Résumé

Zusammenfassung

Keywords

Automotive industry, unions, strategies, union knowledge regime, industrial relations

Corresponding author: Valeria Pulignano, Center for Sociological Research KU Leuven valeria.pulignano@kuleuven.be

Introduction

Two intertwined challenges – the transitions to more digital and net-zero carbon economies – are changing the face of European economies and employment relations. Digital technologies are underpinning the transition to a net-zero carbon economy, while the ‘green transition’ necessitates a technological shift in our ways of producing and consuming, to be achieved through increased digitalisation, in the form for example of artificial intelligence, robotics, and the internet of things. This article deals with this twin transition, with a focus on the shift to producing electric vehicles (EVs) as the key to decarbonising transport.

This will not only generate opportunities, but also destroy and change jobs through work reorganisation (Brynjolfsson and McAfee, 2014), posing the question of how unions are to respond (ETUC, 2018).

Scholars have called for the involvement of unions to prepare workers in a timely manner for this shift towards a digital, resource-efficient and climate-friendly economy by pointing to social dialogue and collective bargaining as key aspects of managing the transition (Galgóczy, 2019). Here, the literature and policy-makers have used the concept of a 'just transition' in specific reference to this shift and its impact on industrial relations. The increased use of digital technologies requires worker involvement in management decision-making processes, for example regarding the introduction of artificial intelligence (AI) (Eisenberg, 2019; Flanagan and Goods, 2022), with worker voice strengthened through social dialogue, employee participation and representation structures designed to help manage and anticipate restructuring (e.g. Pulignano and Stewart, 2013; Gumbrell-McCormick and Hyman, 2013; Pulignano et al., 2007). However, these studies also point to diverging national union and worker representation approaches to work reorganisation and restructuring (Hyman, 2001; Turner, 1991). This article builds on this literature, comparing German and Belgian union strategies towards the digital and green transitions in the respective automotive industries.

Our research identified two strategic response patterns in the two countries. In Germany, labour has been proactive in developing independent proposals on how to manage the twin transition. Worker representatives have put forward their own proposals in negotiations with employers, seeking to shape the direction of change and balancing the long-term risks and opportunities for workers. In Belgium, unions have been more passive, reacting to change proposals from

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management primarily with a narrower focus on protecting employment and working conditions. Their emphasis has been on dealing with immediate challenges without developing their own long-term transition strategies.

We argue that the different union strategies are shaped by two factors: national employment relations (ER) institutions, and the role of union knowledge regimes. The former include workers to varying degrees in management decision-making, affecting their ability to influence change processes. In Germany, co-determination rights for works councillors on the shop floor and supervisory boards provide channels for voicing and negotiating proposals regarding the green and digital transitions. Such company-level negotiations are complemented by sectoral collective bargaining between unions and employer associations, frequently going beyond narrow 'bread-and-butter' issues to include frameworks and agendas for broader change processes. In Belgium, worker representation rights also exist at company level, but have a greater emphasis on information and consultation and only limited possibilities to influence management decisions and put forward independent reform proposals. A further union channel for influencing management is sectoral collective bargaining, which however has a narrower focus on wages and working conditions in the Belgian automotive industry.

Second, labour strategies are influenced by union knowledge regimes, a term referring to the organisations and structures within unions that are involved in developing new knowledge, ideas and policies. Including union research departments, research institutes and foundations, these organisations look at topics important to unions with a view to developing proposals and programmatic agendas. The well-funded and developed German union knowledge regime includes the research

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institutes of the Hans Böckler Foundation, whose research outputs and related training courses and workshops for worker representatives support the development of strategies for managing the digital and green transitions. In Belgium, the union knowledge regime is less well-resourced and has a narrower focus. Union research departments focus more on current working conditions at the workplaces and social dialogue, but less on societal debates with a broader time horizon such as digital change and net-zero economies, limiting the capacity of unions to put forward their own reform proposals on the green and digital transitions.

Our article makes two contributions. First, while recent research on the social organisation of ideas and national knowledge regimes is examining the role of ER players in developing policy ideas (Morgan and Hauptmeier, 2021; Campbell and Pedersen, 2014), this research has up to now been focused on the national level. We extend this macro-level research to the organisational level, explaining how union knowledge regimes contribute to the development of labour ideas and strategies. Second, while it is well-established in ER how institutions shape change processes and union strategies, much research has compared countries with strong and weak collective bargaining institutions (e.g. Lévesque and Murray, 2005; Marginson, 2016; Doellgast, 2012; Hauptmeier, 2012; Hermann and Flecker, 2013; Pulignano and Signoretti, 2016). Looking at the specific context of the digital and green transitions, our research identifies the different impact of these institutions in two continental European countries with well-established and strong union representation and sectoral collective bargaining but with distinct systems of workplace representation.

