

BARMETAL



Digitalisation, Automatisatisation and Decarbonisation: Opportunity for Strengthening Collective Bargaining in the Metal Sector

Hungary Policy Report

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Funded by the European Union, Project No. **101052331**

Introduction

This report sets out to explore first, which processes, derived from the ongoing technological changes, in particular, digitalization, automation and decarbonization (DAD), have had an impact on the labour market, employment, working conditions and the quality of jobs in the Hungarian metal industry. Second, it explores the current situation – the scope and agenda of collective bargaining and social dialogue-, and more generally, opportunities and main challenges with respect to DAD in the Hungarian metal industry, with a greater focus on automotives. Special attention was devoted to highlighting trends or novel methods for strengthening social dialogue and collective bargaining in the metal industry within the conditions of technological change.

The first two sections outline national and sectoral economic trends and labour market developments as well as the main characteristics of Hungarian industrial relations in metal manufacturing. Section three maps the overall developments of DAD in Hungarian metal manufacturing, how it impacts production, employment, skill formation and to what extent it enriches social dialogue and collective bargaining. As it is argued, technological change occurs with a structural delay in the country, with more significant changes occurring only recently. For employers, technological change occurs both as an investment and cost issue, but also as a pressure and requirement to stay afloat. Such pressure is especially felt by domestic small and medium enterprises (SME), typically lower in the production chain, especially in subsectors with high energy intensity production. Larger companies are leading the change, and have also established social dialogue structures, mirroring the Hungarian industrial relation structure. Social dialogue and collective bargaining is only indirectly affected by these changes. The issue of training and qualifications appears as a very important issue for both employers and trade unions, but skill formation is extremely decentralised, and company based. As the brief case studies in section 4 indicate, even in large companies with established industrial relation structures, aside from information sharing, collective bargaining does not, or has not yet dealt with issues of re-qualification, working time and training, or job redesign.

The report builds on available statistical data, online reports, media sources and other documents as well as interviews with main stakeholders of industrial relations in metal manufacturing. In total, 15 interviews with 18 interviewees were conducted for the purpose of this study between June and November 2023. Respondents included representatives of general and specialised employer associations (2), trade union representatives on both regional (3) and plant levels (6), including works council members (3), white (1) and blue collar (3) employees as well as expert-consultants (2) to social partners. Interviews lasted between 40 minutes and 140 minutes, and were conducted mostly online. All but one of the interviews were recorded, transcribed and analysed¹. Most interviewees were promised anonymity. For this reason, interviewees quoted in the text are only introduced in general terms. During the case selection period, additional inquiries and unrecorded conversations occurred with various plant level trade union representatives. The main purpose of these discussions was to

¹ Research assistant to the project, Pavol Bors provided support in research analysis, particularly transcribing interviews and in the analysis of key interviews and research documents. Special thanks to András Juhász for sharing his insights on media reporting.

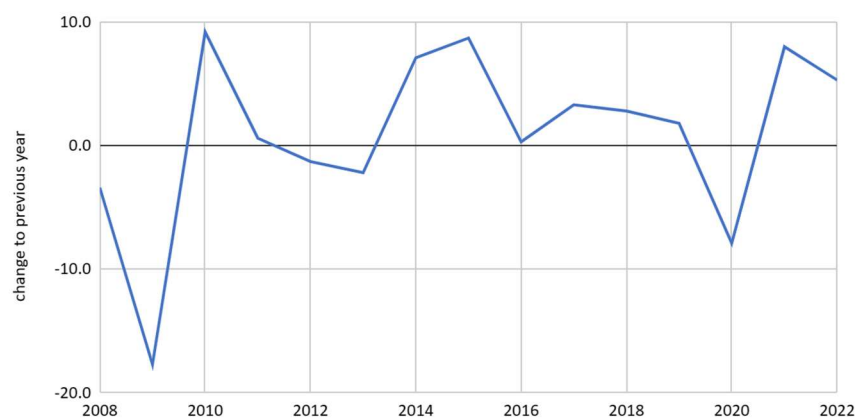
assess the level and extent of technological changes in companies. Thus, valuable information was collected on all scales of sectoral development, regional characteristics, as well as at plant level developments with union presence and collective bargaining coverage.

1. National and sectoral labour market situation

Metal manufacturing in Hungary is a key sector of the export oriented open economy. Since 2010, the Hungarian government has successfully attracted new companies, especially in the automotive industry, both OEMs and suppliers, and has also financially supported the expansion of existing production plants. In recent years, new have companies appeared as major investors that are setting up their production sites (e.g. BMW Debrecen, and plans for BYD in Szeged). Hungary recently became a key destination for lithium ion battery production (Czirfusz et al. 2023). The energy crisis and the decarbonisation drive that followed the war in Ukraine, especially affected raw metal producers. Since the integration level of the Hungarian metal manufacturing sector into the global and regional EU economy is very high, global changes as well as negative and positive developments are felt immediately, along with the uneven effects of new EU level regulation on manufacturers, depending on their size, energy consumption and position in the value chain. Except for a high reliance on foreign direct investment (FDI) of multinational companies, the Hungarian economy is also highly dependent on energy and EU regulation of its use. Until February 2022 it relied heavily on Russian gas and technology. Not surprisingly, after the 2009 recession, industrial output in manufacturing was severely hit both during the Covid-19 crisis and then also after EU instituted sanctions to Russia in response to the full scale invasion of Ukraine.

In terms of output Manufacturing, value added (% of gross value added - GDP) - Hungary oscillates between 17 and 20 percent in value added of total GDP (World Bank, 2022) with low points in 2009 and 2020. Relative change annually in gross value added, as Graph 1 shows, changes in both directions, and is punctuated with shorter periods of rapid relative growth and decline.

