



PROMOTING STRONG COLLECTIVE BARGAINING AND DECENT WORKING CONDITIONS IN A TIME OF RAPID TRANSITION

Project IndustriAll European Trade Union (October 2021-December 2022)



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Introduction

Disruptive technological change and the green transition towards a net-zero carbon economy are changing the face of industry on a global scale. The COVID-19 crisis has exacerbated the twin green and digital transformations of several industries. To manage and minimize the potential economic and social disruption, Europe has mobilized unprecedented stimulus packages to accelerate the energy transition and the creation of jobs and economic benefits (NextGenerationEU¹). Equally important in this transformation is the creation of good quality jobs, in condition of freedom of collective bargaining and social dialogue, safeguarding workers' rights and workplace representation (industriAll Europe, 2019; IRENA, 2020).

The decarbonisation of the economy necessitates a technological shift by using digital technologies, which will not only create jobs, but also destroy and transform jobs (Brynjolfsson and McAfee, 2014). Therefore, it posits the questions about the strategies trade unions develop to deal with the employment consequences of such a shift that creates both new risks and new opportunities for workers (ETUC, 2018; industriAll Europe, 2019). This gives rise to a number of issues concerning the future of employment and specifically on the employment dimension of the transitions, corresponding to the concept of a 'just transition'.

Some of the key questions of the report are, for example, how are workers prepared for the transition in terms of training, job-to-job transition programs, as well as employment security? What are the social costs of the transitions (e.g. job losses) and what are the social gains (e.g. job creation)? Are there jobs replacing the ones which are going to be destroyed? And, what is the quality of the 'new' jobs created? How far are workers transiting the changes through – for example (re)-training, job-to-job transition programs – experiencing good quality employment in the jobs they are transiting to? How far are the workers facing transitions protected through 'employment security' program and which are those and their underpinning criteria? Are workers and communities in regions facing transitions left suffering alone the negative effects of a low-carbon transition? How are national governments supporting fair 'just transitions' and how trade unions are involved in shaping transitions, which policies have deployed and what are the effects of those on workers and their families?

We respond to these questions by focusing on industries including automotive, chemical/steel and renewable energy sector. These sectors have been affected by digitalization and greening economy, however, there are different ways in which these transformations take place, which is illustrated by the different regional contexts. We address the role of trade unions, social dialogue, and collective bargaining within both sectors and companies in managing the digital and green transitions. Especially, we focus on trade unions' strategies of bargaining within both sectors and companies in diverse national economies. Thus, we selected specific empirical cases in different countries and sectors based on a

¹ See https://next-generation-eu.europa.eu/index_en

preliminary analysis of collective bargaining agreements and expert interviews within (and across) the selected countries (Germany, Belgium, France, Italy, Spain, Sweden, Hungary, Romania, Czech Republic, Denmark, Finland).

The report is divided in two parts. The first part describes the context of accelerating twin transitions and the impact on employment across sectors. This is based on key policy documents and data that are publicly available such as collective bargaining agreements and European and national policy plans, and on the relevant scientific literature. The second part is a case study analysis based on interviews with trade unions from different countries (with support from Stefan Guga from Syndex) and policy advisors from industriAll Europe. These findings are further supported by the exchanges during several workshops with trade union representatives of different European regions organized by industriAll Europe in 2021-2022. This has allowed us to tackle the key research questions, give a broad overview of the trends in the different industries, and shed light on the different positions and strategies of trade unions in managing these changes.

This report is the outcome of a project that started in October 2019 set out to outline the transitions of key industries in Europe and the role played by trade unions in managing job transitions as it addresses the impact of the green and digital transition on quality of employment. During the project, however, Europe has entered another crisis due to the Ukraine war with European countries facing rising energy prices and record inflation. In light of these recent developments, we have slightly amended the report to give some indications as to how it has affected the twin transition and the intervention of social partners.

Part 1: Managing the twin transitions - climate neutrality and digital transitions

Europe has firmly established itself to become the first climate-neutral continent by 2050, i.e. to produce no more greenhouse gases than the ecosystems can naturally absorb. This is in line with global targets set by the United Nations Framework Convention on Climate Change (UNFCCC) to limit global temperature rise to well below 2°C - preferably 1.5°C - above pre-industrial levels, which has been adopted by 196 parties in the 2015 Paris Agreement. EU's commitment to this global climate action under the Paris Agreement to achieving net zero greenhouse gas emissions by 2050 is set in the European Green Deal (EGD) and is written into law. This European Climate Law has additionally set a legally binding intermediate target of reducing net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels. The European Commission has also put forward a series of legislative proposals, the so-called "Fit-for-55" package², covering a wide range of policy areas including climate, energy, transport, and taxation. Recently, policies have been driving a more radical change to speed up

² [Delivering the European Green Deal | European Commission \(europa.eu\)](#)

the decarbonisation of the power sector by phasing out coal and supporting the rapid scaling up of renewable energy.