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Unions and the digital and green transitions

Europe has pledged to become the first climate-neutral continent by 2050. The sense of urgency regarding the green transition has led the European Commission to tighten the regulatory framework to achieve the EU's intermediate target of reducing net greenhouse gas emissions, including the ambitious 55 per cent CO₂ reduction target for cars by 2030 (based on 2021 levels), moving to zero-emission vehicles in 2035 (European Commission, 2021). These tightened CO₂ limits for the automotive industry can only be achieved through a transition to EVs and the phasing-out of combustion engines. This is leading to manufacturing processes being further automated – through increasing digitalisation. Coming under the umbrella term Industry 4.0, changes include the digital integration of autonomous robots, location detection technologies, smart sensors, wearable technologies and AI (e.g. Edwards and Ramirez, 2016; Rainnie and Dean, 2020). In the automotive industry, Industry 4.0 generally represents the piecemeal application of new digital and other information technologies rather than a coherent strategy. Nonetheless, in practice it is a way in which management strategically determines the direction of technological change and experimentation within a context of a wider reorganisation of work and employment (Moore et al., 2018; Helper et al., 2019).

New Industry 4.0 technologies have received attention because of their role in shaping new business models in car manufacturing and requiring different worker skills (e.g. Caruso, 2018; Susskind and Susskind, 2015; Brynjolfsson and McAfee, 2014). New technologies, such as digital process control techniques (e.g. smart sensors) and material-handling robots, can increase job quality by eliminating dangerous, arduous and repetitive tasks. However, they can also create redundancies as they

require fewer workers to operate ever bigger and more complex production processes (Krzywdzinski, 2021). Efficiency gains through digitalising production processes can have adverse effects on workers' skills and reduce their autonomy (IndustriAll Europe, 2021; Eurofound, 2021), while at the same time degrading both job quality and working conditions (Cedefop, 2021). At the same time, powertrain electrification requires less labour input, simply because EVs have fewer and less labour-intensive components, meaning that their assembly is much simpler (IEA, 2020). As Galgóczi argues 'the forecast employment effect in the automotive sector becomes increasingly negative as the level of emissions reduction and powertrain electrification increase' (Galgóczi, 2019: 174).

However, the assumption that the shift to EVs will reduce employment is challenged by studies showing that, while the estimated full running cost of robots is well below that of labour, employees may be preferred over robots. In this light, for example, Helper et al. (2019) counter 'Taylorist' strategies under which Industry 4.0 deskills workers with 'pragmatist' approaches under which companies develop employee skills to optimise Industry 4.0, demonstrating that considerable human intervention is still required to overcome the limits of technologies when dealing with production complexity (Avogara, 2017). Specifically, automotive workers will need to acquire more advanced technical skills due to more advanced electronics and software requirements, currently representing up to 35 per cent of a car's value and set to increase to 50 per cent by 2030 (Cedefop, 2021). Thus, new advanced manufacturing expertise is needed for the green transition, bridging the knowledge gap between the automotive and the information and communication technology (ICT)

sector and requiring workers to be able to solve problems, adapt quickly, and work in teams (European Commission, 2017).

Other studies point to the importance of employee representation in shaping adaptation to new technologies within companies (Totterdill, 2015; Krzywdzinski, 2017), with shop-floor interventions helping overcome challenges related to Industry 4.0 implementation (Lacueva-Perez et al., 2018; Leyer et al., 2019; Totterdill, 2015). This is particularly the case in the automotive industry where new technologies are viewed as fields open to employee influence and agency (Edwards and Ramirez, 2016) and where production engineers and managers in both automakers and supply chains rely on such employee voice (McKinsey and Company, 2019). For example, studies of Industry 4.0 initiatives in Germany reveal important possibilities for a more employee-led adoption, in turn requiring new technological expertise by works councillors (Bosch and Schmitz-Kiebler, 2020).

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Considering the different aspects of the digital and green transition discussed above from a worker and union perspective is therefore key to mitigating and managing the impact on jobs, working conditions and skills. As a recent ETUC (2018: 6) study summarised: 'From a workers' perspective, the transition will profoundly reshape the labour market in ways that creates both new risks and new opportunities for workers [...]. Anticipating these trends and their impact on workers is at the heart of unions activities'.