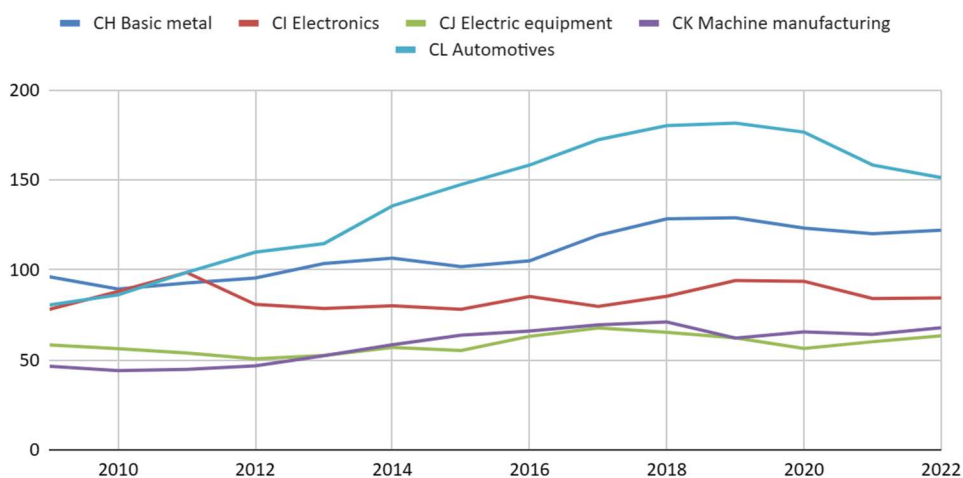
Graph 1. Gross value added in manufacturing, relative change to previous year in percentage (year, %)



Source: KSH, https://www.ksh.hu/stadat_files/gdp/hu/gdp0007.html own presentation

The share of employed in manufacturing is a few percentage higher than its contribution to GDP, oscillating between 20 and 22.5 percent of total employment (KSH 2023a) Metal manufacturing constituted 43 and 52 percent of all employment in manufacturing between 2009 and 2022. Between 2009 and 2018, employment in metal manufacturing rose by 47.5 percent, only to decline by 8 per cent between 2018 and 2022. Among subsectors, as the Graph 2 also shows, until 2019, automotives expanded significantly in terms of employment, followed by basic metals, while other subsectors stagnated (Source: KSH, 2023b, KSH 2020b, own presentation). In 2019, The share of basic metals and automotives in total manufacturing employment was 12.8% and 17.7% respectively (KSH 2020b).

Graph no. 2. Number of employees in metal subsectors, 2010-2022 (year, no. of employees in thousands)



While levels of unemployment increased significantly during crisis periods, as in 2009 and 2020, in general since 2016, low levels of registered unemployment and acute labour shortages have characterised the labour market. Within the Hungarian labour market, there has been a significant territorial-regional variation, especially between the more depressed South and East compared to the West and Central-North of the country. Such development is entrenched and in line with a higher intensity and longer duration of FDI in the latter, economically more active regions. As a result of labour shortage since 2016, turnover is significant, further amplified by both internal labour migration and the increased presence of temporary non-local, third country migrant workers, especially in large supplier automotive companies.

2. Insight into industrial relations

As in many other countries on the Eastern EU periphery, industrial relations structures are the weakest at the sectoral level. Collective bargaining in metal manufacturing is highly decentralised at the company level. Employer organisations do not engage in sectoral or higher-level collective bargaining, although trade unions are interested in reaching binding agreements beyond symbolic consultations. High decentralisation was traditionally

complemented with national level social dialogue structures, with various roles and jurisdiction of the designated bodies, dependent on government preferences.

Especially since 2010 and the start of the absolute majority rule by the right wing Fidesz based governments, the bodies in charge of social dialogue at national level have a consultative, rather formalistic character. The two main bodies in charge of social dialogue are the National Economic and Social Council (NGTT) and the Permanent Consultative Forum of the Private Sector and the Government (VKF). As scholars have pointed out (e.g. Szabó, 2013), these channels of bipartite and tripartite social dialogue do not allow for an appropriate and real inclusion of social partners in the creation and implementation of relevant policies and a role in labour market governance. NGTT is a very broad body that also involves representatives of civil society organisations, church and academic bodies, and governmental representatives only as observers. Social partners provide only a minority of its members. At meetings, governmental representatives typically prepare and present reports and data while other parties have the chance to reflect and ask questions. In contrast, the Standing Committee Forum for the Private Sector and the Government (VKF – Versenyszféra és a Kormány Állandó Konzultációs Fóruma) is authorised to cover a very narrow set of topics, and its agreements are not legally binding. VKF takes part in the preparation of government decisions on economic, wage and employment policy, and parties reach agreement on annual minimum wage levels. The government arbitrarily nominated members of VKF in 2011 and it does not include all representative trade union confederations or national employers' representatives.

At the sectoral and subsectoral level in the non-public sphere, bilateral social-dialogue committees exist. In the metal sector, two subsectoral social dialogue committees exist: for machine manufacturing, and social dialogue committee for IT and communication. However, these have not received substantial funding from the government since 2010 and are not very active.

In early 2020, the union density in the entire industry density stood slightly above 7 per cent, decreasing compared to the 2015 level (KSH, 2020). Altogether, density is high at carmakers and on average it is below 10 percent among suppliers (Meszmann, 2023). Unions are rarely present in medium sized companies, and they are nonexistent in small companies. Union membership, as well as collective bargaining have been concentrated in larger enterprises, especially those positioned higher in the product chain.

The trade union structure in the Hungarian automotive sector is decentralised, pluralist and competitive. There is only one sectoral trade union, the Hungarian Metalworkers' Federation (Vasas Szakszervezeti Szövetség), some inter-company initiatives, and a few independent plant-level unions at large manufacturers, which are comparatively strong trade unions. Employer organisations do not engage in collective bargaining, and social dialogue is mostly limited to the organisation of joint conferences. Employer organisations provide expertise, educational activities, workshops, and work groups, as well as conduct studies in order to define needs, provide information, and find resources and lobby relevant bodies. Among the employer organisations, the Association of Hungarian Vehicle Component Manufacturers (MAJOSZ) has been the most important employer organisation in the sector, which gathers subcontractors of various tiers and one OEM, Suzuki. In contrast, the Hungarian National

Association of Machinery and Power Engineering Industries (MAGEOSZ) is an association that increasingly deals with sector-specific, economic and developmental issues. MAGEOSZ only formally and sporadically engages in social dialogue with the metalworkers' trade union. Employer members of the subsectoral social committee for IT and Communication, the Federation of Digital Enterprises (IVSZ – Digitális Vállalkozások Szövetsége) gathers more than 300 members of various size, mostly SME, but also few large companies. Both companies, especially IVSZ, engage in research and support for members. Smaller in size is the Hungarian Federation of Communication, which is a member of IVSZ, but participates independently at the subsectoral social dialogue committee.

At the workplace level, also in manufacturing in medium and large enterprises, Hungary has a dual worker representation system. Here, work councils have greater information and consultation rights than trade unions. As regulated in the Article 268, paragraph 1 of the Labour Code, the employer shall consult the works council at least 15 days before taking a decision affecting a large group of employees and especially when it comes to the introduction of new technology. Works councils may exert pressure only via trade unions. Trade unions, in turn, only have the right to request consultation and information from the employer.

Collective agreement coverage is hard to assess precisely due to lack of data and their validity. However, the trend is clearly visible, as bargaining coverage has decreased especially in the last decade. 2020 data of the Central Statistical Office indicate that 18.5% of employees reported that their workplace has a collective agreement concluded (sectoral or company level), and the public online registry of CBAs lists about 1100 valid CBAs in the non-public sphere (Borbély et al: 2023: 18).

3. D-A-D and its effects

Discourses, policies and measures

In the last decade, Hungary introduced overarching digitalisation strategies in 2014, 2017, and 2021, targeting development of the overall economy, development of enterprises as well as skill formation and training of employees, in line with EU priorities. As in other affairs of infrastructural and public policy development, large businesses and their requirements exercised a strong, permanent influence on the rhythm and logic of digitalisation. Typically large manufacturing companies enjoy governmental support in the form of large subsidies and infrastructural development (e.g. Voszka et al. 2023). Still in Hungary, the government was the key intermediate actor in critically shaping the pace and logic of digitalisation programmes. (Kelemen & Meszmann 2023). In the last decade, the narrative of the Orbán government insisted on championing digitalisation in its discourse, but implementation of its own programmes showed much more mixed results, ranging from better infrastructural development to very poor outcomes and prospects in digital skill formation compared to other EU countries. (Kelemen & Meszmann, 2023, Bogóné & Vakhal 2022). Especially in the domain of “Integration of Digital Technologies by Businesses”, Hungarian enterprises performed quite poorly. The SME sector lagged significantly behind EU average, and remained

in the group of the 5 least developed countries (Bogóné & Vakhal, 2022, Kovács et al, 2022). The poor record of implementation of digitalisation strategies overlaps the poor progressive results in SME sector and digital skill formation (EC, 2023).

A recent research of a forthcoming study (Borbély et al 2023) highlights that in some public sectors (health care, electricity and public administration) digitalisation offers a new optimised work process, increased efficiency and production optimisation and opportunities for cost saving. Structural bottlenecks persist however, preventing a major change, such as the lack of investments and patchy rather than thorough implementation of new technologies for businesses and establishments. Moreover, digitalisation has only been introduced in some areas. The scale and scope of digitalisation is patchy and uneven, thus it creates persisting obstacles in overall synchronisation, servicing and maintenance. According to a great majority of interviewees cited in the study of Borbély et al. digitalisation improved work organisation and remedied labour shortages, but also increased the intensity of work, and made tasks more monotonous.

Assessment of the pace of DAD

Developments in the last decade, especially since 2016 have indicated technological transformations on a smaller scale and depth, resulting in a more evolutionary change. A typical case was a somewhat higher percentage of automation within semi-automated production. As recorded in a study (Work Transition, 2022), despite the fact that a few SMEs are specialised in innovation and technological development, SME representatives asserted that technological change was a privilege of only large companies. SMEs were facing an acute pressure spiralling from increased customer demand, investments in modernisation by means of production, including digitalisation and automation of production (Work Transition, 2022: 40-41).

Decarbonisation of production. A regional trade union representative assessed that there is little clarity and awareness on implications of decarbonisation among domestic actors, as companies are engaging non-transparently in cap and trade practice with their carbon emissions. In turn, employer organisations' representatives confirmed that greening production appeared mostly and almost exclusively as a cost related issue, playing out from mounting pressure for small and medium sized companies, where investment was a must, and to which only large companies could engage on a sufficient scale. Media reports and regional trade union interviews also confirmed that typically only leading OEMs and Tier 1 suppliers could invest into a renewable infrastructure.

Employment effects. In terms of employment, social partner representatives did not consider technological change to pose any threat to employment, given the situation of acute labour shortages. As already mentioned, small scale technological change was also introduced to alleviate severe labour shortages. The findings of a recent report (Work Transition 2022) confirmed that surveyed company managers and employees saw small scale changes, little pressure to adapt, and judged that neither their company's competitiveness nor jobs were at risk. For the highly skilled jobs and employees, neither managers nor the employees themselves perceived a risk stemming from digitalisation. Interviewees confirmed that

greater scale technological change will affect most negatively the least skilled jobs in metal manufacturing as some work processes could become fully automated. An upgrade would also trigger the creation of new, high-value added jobs. Changes in jobs that are adjusted to new technology occur in an evolutionary way, via modification of work processes. Respondents from both social partners observed increasing concentration and cognitive skill needs for work necessary to control and operate new types of machines. Simultaneously, the physical burden during work was decreasing.

Skills. Skill formation for new production requirements in the form of qualification or training requalification is company centred. Based on regulatory documents (governmental decrees) assessment of expert interviews and reports, a dual picture emerges. On the one hand, company based, company specific training and reskilling takes place intensively, at least in medium and small enterprises typically without the formal agreement of employee representatives. On the other hand, earlier required formal vocational training have been lifted for hundreds of positions in industry and retail. Both developments increase the weight of company based skill formation, adjusted to the situation of labour shortages, including the need to employ workers from third countries without nostrified diplomas.

Typically large multinational companies conclude separate agreements with vocational schools, including those for new professions, or those in high demand. Qualification and training programmes are offered to both white- and blue-collar workers, whereas white collar workers have more chances to participate, as one of our case studies also highlight. On the other end of the spectrum, domestic SMEs are organically coping with retraining and qualification requirements. They are also searching for resources and opportunities that would enable training, in which for example, the association of suppliers and other employer organisations are assisting them. According to regional trade unionists, in case of machinery modernisation, other retraining and training can be provided to employees also by a third party that installed the new machines and equipment. A serious problem and risk related to investment in qualification and training is the high turnover among employees, as there is high competition for workers among companies in a labour market with shortages

Sectoral and national level employer and union organisations portrayed more general developments, based on their insights. An expert of the largest employer confederation as well as regional trade union officials, asserted that an overall technological change is still moderate in Hungary, occurring unevenly across regions, subsectors, and company size. An expert of an employer confederation stressed that technological change is slow, and there are several bottlenecks for a major change coming into being, most importantly, the lack of skilled workers and financialisation. Employers considered technological change, especially digitalisation and automation an issue of productivity, and substantial change would happen only if there is a major change in the prevailing economic model. So far, respondents agreed that especially automation and to some extent digitalisation were mostly introduced on a small scale as a necessary remedy to tackle labour shortages. Trade union representatives asserted that the greatest change and pressure has been recorded in logistics, however only a segment of automotive logistics has introduced more automated processes.