Union strategy: the role of national institutions and union knowledge regimes

Having argued above that union strategies towards the digital and green transitions are shaped by national ER institutions and union knowledge

regimes, this section explores and develops these key analytical concepts on the basis of existing literature.

Strategy has been defined as the ‘the way in which a[n] [...] organisation carefully plans its actions over a period of time to improve its position and achieve what it wants’ (Cambridge, 2022). A key starting point for research on unions has been the strategic choice perspective (Child, 1972; Kochan et al., 1994), which emphasises the capacity of unions to develop a variety of options and plans to manage the challenges they face. Given their discretion and ability to manage environmental uncertainty, unions have been described as ‘strategic players’ (Heery, 2005).

While research on unions stresses that contexts and environments do not determine their strategy, it is widely recognised that national ER institutions do influence union strategy (see also Garneau et al., 2023). However, insufficient insights are often offered into the interaction between national political economy institutions and the strategies of organised interests within different institutional systems (Doellgast et al., 2018). Responding to this limitation, comparative ER scholars have sought to explain how local dynamics of interest (and sometimes identity) construction can account for subnational variation (Tapia et al., 2015; Hauptmeier, 2012; Hauptmeier and Morgan, 2014). Hence, comparative ER scholars have sought to examine management and labour practices through the lens of (national) institutional settings which come along with opportunities for or constraints on local players. Accordingly, the interactions between labour and employers at workplace, company and sector levels are often examined through a focus on (different combinations of) power resources available in particular institutional contexts. The ways in which players wield their

available structural, associational or communicative power resources when responding to flexibilisation, marketisation and deregulation pressure are therefore used to explain variation (Doellgast et al., 2020; Pulignano and Doerflinger, 2018; Levesque and Murray, 2013).

Although negotiated solutions may slow down decision-making, they can ultimately lead to a smoother and more effective implementation of a negotiated agreement between both ER sides. Examples of work reorganisation illustrate that, in countries with institutional support for the role of worker representatives in management decision-making via works councils and supervisory boards (i.e., through co-determination rights), management and unions likely collaborate and develop joint solutions for implementing change (see also Doellgast et al., 2022). A key institutional component of importance for union strategy is institutionalised access to company information, e.g. on its financial situation, production planning and investment decisions (Morgan and Hauptmeier, 2014). When unions have institutional support for accessing such information, they are able to independently analyse and verify it within union structures, as comparative studies between Belgium and Germany (e.g. Pulignano and Doerflinger, 2018) and Germany and Denmark (e.g. Wagner and Refslund, 2018) illustrate. Unions and management share the same facts (despite possibly differing interpretations and interests), allowing both sides to engage with the substance of any change proposal more easily or to develop jointly negotiated proposals (Haipeter, 2020). Conversely, in country settings without institutionalised access to company information, unions more regularly distrust management announcements about losses or future plans, thereby contributing to defensive and reactive union strategies (Lloyd and Payne, 2019).

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Our comparative analysis focuses on the institutional differences between two coordinated market economies, Belgium and Germany. In Belgium, worker representation structures on the shop floor or on works councils can issue advice and make suggestions about or objections to collective measures that may change work organisation. Moreover, both works councils and union delegations are entitled to negotiate with management. Works councils have extensive rights to receive economic and financial information from the company, but have no say in company decision-making. De Spiegelaere and Van Gyes (2019) describe the Belgian employee participation model as a shareholder model, where only company owners and executive boards decide on business strategies without formal employee involvement. By contrast, company-level employee representation in Germany is more far-reaching and has two channels: Works councillors represent employees on the shop floor as well as on the supervisory board along with union representatives in large German companies. Works councillors have co-determination rights on the shop floor, requiring joint negotiation and decision-making between management and labour representatives in a number of areas, including work organisation and the introduction of new digital technologies (Doerflinger et al., 2017). On the supervisory board, employee representatives take part in key strategic decision-making (including management appointments, planning and investment decisions) and in supervising executive management.

Collective bargaining in the Belgian and German metal industries takes place at sectoral level. The metalworking unions in both countries are strong and enjoy relatively high company unionisation rates compared to other sectors. The Belgian bargaining system is somewhat more centralised than in Germany. Belgium has encompassing bargaining

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structures, with the social partners also able to negotiate intersectoral collective agreements (Pulignano et al., 2016), whereas in Germany bargaining coordination across sectors is a looser form of pattern bargaining, with smaller sectors attempting to follow the patterns set in the metal or chemical sectors, with varying degrees of success.

In addition, we suggest that union strategies are shaped through union knowledge regimes, i.e., the organisations and structures within unions that are involved in developing policy ideas, plans and strategies, including union research departments, research institutes and foundations. Our focus on these internal union structures and processes builds on the recent literature on the 'social organisation of ideas' and national knowledge regimes (Morgan and Hauptmeier, 2021; Campbell and Pedersen, 2014), looking at how new policy ideas are developed as well as the various parties involved in such knowledge production.

Focusing on the national level, Campbell and Pedersen (2014: 3) describe a national knowledge regime as the 'the organisational and institutional machinery that generates data, research, policy recommendations and other ideas that influence public debate and policymaking'. In a recent comparative analysis of the varying trajectories of labour market deregulation in the US and Germany (Morgan and Hauptmeier, 2014), the differences in the adaptation,

development and rejection of neoliberal ideas are linked to the varying 'social organisation of ideas' across countries, reflecting *inter alia* the differing integration of employers and unions in developing policy ideas, the degree of partisanship across the political divide and varying rules of the knowledge regime. Going beyond such a national focus, this article focuses on the organisational level, analysing the various internal union bodies and structures involved in the development of union plans, policy

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ideas and strategies. Many union representatives are preoccupied with the day-to-day representation of workers. While this is a crucial role, it is also important to consider the varying capacity of wider union organisations to engage with broader societal and economic change dynamics, conduct research from a union perspective and develop broader union agendas and positions. Beyond producing new insights and research, it is key for union knowledge regimes to transfer new expertise to unionists and works councillors through training courses, workshops, seminars and conferences. Receiving, digesting and discussing new insights and knowledge in these various forums all contribute to the articulation and development of union strategies.

In sum, this article substantiates how the varying capacities of the Belgian and German union knowledge regimes and the institutional differences between the countries discussed above shape union strategies towards the green and digital transitions, as demonstrated by the following case studies.

Methods and data

Using a comparative case study approach, the article adds to our understanding of union strategies in managing the twin green and digital transitions. We selected the automotive industry for several reasons. In an industry characterised by a high level of automation and digitalisation, 'stricter emission standards, new mobility concepts, growing use of connectivity and digital technologies in vehicles, changes in consumer preferences, relocation to low-cost countries and the development of global manufacturing systems' (European Commission, 2017: 6) are all contributing to change processes.

In-depth case studies were carried out based on 19 semi-structured qualitative interviews in the two countries. Interviews were conducted with union representatives from the automotive sector and policy experts from the European-level union federation covering the industry, IndustriAll Europe, in 2021–2022. We interviewed representatives of the main metalworking unions in each country, ACV-CSC METEA in Belgium and IG Metall in Germany, who were involved in sector-level negotiations on the twin transition. We also used snowballing to identify works councillors in Germany and Belgium to add knowledge on the processes and dynamics of information and consultation at workplace level.

In an attempt to tease out how these unions are handling the twin transition in the two institutionally different countries and to understand labour strategies, interviewees were asked to narrate their experiences of the adoption of new technologies in the sector and to indicate which technologies were adopted and how negotiations took place. Lasting about one hour, the interviews were recorded and subsequently transcribed. Primary qualitative interviews were supplemented with secondary data, such as documentation received from the interviewees and collective bargaining agreements. In addition, we used participatory methods, i.e., taking part in union round tables organised by IndustriAll Europe with the main players involved in collective bargaining and the twin transition. This triangulation of different data sources allowed us to validate and substantiate our findings (Patton, 2002).

Reactive and short-term labour strategies in the Belgian automotive industry

There have been no sector-level collective agreements dealing with the digital and green transitions in Belgium so far. According to one union officer, there were more urgent priorities during the COVID-19 pandemic and the Russian-Ukrainian war such as inflation and the cost-of-living crisis.

'Other issues, such as wages, are prioritised in collective bargaining. The introduction of new technologies is not dealt with in a proactive way, only when problems occur, then it becomes a topic on the agenda. Until then, other issues are more important' (Trade union officer, METEA ACV).