Most respondents evaluated that technological change in metal manufacturing, and automotives is being introduced with a significant delay and unevenly. Smaller companies saw it as a privilege of large companies. (Work Transition, 2022) The dominance of large companies was visible also in the media. Articles highlight that large foreign multinational companies in the automotive industry, both car producers and some Tier 1 suppliers announced relatively recently a change to electric vehicle and component production (e.g. Végh, 2023, Weiler, 2023b) major investments (Weiler, 2023a) and training programmes for its own employees (Autopro, 2023b). OEMs also engaged in and launched specific programmes for new skills – as in robotics or 3D printing - in special cooperation with vocational schools (Autopro 2023c) but also in investing in renewable energy sources and infrastructure, typically solar panels and seeking opportunities to use geothermal energy. (e.g. Autopro 2023a). For some OEMs, especially Suzuki, the technological development, robotisation and automation and their maximum utilisation in the supplier ecosystem was important to achieving long term development (Pörge, 2023). For supplier innovations, cost efficiency, employee training, the promotion of renewable energy, and energy improvements have been recognised as necessary. Accordingly, special programmes have been launched to support SMEs. As a subcontractor association representative stated in the interview to this report, recent changes in energy prices and the pressure of greening production is forcing SMEs to adapt and introduce changes in all production, re-skilling and the organisation of work.

Regional trade union representatives confirmed comparatively little development, but with large variation among cases, depending also on the region: more changes are occurring in the industrially more developed NorthWest, and less in the SouthEast. Companies varied on the scale of technological change. The majority used old technology, with small changes: they introduced new machines or optimised a production processes. On the other end, there were pioneering companies that introduced greater technological change, typically greenfield or newly established plants in non-unionised companies, which ran on entirely digitalised or automated production, for example in logistics. A greater technological change occurred with the start of the production of new e-products at large multinational companies, as in Mercedes or BMW. Such a grand scale change was expected to spiral down as an adaptation pressure towards subcontractors.

In contrast to digitalisation, decarbonisation is not present in public discourses, although terms like green economy have gained some ground. The issue strongly associated with decarbonisation was the steep rise of energy costs and its impact. A survey conducted at the end of 2021 revealed that many companies, especially small and medium sized, were severely affected by the sudden increase of gasoline prices, but also prices for electricity and natural gas. (MKIK 2021).

National level social dialogue in Hungary is weak, and it translates into low and shallow involvement of social partners in policymaking: While the government provides and fulfils formal requirements of the provision of information, in the view of social partners, there is no proper or meaningful consultation process (Eurofound, 2019: 38) on employment, social and economic policies and reforms which has been leading to unilateral labour market

reforms by (Eurofound 2020: 12, 27). Social partners have had even less influence over policies and measures not directly related to labour market governance, such as addressing technological change. Social consultation on digitalisation happens either via governmental policy legitimising propagandistic fashion, via the national consultation survey, or a unilateral governmental channel, with extensive but shallow involvement of other social actors, as in 2017, when about 150 associations could provide feedback on the national digital welfare programme drafted by the government. There were no special forums with trade unions and employer organisations to discuss digitalisation strategies. More recently, only associations of entrepreneurs, business associations and scientific and professional organisations are involved in the monitoring of the latest digitalisation programme while trade unions were excluded from it (Borbély et al 2023).

A basic content analysis of summaries of NGTT quarterly meetings available online (NGTT, 2023) between 2018 December and 2023 November shows that the issues of automation, decarbonisation, nor the issue of industry 4.0 were neither raised nor discussed - these terms did not appear in the texts - memos of the meetings. Overall, the need for technological modernisation was raised for the national economy and for other sectors in a few sessions (e.g. 2020 March 6,), but not metal specifically. Digitalisation was discussed more generally, as an impact of the COVID-19 pandemic (as at the June 2020 session), and digitalisation programmes of the government. At a session in February 2021 it was voiced that Hungary plans a big leap forward in both greening the economy and digitalisation. Digitalisation of public administration, education, and skill formation were also voiced, but not as an issue related to manufacturing enterprises.

The issue of technological change and energy related costs has increasingly appeared on the agenda since 2021. For example, more recently, at the September 2023 NGTT meeting, the government representative acknowledged in his opening presentation that small and medium sized enterprises are lagging behind large companies in terms of innovation and digitalisation and therefore they require financial support, coming via various governmental programmes. Trade union confederations requested more attention to support for employees to gain skills and to assess impacts of digitalisation in a complex manner. Among the accepted priorities for the 2024 NGTT agenda is the topic of "Innovation, digitalisation and artificial intelligence in the government's short and medium-term agenda".

Decarbonisation as such has not appeared as an issue in public discourse nor did it appear on the agenda of national social dialogue (NGTT). Energy use and CO2 emission appeared as a cost issue for manufacturers and sometimes even for staying afloat. The issue of greening the economy appeared only at one session and then only from the perspective of the significant increase in energy costs after February 2021, which threatened the survival of many enterprises, especially small and micro. At the session of February 2022, the president of the Chamber of Commerce and Industry presented the main findings of the MKIK (2021) study on the effects of the increased costs of energy and gas on domestic enterprises discussing measures.

According to an informed interviewee, at meetings of VKF no issue related to DAD was discussed as a separate point.

4. Sectoral relevance of DAD – responses via collective bargaining

Social dialogue and collective bargaining agendas have not expanded due to technological change. As technological change has been occurring in a labour market environment full of labour shortages it has put additional pressure on the classic agenda of classic bargaining over wages, working conditions, and employment levels, without enriching it.