The absence of sectoral plans leaves important issues, such as training to back the shift to EV production, to be decided at company level where employers often avoid joint regulation with unions. A union officer explained that: *'[...] there is a lack of a framework, collective agreement, or legislation [...] and employers do not push for collective agreements or legislation either, they want to handle it themselves' (union officer, METEA ACV).* This leaves the unions with just one option: *'if we do not like what employers propose we will just react to that by providing advice or in a worst-case scenario we will show opposition' (union officer, METEA ACV).*

Net-zero decarbonisation involves a shift to less labour-intensive production methods, as can already be seen in new EV plants. At the same time, EV manufacturers require IT specialists for the AI-based driver assistance technologies widely used in these new vehicles or for handling production robots and smart sensors. This work reorganisation

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has major implications for workers' skills. Indeed, we are experiencing a shift from blue- to white-collar employment.

Unions focus on pay and working conditions in sectoral collective bargaining in the automotive industry, leaving work organisation, work content or technological advances mostly up to the discretion of employers. Information and consultation rights entitle local worker representatives to be informed and consulted with regard to the social implications of change (e.g. lay-offs, dismissals and delocalisation), including consultation over the effects of work reorganisation, which covers training and skills development. However, as unions and worker representatives are not included in the decision-making process, they tend to 'react to' rather than 'act upon' change. While unions retain the capacity to negotiate at sector level, no collective agreements have yet been concluded with respect to the twin transitions. Overall, the unions are little involved in the adoption of technological innovation and the management of change processes. When the VW Group CEO recently announced that 30,000 fewer jobs would be needed due to car electrification, one union officer had just this to say:

'This creates some insecurity [...] maybe the top trade union representatives and union officers are aware of this shift, but at the moment it is not that urgent. But maybe, tomorrow, if Audi says we will reschedule and digitalise the production line and we do not need all those people.' (Union officer, METEA ACV)

Short-term solutions and company agreements are seen as the primary way to deal with issues arising from work reorganisation linked to the changes resulting from the shift away from combustion engines, such as dismissals or the redeployment of workers. However, the unions are

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aware that such a strategy is short-sighted and may not be feasible or sustainable in the long run:

'In [companies] there is a tacit agreement (nothing in writing, this happens a lot): if they find ways of making the production process more efficient and thus make workers superfluous (e.g. through robots), these workers need to be given a position in the same production line. [But the] question is what are they going to do when the whole production line is automated?' (Union officer, METEA ACV)

In the 1980s, cross-sectoral collective agreements covered reskilling and the work reorganisation associated with changes in production processes, for example driven by automation. Employers supported the involvement of unions and guaranteed workers' jobs. However, current agreements remain vague as there is no clarity as to what 'new' technologies entail. For example, it is not clear whether the shift towards decarbonisation and digitalisation will imply organisational changes lasting longer than the three-month period stipulated in the current collective agreement (CBA39). At the same time, lay-offs directly linked to such changes are prohibited by law in Belgium.

However, Belgian unions have recently begun moving beyond a focus on skills to also consider the impact of work reorganisation, as witnessed by the ACV conference in October 2019. This 'transition conference' put the digital and green transitions, more specifically Industry 4.0, back on the top of the union agenda, suggesting that the union needed to 'closely monitor technological developments such as the move away from combustion engines and the introduction of new software in order to tackle any negative impacts'.

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The union knowledge regime covers the research departments of unions and access to public academic research institutes such as the Higher Institute of Labour at the KU Leuven university. Compared to Germany, the Belgian labour movement has no national-level research institutes or foundations of its own. This might be related to the strong regional divide along language boundaries and the pillarisation of society along religious and associated political beliefs. A key player is the research department of Belgium's largest national industrial union ACV-CSC METEA (covering the textile and metal sectors), though its focus is not on technology or digitalisation but on wages, working conditions and collective bargaining: *'We should not get lost in the technological aspects, we have to look at social dialogue.'* In this vein, it offers internal training to employee representatives and union officers aimed at building up their knowledge on wages, workers' social rights, labour rights and social dialogue, allowing them to take action when fundamental rights are violated. However, it has little technological expertise. Union documents indicate this as well, as witnessed by a study on employee voice in companies of the future:

'Whether certain companies will use smart glasses or other applications is not the essence of the discussion. But rather what the influence of new technologies is on workers' jobs, job content, working conditions, and labour relations. In short: the focus should be on the quality of work. Because if employee representatives want to take on a role in this debate, that is their role par excellence.' (SSWIFT)²

² SSWIFT Wegwijs in het werken van morgen. Available at https://www.hetacv.be/docs/default-source/public-konfed/wegwijs-in-het-werken-van-morgen.pdf?sfvrsn=8e29aa5e_2 (accessed 23 March 2022).

Nevertheless, the accelerated European green agenda has stimulated debate on the need for unions to develop positions on Industry 4.0 and update the current collective agreement to make it a ‘transition collective bargaining agreement’ not only limited to the impact of technological advances, but also taking the green transition into account. According to a union officer, such an update could open the window to ‘future collective bargaining agreements’ as in Germany, creating greater space to anticipate the impact of the transition and shape its direction (*Union officer, METEA ACV*).

Proactive and long-term strategies in the German automotive industry

To prepare the sector for the upcoming challenges, IG Metall has been actively raising awareness of the twin digital and green transitions among companies, policy-makers and union members, as explained by one works councillor:

‘In the early phase of the project, we wanted to make the point that change is not inherently evil or good, it depends on the plan behind it, how it is implemented and how people are involved. The changed perception in our works council has also to do with the campaign of IG Metall since 2018 and the big union ‘transformation conferences’ in Berlin in 2018 and 2019.’ (Works councillor, IG Metall).

IG Metall has been able to build up expertise particularly on digitalisation. This includes bottom-up projects where unions work together with works councils at company level to map the employment

impact of the transition in order to guide social dialogue on work reorganisation, such as the restructuring of manufacturing processes or new skills for the production of EVs and the implementation of AI in a way benefiting both employers and employees. This is done via consultations with works councillors at different company plants on the changes they are experiencing:

'Parallel to company-level negotiations, we initiated projects co-financed by the federal government, later by the European Commission, on the topic of digitalisation ('Arbeit 2020'). We went to companies, those involved in the process of change. We held workshops in the companies with work councillors and employees and discussed how work had changed and what needed to be done, e.g. how company-level policies should change to address the impact of change [...] We have a tradition of working on projects in companies to tackle change.' (Union officer, IG Metall)

Unions look at future scenarios covering for instance the need for qualifications or threats to jobs due to the twin transition. These projects stress the importance of involving workers in implementing changes for them to be successful. As one works councillor reported:

'In one company, they [management] gave everyone Google glasses, but no one talked to the employees. They developed it in IT and asked them to use them, but it did not work out in practice [...] we then restarted the process and worked together with management and developers, and then they were only used at the end to check the final product [...] our approach is always: 'you have to develop bottom-up not top-down'.' (Works councillor, IG Metall)

By involving workers, unions and worker representatives are able to address concerns and develop strategies for (and within) companies to deal with the upcoming challenges, going beyond negotiating wages and working conditions. IG Metall has focused on digital transformation in the automotive sector, including the supply chain, with a view to safeguarding jobs and securing quality working standards in the transition to e-mobility, under the constant threat of production relocations to low-wage countries. A recent agreement by IG Metall has attempted to avoid potential compulsory redundancies and keep jobs in Germany by allowing companies to convert the 'transformation pay' won by the union into future working time reductions. To enable worker representatives to deal with upcoming challenges, unions have also introduced so-called 'future collective agreements' (Zukunftstarifverträge) at regional level. These agreements allow labour representatives to be involved in managing the transition by establishing a framework of rules for future collective agreements in the workplace. These negotiated agreements specify and detail job profiles, manpower requirements, training needs, future production quotas and the development of new products with the aim of securing good quality jobs.

'In 2018, it became apparent that the German automotive industry would have big problems with regard to e-mobility and the associated changes [...] Moreover, there is a growing urgency to not only talk about change at company level, but also to talk to companies about how they are changing their business models [...] We have some examples where, due to pressure from works councils and IG Metall, new products, new components for e-mobility were agreed upon in collective bargaining agreements

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instead of continuing with the old combustion engine products.'
(Union officer, IG Metall)

The focus on the impact of technological innovation, for example on employment, skills development and training, is complemented by active participation in the design and implementation of the technologies accompanying decarbonisation strategies. Supervisory board employee representation can be used to steer digitalisation (Krzywdzinski et al., 2022) as company plans and future investments are discussed at board meetings.