As already mentioned in section 2, on the sectoral level, capacities of both social partners are modest to engage in social dialogue. Besides information exchange events and joint conferences, sometimes concrete initiatives also surface. One such initiative was the Framework Agreement on Digitalisation that was formulated within the WorkTransition international project related to the introduction of digitalisation, a project in which the Vasas Metalworkers Union and the employers federation MGYOSZ participated. The project and the report aimed to:

- enhance the positive effects of digitalisation via raising awareness and improve openness of employers, workers and their representatives of the opportunities and the challenges they face in the world of work resulting from the digital transformation;
- providing an action-oriented framework to encourage, guide and assist employers, workers and their representatives in devising measures and actions aimed at reaping these opportunities and dealing with the challenges, whilst taking into account existing initiatives, practices and collective agreements;
- encouraging a partnership approach between employers, workers and their representatives;
- supporting the development of a human-oriented approach to integration of digital technology in the world of work, to support/assist workers and enhance productivity.

On the side of trade unions, there was also interest in formalising the agreement into a concrete sectoral bargaining agreement, while the employer side could not legally engage in a binding framework. The arguably inadequate educational system and skill formation of (potential) employees was the point where positions of employer organisations and trade unions were the closest.

The above-mentioned report (Work Transition, 2022) also voiced the concerns and criticism of social partners related to inadequate vocational system and training programmes to meet the future demands of a more digitalised economy. Both social partners and interviewees raised concerns related to skill formation needs for the new economy, more concretely requesting more change and resources to education and requalification programmes for employees. Interviewees of the BARMETAL project confirmed that digitalisation poses a threat only for low-skilled workers, but only in case technological change happens on a greater scale. Outside of company premises and arrangements, educational programmes are incapable of tackling the adjustment needs of the less qualified workers. Whereas significant technological change would negatively affect those who are less skilled, it would also trigger the need to employ more skilled professionals who are already acutely missing from the labour market. Social partners are aware of alarming trends related to lack of workers with required skills, as in IT, which might pose a challenge for technological change on a greater

scale. And precisely here there is a bottleneck: even with technological change lagging behind and progressing at a slower pace, the second most acutely needed professions in the Hungarian labour market are IT professionals and fourth on the list are engineers. (for data see: Borbély et al. n.d: 7-8)

New bargaining topics emerging - Which and in what subsectors and type of companies?

As mentioned in section 3. infrastructure development and digital skill formation development was dominated by big business interest (Kelemen and Meszmann 2023), not coordinated via sectoral or subsectoral associations. Employer organisations have no coordinating influence over skill formation arrangements and there is also no sectoral or subsectoral social dialogue on vocational training and emerging needs. Employer organisations considered their own research, information gathering among members and lobby activities towards the government to be the most productive ways to exert occasional influence over governmental decisions, targeting regulation and governmental support-scheme programmes.

As mentioned above, under the Hungarian industrial relation system, company level technological change does not translate into an issue in the collective bargaining agenda. At best, it only becomes an issue for social dialogue, with the central involvement of company level works councils. Union informants estimated that approximately only at half of the unionised enterprises does collective bargaining take place, including wage bargaining. However, neither trade union, employer organisation nor involved expert-consultant respondents actively following or present at company level collective bargaining rounds could recall that technological change or decarbonisation informed the agenda of bargaining. Regional trade union representatives are aware that investments and innovation also impact wages, employment security, working conditions, job content, and (re)qualification requirements, but the small scale of changes have not triggered enrichment of the entrenched collective bargaining agenda, dominated by defensive, wage and employment security issues. A legal expert who is present at collective bargaining over the establishment or modification of collective agreements also could not report any issue related to technological change or decarbonisation. The only issue arising in his work related to digitalisation was related to employers' practice of terminating employment contracts digitally and not in person. Another expert consultant confirmed that unions have not asked expert support in this matter, and it has not come up in wage negotiations or collective bargaining.

There is little communication and discourse on changes at the workplace level nor on the application of new technologies in the workplace. Digitalisation was discussed more practically related to the operation and establishment of works councils and trade unions: for example, the use of digital technology for communication, for storing contacts, for elections, voting, for running institutions. Disruptive changes in production spiralled only into employment and wage issues in collective bargaining. As the same expert consultant explains, during wage bargaining at one of the well unionised companies, union representatives did not want to table the projected effects stemming from technological and product change, necessitating deliberation also on training and employment. Instead, union representatives

interpreted negative employment changes as a short-term effect stemming from the disruption in the supply chain due to the Covid-19 crisis and insisted on concentrating on wage bargaining only.

There are institutional and organisational obstacles for technological change to at least inform the collective bargaining agenda. Some unionists were aware that the bargaining position of the union will decrease if technological changes are introduced without prior consultations, that could happen only if the trade union is sufficiently informed from works council channels. An additional problem for the unions is that those lower in the company hierarchy, blue collar workers are more affected by negative changes, but constitute the bulk of union membership. In contrast, white collars' have more stable jobs, development opportunities but are typically not union members. Regional union representatives prioritise to work with their own core blue collar constituency, to educate and prepare members and create awareness among them.

In terms of decarbonisation, decisions on investments, and greening the workplace is done so far without formal involvement or consent of employee representatives.

Especially for domestic subcontractors, typically SMEs and their associations, technological change means a mounting pressure to invest in new machinery, while production costs continue to rise along with the costs of energy. For SMEs and their associations, the fight to survive is an acute short-term issue, and they are not in the position to increase labour capacities, offer higher wages or expand employment. These associations also do not engage in collective bargaining with employees, but agree informally with workers: offering higher job security via job enrichment and training. As the representative of a sectoral organisation stated, SMEs are engaged in retraining and re-skilling, as well as team building in order to maintain and develop their own competencies. For this, the association tries to get external resources, provide internal or external training.

5. Case studies

Eight (8) interviews were conducted with 10 interviewees, including workers, trade union and work council representatives from 5 companies, a car producer (Company B) three automotive subcontractors and a steel manufacturing company.

Table no. 1 systematises the main characteristics of the four selected supplier companies along the lines of sector, position in supply chain and size, changes and stability of the product market, employment, technological change over the last decade and main features of industrial relations. The four companies from which interviews were obtained indicate great variation for subcontractors in terms of stability of industrial relations, production/employment as well as scope of technological change introduced or under way. In two cases, there was turnover in upper management and two companies faced insecurities in terms of survival or ownership change. All suppliers were foreign owned and interviews with management could be obtained only if a permission was granted from headquarters. During the case selection phase, additional discussions took place with union representatives from a further 6 supplier companies which confirmed variations in the fragility of the product

market, industrial relation structures and technological change. Furthermore, regional trade union representatives informed me about greenfield sites, either entirely newly established companies or plants with no trade union presence where more significant technological change occurred, typically after 2020.

Table 1. Main characteristics of selected companies

Company name	Sector/position/size	Production/market	Employment	Technological change	Industrial relations
Company A	Basic metals, large	Costs increase, contracting	Cuts, radical change expected	Slow, currently radical	Trade union, density high, well developed CBA, WC, in crisis
Company C	Automotive logistics, third-party logistics provider via tender, small	Despite modernisation, bid lost	End of employment announced	Significant via 3 party contracting, OEM dictated	No trade union, WC, or CBA
Company D	Automotive subcontractor, parts and components, Tier 1	Relocation of production from Germany, and from Hungary to Asia, higher value added	Stable, increasing for white collars	Gradual, new products, more engineers	Trade union – low density, WC, wage bargaining non-conflictive, no CBA
Company E	Automotive subcontractor Tier 1, metal components manufacturing	Relocation of production of some products from Germany, cost sensitivity	Increasing, poorer working conditions	Gradual, new products, somewhat higher automation	Trade union density high but deteriorating, WC, wage bargaining no CBA

The case of the steel manufacturing company – Company A – is portrayed in greater detail. Here, the most radical change occurred both in terms of change in technology, especially related to decarbonisation as well as in terms of potential effects on employment, skill requirements etc. Company A was selected as an extreme on both key variables, as the plant that had the most developed industrial relations structure and was most exposed to cost pressure to introduce technological change, to meet the requirements of decarbonisation in the most energy consuming basic metal sector: Company A was responsible for about 6 percent of total CO2 emission of the Hungarian industry. Besides interviews with trade union and work council representatives of Company A, the case was also closely monitored by the regional trade union and the media, thus additional reports, documents and media articles have been collected on its development, especially since 2020.

Case 1. Company A (basic metal producer)

Established in 1950, this company was one of the key newly established large enterprises of state socialist Hungary producing coke, iron and steel, necessary for industrialisation. With significant downsizing and restructuring, the company survived the transition from state socialism and was privatised only in 2003 as a closed limited liability company (Zrt). Then its core activity was defined and in parallel, several daughter companies were established,

specializing e.g. in research, transport and human resource services, but it also outsourced new production units. According to the last official record of the plant of 2019, Company A consisted of a blast furnace, steelworks, hot rolling mill, plate mill, metal remelting and processing plant, as well as a unit for transport and a unit for production support and logistics. Since Company A was directly affected by all energy price rises, the rising costs of production and EU financial sanctions against Russia, it began bankruptcy procedures in the autumn of 2022. In June 2023, a privatisation agreement was signed with a new owner, that would keep only part of the plant and modernise it for the production of pig iron and steel production based on cold, green technology.

The company was and remained the major employer of a middle-sized industrial town. After the shock of the financial crisis of 2009-2012, according to company official data, the number of employees was relatively stable, and decreased only slightly from 4067 in 2015 to 3706 in 2019. Production of electrical steel is more expensive, but its demand is stable, mainly stemming from car manufacturers. In the future, Company A might introduce production flexibility, to keep its complexity as an advantage in the market. The biggest insecurities surround the coke plant and coke production. Currently, the production of coke creates a net loss, therefore its production is kept at the lowest possible level. There is a restructuring concept to remain as diversified as possible to be able to respond to market demand optimally. With investment and changes still underway, there is uncertainty about the exact future of production. According to the interviewee and available reports, the smelting plant (*nagyolvasztó*) will be affected, but there are uncertainties related to the converter and steel production.

Industrial relations. Company A is a company with traditionally high union density rate: the majority of the workforce is unionised. Currently, 40 percent of employees are members of the largest union federation Vasas, but another trade union is also present. Vasas has an established strategy of unionisation adjusted to the decades-long downsizing of Company A. Namely, trade unions are established not only at all production plants of the company, but also for newly established subcontracted companies that operate in the shadow of Company A. Each of these unions then the Company A union led union federation. The latter is an affiliate of the sectoral-national metalworkers federation Vasas. All plants have their own works councils and there is a central works council for the whole company. Here trade union delegates, mostly of Vasas, have traditionally occupied 80 percent of seats. Consultation and information sharing was fair but rather formal until 2020. Since ownership change in 2023, works councils were reelected.

For all plants of Company A, a collective bargaining agreement was in force until 2021 - a beneficial bilateral agreement above the established standards of the Labour Code - which gave union representatives better rights in both organising and consultation rights. Regular collective wage bargaining ended in annual, biannual, and even three-annual collective wage agreements. The company level trade union federation has an available strike fund, and in times of crises of collective bargaining the union regularly organised protests, petitions, and was active in the media and local community.

The interviewee stated that communication within the plant, especially communication with superiors became poorer after the 2009-2012 crisis. Until then, Company A was a “family friendly” enterprise: locals considered it a privilege to work there. Employees were also less motivated to engage in innovation activities. A slight change occurred within the company hierarchy in the last decade due to technological change, when a younger generation gained a standing in the company hierarchy. Engineers and IT professionals gained respect and recognition from fellow employees, but also management.

Technological change Company A went through a complex technological change after the crisis of 2008-2012. In the last decade, modernisation of the plant has occurred partly as a necessary investment, as was the rebuilding of a furnace (kohó). Introduction of digitalisation via information technology, computerisation of production was encompassing and covered almost all production sites. The process was a gradual, small scale change that happened over 10 years. As the union and works council representative explains:

„The capacity of the hot rolling mill has increased, and as a result, an IT-based monitoring process has also been revived. We've seen a lot of things on the screen that we didn't see before. We were able to find faults, call or inform maintenance about the source of the problem... Sometimes we could fix the problem ourselves. Here, the younger generation was more receptive and active”

There were positive results in both productivity rise and lower costs of production. Few changes were announced in the organisation of work, and there was little transparency in changes in jobs and their description. Changes in jobs were adjusted ex-post to the accumulated experiences of employees. In total, electric skills and engineering, especially hydraulics gained in significance over time. New jobs and positions also appeared in these areas, posts typically occupied by workers from a younger generation. By November 2023, there was little clarity in terms of changes in jobs and skill requirements due to the introduction of cold steel production technology. Attention was still on the import of the new electric furnace, that included active state involvement.