'This is part of co-management, getting directly involved in the process. We say it is beneficial for workers because they have a say now in how to manage change and which technologies are implemented (maybe some technologies might seem attractive or cheap because they save labour, but this could also threaten the entire production process). What is the better technology? Not always rationalising jobs away, but also using technology for better jobs, not worse jobs. At the end of the day, there were discussions with management and we tried to reach an agreement with the work councillors and management on how to tackle change within the company.' (Union officer, IG Metall)

The union is actively engaged in discussions on the green and digital transitions at all levels and receives financial and programmatic support from federal and regional governments to keep employment in Germany. However, unions acknowledge that they face enormous challenges at company level, with fierce competition within the automotive industry putting downward pressure on working conditions. This is why certain issues need to be dealt with at sectoral level.

'We see some issues that we have to address collectively like qualifications and upskilling, but usually you have an agreement in principle but not yet a formal collective agreement and the company demands something in return. If it is only beneficial for us, we won't get it. In that sense, we are still at risk. If we negotiate something for the future, like job stability or transfers to new jobs, we may have to give something in return.' (Union officer, IG Metall)

However, the union is attempting to change this. In its attempt to secure future jobs, it proactively approaches companies to address the (potential) problems employers will be facing. For example, works councils and IG Metall are aiming to conclude collective agreements with employers on the introduction of new components for e-mobility instead of continuing with combustion engine products (see, for example, the Daimler agreement), but there are trade-offs, as explained by a union officer:

'With these agreements you may save jobs through productivity increases or new products, but e-mobility generally requires fewer people, so these future-proof agreements generally foresee a slight drop in staff – definitely one disadvantage.' (Trade union officer, IG Metall)

However, these 'future collective agreements' also address training requirements, an aspect seen as an advantage and part of the union's proactive strategy towards employers:

'We wanted different agreements [...] it used to be the company which talked to the employers' association which would then ask IG Metall for company-level negotiations, so the company would be addressing us to gain some cuts in entitlements. But we wanted

to have it the other way around where we can go to the companies saying that we know you might run into problems in the near future or you will be subject to transition/change and we want to negotiate with you on how to do this in the best interest of the workers, not resorting to lay-offs, but getting people qualified.’ (Union officer, IG Metall)

As discussed above, German co-determination legislation gives employee representatives the opportunity to weigh in on a company’s strategies and decisions. However, to be able to contribute ideas and develop strategies, labour representatives need to have the necessary knowledge and expertise, particularly in the context of new technological advances that are often highly complex. The German union knowledge regime supports the development of union expertise and strategies on the twin transition. One key player is the Hans Böckler Foundation (HBS), the main foundation backing the German labour movement. The HBS conducts its own research through its research institutes, namely the Institute for Co-determination and Corporate Governance (IMU), the Hugo Sinzheimer Institute for Labour and Social Security Law (HSI), the Macroeconomic Policy Institute (IMK), and the Institute for Economic and Social Research (WSI). In addition, the HBS funds a wide range of PhD fellowships and external research projects of relevance to labour unions, making it one of the largest non-governmental funders of social science research in Germany. Based on its expertise, the HBS provides relevant research outputs for employee representatives as well as training and development for unionists, *inter alia* through the IMU with its focus on advising representatives with a co-determination mandate. One concrete example of its work is its policy brief on ‘Co-determination for the Sustainable Company’ (Kluge and Vitols, 2020), which proposes that

labour can contribute to the 'Green Deal' by advocating sustainability as a basic principle of corporate governance across different corporate domains. Further leading HBS research and publications that aid labour representatives in developing expertise and knowledge on the green and digital transitions include various articles published in the WSI's own academic journal (e.g. Schroeder, 2021; Urban, 2022; Canzler and Knie, 2021). Another activity is the IMK's conference on 'Macro-Economics and the Socio-Ecological Transition' which explores policy measures from a union perspective.

HBS support for unionists is complemented by the IG Metall's own activities, such as the work performed by the Otto Brenner Foundation (OBS) or by the union's education centre in Sprockhövel. The OBS funds research of relevance to trade unions and works councils, for instance the recent report on the results of a research project on 'The Transformation of the Automotive and Supplier Industry' (Blöcker et al., 2020). Focusing on the training, education and development of employee representatives and unionists, the union's education centre in Sprockhövel offers a wide range of courses, workshops and seminars, *inter alia* on themes relating to the green and digital transitions.

The union knowledge regime is supported by an unusual funding source. As discussed above, both works councillors and unionists represent labour on the supervisory boards of large Germany companies. In this role, they receive – like their shareholder counterparts – sizeable payments. There is a longstanding tradition within the German labour movement that the majority of this remuneration is donated to the unions, enabling them to finance research institutes, internal and external research and training for employee representatives.

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This broad expertise built up in the union knowledge regime helps labour representatives develop the necessary knowledge and to be actively involved in the discussion on managing the twin transition, allowing them to arrive at an adequate assessment of the technologies and their alternatives and thus guide unions through a period of transformative change

Conclusion

The article identified two different strategic response patterns to the challenges of the digital and green transitions in the automotive industries in Belgium and Germany. The German union balances the risks and opportunities of the transition by developing proactive strategies to influence the impact on employment and working conditions through independent, long-term proposals. The Belgian union's approach is more reactive, focusing more on short-term employment issues, while long-term strategies for managing the transitions are notably absent.

Our explanation of these distinct strategic patterns focuses on ER institutions and union knowledge regimes. In Germany, co-determination rights on the shop floor and supervisory board provide labour representatives with a say in management decision-making. In essence, employee representatives can block management decisions in a number of key areas, requiring management and labour to jointly negotiate change. Labour thus assumes real responsibility in the management of companies. This in turn requires representatives to develop independent positions, expertise and strategies to be able to perform their roles effectively. Labour representation within German companies is aimed at providing labour with possibilities to advance their points of view and interests. In Belgium by contrast, labour representatives have much

narrower information and consultation rights. The absence of co-determination substantially reduces the possibility for trade unions to participate in management decision-making processes, explaining why trade union representatives in Belgium tend to distance themselves from board-level decision-making within companies and operate from an outside position. Labour has no direct channels to influence management decisions and voice its own positions on change processes. Consequently, labour focuses more narrowly on the impacts of managerial decisions on wages, employment and working conditions which can be defended and controlled through the terms of collective bargaining agreements. The sectoral level of ER mirrors company-level developments in both Belgium and Germany. However, given the limited company-level role of labour in Belgium, sectoral collective bargaining focuses on wages and working conditions, while it has a broader agenda in Germany, also encompassing frameworks for change processes at company level such as the above-mentioned 'future collective bargaining agreements'.

The union knowledge regime supports the different labour representation roles in both countries. In Germany, research institutes, union research departments and foundations – especially the Hans Böckler Foundation – play an important role in providing own research and funding external research, resulting in a host of research reports, policy briefs, research articles and working papers, and producing valuable insights for labour representatives. This knowledge is disseminated through a wide range of conferences, workshops and seminars that help train labour representative and support them in developing union strategies. Importantly, German unions have sufficient financial resources to fund this extensive knowledge regime, *inter alia*

through employee representatives donating the remuneration they receive for supervisory board work. The Belgian union knowledge regime is less well funded and features fewer institutes and research departments. In line with the narrower role of unions, any research or support is focused on social dialogue, wages and working conditions, with very limited evidence of unions attempting to build up expertise in the areas of new technologies, Industry 4.0 or the green transition.

Through focusing on the organisational level, this article has thus demonstrated how knowledge production within unions makes an important contribution to the development of union strategies on the digital and green transitions. One key lesson for labour practitioners is that it is important to invest in union structures and organisations tailored to developing knowledge, expertise and positions from a labour perspective. Technological change and the green transition are complex and difficult topics. Union research institutes and departments can provide labour representatives with insights, educating them about trade-offs and assisting them in developing their own strategies to effectively represent workers. While investing in union knowledge is becoming increasingly important in the face of technological change, unions in different countries seem to be very differently resourced to do so. Less well-resourced union movements can attempt to overcome their own limitation by collaborating with research institutes from other countries or at European level, such as the European Trade Union Institute, drawing on their expertise and knowledge. However, the variety of national ER systems provides distinctive institutional channels to disseminate and present union insights and expertise in negotiations with management, as indicated by the comparison in this article.

The twin transition is set to have a profound impact on the labour market, as seen in the automotive sector – a sector facing enormous pressure to reduce CO₂ emissions. Such developments require unions to develop strategies on the digital and green transitions, looking for example at which jobs/skills will be needed in the future, or how upcoming changes can be anticipated and managed. The union knowledge regime and ‘future-proof agreements’ in Germany chart a course for dealing with the challenges posed by the twin transition. If trade unions in Belgium decide to embrace such change, they will need to think about how to create and strengthen union structures able to boost employee involvement in future decisions at both sector and company level.

Funding

This article has received funding from the FWO - Flemish Research Council [Project Number G073919N] on ‘Precarious work in the online economy. A study on digital workers in Belgium and the Netherlands’ and the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme - ResPecTMe-project [grant agreement n° 833577].

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