Social dialogue and collective bargaining

The interviewee characterised social dialogue related to technological change until 2019 as rather formal, as management accepted proposals from worker representatives, but did not seem to take them into account when making decisions. In times of restructuring, the union typically initiated a redirection of employees from areas with a labour surplus to areas with shortages. In contrast, the procedure and agenda of collective wage bargaining were well established. Relations with management deteriorated especially after trade unions agreed to concession bargaining in hard times - agreeing to a restraint in a 3 year wage-agreement in 2013 for the owner to implement necessary investments in the plant – which the management did not recuperate a few years later when significant wage hikes were typical in the Hungarian labour market. Workers resented such behaviour of the management, that thus ignored former employee loyalty and concessions. Collective lay-offs in 2019 of a few hundred employees added fuel to fire. Still, management-union relations deteriorated further and reached a new low in 2022, when the employer failed to pay a wage supplement, thus

breaking a clause in the collective agreement, and then unilaterally terminated the collective agreement. Trade union representatives initiated a court procedure, and won the case in late 2023. The crisis of 2019 negatively affected both the number of employees and union density, but union density climbed back up since 2022.

The union and the works council representative considers one of the main losses to be that the most talented, younger employees left Company A in greater percentage since 2020, and that the age structure of the company is very unfavourable, as most workers are already in their 50s. Information on skill requirements, requalification and training for new positions is in process. In general, worker representatives positively evaluated and greeted an exchange of information with the new owners. Nevertheless, at the moment this information sharing was limited to receiving rather general information, on general intent and ideas. The new owner also informed employees in an open letter, but also offered the chance for worker representatives to invite experts who would provide an open lecture to employees on topics of new production and technology. The interviewee underlined that worker representatives supported Company A modernisation to stay afloat and therefore greeted the introduction of new, pioneering technology. They were willing to accept sacrifices, such as employment cuts, if these are kept as low as possible.

Case 2. Company B (OEM, car producer)

Established in 2009 as a greenfield investment, Company B is an OEM carmaker which started full scale production in early 2012. Within the global company, the following are the shops of Company B: a press shop, in terms of employment rather insignificant body shop, with highly automated-robotized activities, the paint shop, and the assembly shop. All these activities have been supported with a considerable research and development unit at the plant. For local conditions a high-end production technology was introduced, including digitally interconnected smart equipment . A recurring complaint from employees and worker representatives was that the machinery and production equipment used in the Hungarian plant was of lower quality than in the parent company. In addition to traditional models, Company B started production of the first fully electric model in October 2021, and plans to introduce more electric car-models in 2024 and 2025. According to official records, in 2012 the company had 2540 employees and almost 4800 in 2019. Employment fell thereafter and climbed back to about 4550 in 2022. About one quarter of all employees are white collar. Compared to blue collars, this ratio has increased slightly over the years. Company B has started a project to decrease CO2 emissions, and also aims to decrease its environmental effects. The company has installed solar panels for producing its own green energy, but this constitutes a very small share of total energy used in production, especially compared to plants in Germany. The construction of solar parks are planned from 2024, along with the launch of new plants.

Industrial relations. Three trade unions are present at the company, reaching a combined density of about 45 percent. Two unions are representative and participate in collective wage bargaining. The largest union which is an affiliate of the Vasas metalworkers federation have unionized close to 30 percent of all employees. The company traditionally had an established

works council, which, according to one of its members, was functioning well until about 2016. In the following five year term, the works council was more divided, with the Covid-19 crisis further hampering its operation. At the beginning of 2022, an unsuccessful round of elections for the works council occurred. Only in late 2023 was the new works council established. Works council members are in the vast majority union delegates, almost all being Vasas union nominees. The company has a collective bargaining agreement. Works councils have monthly meetings, but also quarterly official meetings with higher ranking managers, and biannual meetings with the general director. At these sessions, all issues and questions were permitted. Similarly, trade unions conduct regular monthly, quarterly and biannual meetings with managers, and in addition, has breakfasts with HR approximately every 40 days. Trade union representatives believe that trade unions and works councils can work together efficiently, using social dialogue channels for information sharing and consultation and trade unions for interest representation.

Technological change. In terms of digitalisation and automation of production, the greatest change occurred with the building and opening of a new pressshop in the autumn of 2022. With the announcement of new electric models, major changes are expected in the assembly and body shop from 2024, when new plants will begin to operate. Significant changes are anticipated in terms of the organisation of work, as the assembly occurs in a significantly larger area, also in new separate units, including pre-assembly of batteries. However, the number of employees would not change. In contrast, no major change has occurred or is planned for the paint shop. Here, according to a non-union member blue collar worker, work has been performed for a decade with old instruments and increasingly outdated computers. Since 2021, subcontracting has occurred in the paint shop, as there are fewer stations for quality check both before and after the paint, as the paint supply company has actually taken over measurement at two stations. Company B has traditionally outsourced logistics and supporting activities, and has only a team for support of subcontractors.

At the recently introduced press shop, aluminium and steel components are produced to supply other plants of the global company. According to the company website and media reports, the introduction of technologies in the press shop allowed greater coordination of design, development, engineering, tooling and manufacturing processes. Digitalisation affected first of all the recording and transmission of performed manufacturing processes, but the new press shop first of all increased on-demand flexibility. A state-of-the-art Servo press line was designed to ensure the interchangeability of press tools between sites, making a more flexible connection with the body shop, connecting ordering, production, logistics and delivery. All these changes aimed to ensure a more balanced product portfolio, flexible production and stable and long term employment.

Trade union and works council representatives estimate that about 20 percent of personnel were affected by these changes in the press shop. Blue collars were far more affected than white collars, both in terms of employment and labour process. Physical intensity of work decreased but the overall workload increased. „Smarter” machines meant fewer employees with vocational education (e.g. welders), but performance requirements increased for those employed. According to a white collar worker from middle management, local engineers and

designers were not only part of the process but were fully in charge of setting up the new press production line in a new hall. Altogether, research and development competences of the local crew gained in significance during this process, which were traditionally utilised for machine maintenance and innovation of available means of production, machinery that was not used any more in Germany.

The Covid-19 crisis prompted the company to digitalise internal communications, the recording and transmission of processes, and the increased use of advanced software (SAP) to manage logistics. In logistics, the digitalisation of paperwork is still in process and it includes digital receipt of a product, issuing quality complaints, monitoring and responding to production supply needs. Digitalisation also affects everyday work. In practice, this means that e.g. documentation for work-support cannot be printed out, but is uploaded to a central server and can be viewed from there. Other internal communication occurs within digital channels, utilised more among the higher ranks. During the process of manufacturing, digital communication has enabled faster communication especially with superiors, or with other shift representatives who are not physically present, which also helps with screening errors and faster learning.

Company B traditionally enhances its employees' participation in innovation, and has established a channel for collecting innovative ideas; and the most innovative are rewarded. Two respondents objected the transparency of the selection and rewarding process, and that only production optimisation or cost decreasing ideas are considered, while innovations to enhance health and safety are not. Plant employees also participate in a profit sharing arrangement, which is part of the collective wage deal.

Training and education. All informants highlighted that Company B offers continuous opportunities for education, training, but also language learning. A particularly interesting feature of training and skill development was that it was designed more on lines of a continuum: as if a system was there that would organically and constantly adjust to new products and work process requirements, as well as being done in rather small steps. Informants confirmed that there was a conscious decision not to introduce changes radically but gradually, so it is somewhat difficult to estimate the validity of informants' claims that working processes has not changed significantly overall in the last decade. Currently, there are very few special programmes that would mediate in the transition, such as working time organisational benefits (work in one shift) for those who completed training and skills for the new assembly shop.

A particularly interesting intermediate step is that Company B supports education, including graduate and postgraduate studies. The company's stated aim was to build its own cohort of engineers and shift supervisors from blue-collar production workers, from the bottom up, providing all the resources to build competence in its own workforce. Still, re-training and education opportunities are uneven for white and blue collar workers. There are indications that a divide between white and blue collar workers is rising in terms of both job stability and career mobility chances.

In the case of blue collars, requalification opportunities, in-house training and qualitative flexibility requirements intersect with the problem of labour shortage. In practice, according to trade unionists and a works council representative, this means that typically blue collar workers have no time to engage in training, reskilling, as their both quantitative and qualitative flexibility is high. In contrast, supervisors, engineers and some production workers have all kinds of support and inclusion in education available, as supervisors get additional training both in-house and via external specialists. When a new product or new labour process is introduced, engineers and some skilled workers receive support in training, starting from visits to other plants. According to the middle-management informant, there is no significant drift between white and blue collar workers, but the educational package is different for leaders and employees, depending on their position. In logistics support, training is almost constant, often meaning full day training either in-house or by the software development company.

Social dialogue and collective bargaining. Works council and trade union representatives complained that the last few years without proper works council operation in place, information exchange via social dialogue did not occur. Information on technological change came just before its introduction, without previous preparation and involvement of worker representatives. There is no evidence of local IR actor involvement in decision making regarding digitalisation of communication, as informants suspected that it was solely a decision of the parent company. Besides information sharing, there was also no involvement of the works council or trade unions in the decision over decarbonisation and greening industrial production, at best, there was timely information, but full information would be available only from the European Works Council. Worker representatives made only smaller achievements strengthening social partnership. For example, the union achieved in sending the head manager and union for occasional visits to production sites to screen employment levels. Earlier, works council members could pay a visit to ergonomic experts, and consult physicians specialised in Occupational and Environmental Medicine before a relocation occurred and gained knowledge on new technology and its effects. Nevertheless, the final decision was up to the management – and typically there was little interest to invest also in ergonomics.

Trade unionists highlight that only during wage negotiations is Company B open to union initiative and engages in collective bargaining, while introducing union-initiated amendments to collective bargaining agreement documents is very difficult. Worker representatives also highlighted that they experience more pressure than real partnerships, as evidenced in the recent refusal of Company B management to provide a key information for preparing annual collective bargaining: for example, it refused providing disaggregated data on changes in employment by plant areas and shops. Despite enlargement and expansion, worker representatives expect challenging years ahead. Besides insecurities in the product market, trade union representatives highlight that the relationship between employees, members and trade unions depends on active members' engagement, which differs from area to area. A non-member worker highlights that communication is occasional and rather poor with works councils and trade unions, and in general there is low interest among employees for works council elections.

There are several channels of information from top-down, via various applications and radio, also used by the trade union. Key information, however, arrives rather late, leaving space for speculations and guesses. Bottom-up communication is typically possible only among peers or with direct supervisors - requesting further inquiries and information from higher ranks is very difficult.

6. Findings

In Hungary, digitalisation, automation and decarbonisation (DAD) has occurred with a structural delay. While greater change is expected or ongoing, in the last decade, there has been only small scale change especially in terms of a greater automation of typically semi-automated production to compensate for acute labour shortages. Large multinational companies, especially carmakers, are leading in introducing changes. In contrast, domestic small and medium enterprises have been struggling to invest and introduce new production requirements. Social partners recognise that the technological upgrade of Hungarian manufacturing to higher value added activities depends both on financialisation (investments) and available labour. Reform of training and education system to meet the needs of a new economy, appears as a very important issue for both employer organisations and trade union federations. Currently, the system favours serving the needs of large, dominant economic actors, and skill formation for new production technology and products is extremely decentralised and adjusted to company needs.

Automotive suppliers and basic metal producers experience insecure product markets, and for many, the ongoing technological change creates further insecurities. A steep rise in energy prices and costs of production also brought about management and ownership change. Industrial relations structures are typically more fragile than at car manufacturers and in crisis periods, the quality of social dialogue and collective bargaining deteriorates further. Social dialogue and information flow remain weak and fragile. Case studies of companies with established industrial relation structures and where greater technological change is underway show that social dialogue is formal, and there is no expansion of collective bargaining agenda. Technological change, decarbonisation of production are all matters of unilateral management decision, and a matter of information sharing, timely at best. Worker representatives experienced more pressure than social partnership during crisis periods or collective bargaining. For cohorts of white and blue collar workers, both job stability and career mobility chances diverge significantly. Trade union and work council representatives experience a difficult and challenging road ahead, for a transition to which their core constituency is largely unprepared.

The report detected an insufficient involvement of sectoral social partners, company level trade unions and employees in challenges stemming from technological change. As a first step, it is necessary to strengthen and broaden social dialogue and information flows to both sectoral and company levels on DAD, to sufficiently inform, prepare and involve all parties in changes, especially training and prequalification requirements.

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