Since digital technological changes underpin the move towards a net-zero carbon economy, governments have moved the digitalisation agenda and technological innovations within industries at the forefront in order to realize the ambitions of the European Green Deal as the two are strongly interrelated. The binding annual greenhouse gas emissions targets for the EU and for each Member State can in fact only be realized when it is met with an equally accelerated digital transition, thereby pushing industries to make a more fundamental digital transformation. This requires new digital business model strategies and use of digital technologies that will change the nature of traditional manufacturing companies with a radical disruption in skills and employment (Cedefop, 2021). In order to support European industries in this transformation, the European Commission laid the foundations for an Industrial Strategy³ in 2020. In Box 1, there is a critical assessment of the European Industrial Strategy.

Box 1. 'Europe's Industrial Strategy: a puzzle that needs assembling

The 2020 Industrial Strategy included a list of actions to support the green and digital transitions of EU industry focusing on innovation, competition and a strong and well-functioning single market. This strategy was updated after the COVID-19 pandemic crisis that led to an increased need for a more rapid transformation towards a cleaner, more digital, and more resilient economic and industrial model (Industrial Strategy update⁴). In such a strategy, investments in digitalisation efforts and skills are considered key in ensuring successful transitions. But what is lacking is a more broad strategic approach that ensures that no one is left behind.

The social dimension to guarantee a fair transition for all workers is equally important in managing the transition and should therefore be objectified as clearly and made as legally binding as the emission reduction targets. While the climate legislation and targets are clearly set in the European Green Deal, there is no hard legislation at European level increasing the rights of workers to anticipate the changes. Although the social dimension is included in the Fit for 55 package, this is just a Council Recommendation. A recent report of Eurofound shows that the involvement of social partners in designing and implementing reforms and policies in the context of the national Recovery and Resilience Plans (RRPs) is uneven and rather weak in a relatively high number of countries (Eurofound, 2022). This is consistent with opinions expressed during this project with worker representatives perceiving that they were insufficiently or not informed or involved in national

³ See https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/european-industrial-strategy_en

⁴ https://ec.europa.eu/info/sites/default/files/communication-industrial-strategy-update-2020_en.pdf

recovery plans (NRRPs) and agreements with EU and that their positions on the twin transition were neglected (e.g. Poland, Bulgaria), thereby excluding worker's voice during these processes that will have significant effects on the workforce that will need to adapt to and carry out the required changes. Analysis suggests that planned spending from the Recovery and Resilience Facility (RRF) is tilted in favour of green transition objectives relative to social objectives, which risks creating an imbalance at the expense of the EU's social dimension (Theodoropoulou et al., 2022).

Moreover, the Strategy does not address some key issues to develop an accommodating inclusive employment approach. Not all industries are sufficiently included in European plans to make a successful and rapid transformation despite the far-reaching implications of climate policies. For example, the challenges of the automotive sector are not sufficiently addressed to deal with the challenges from a strict emission limits. Additionally, the EU-budgets are fragmented; there exist different funds for digital and green transition (just transition fund, ESF+, ERDF, Cohesion Fund, Recovery and Resilience Facility). The Just transition fund for example is relatively limited and focuses primarily on coal mining and carbon-intensive sectors.

A more comprehensive and integrated strategy is needed for a Just Transition with flanking measures such as training opportunities, supportive social security systems, active labour market participation schemes, and good social dialogue with strong workers representation. Additionally, It is necessary to identify which jobs will be lost, which will be created, and which jobs will be transformed. This requires long-term strategies to identify which education and trainings are needed for future jobs to be able to organise the phasing out and phasing in in a timely way.

The COVID-19 coronavirus crisis in early 2020 has accelerated the transition to a green and more digitalized economy. Member States received support to mitigate the economic and social impact of the coronavirus pandemic and at the same time to implement the necessary reforms and investments to bring about a greener, more digital and more sustainable recovery from “the NextGenerationEU⁵ recovery instrument” with a budget of more than €800 billion. Central in this EU recovery plan, is the Recovery and Resilience Facility (RRF) introduced on 19 February 2021 with €723.8 billion in loans and grants for Member States. The efforts, i.e. investments and reforms, of each Member State to meet the climate objectives are described in the national resilience and recovery plans (NRRPs) and are integrated within the framework of the European Semester that supervises and coordinates economic and employment policies across the European Union. In these plans, each Member State should be able

⁵ See https://ec.europa.eu/info/strategy/recovery-plan-europe_en

to prove that a minimum of 20% of the resources goes to foster the digital transition and at least 37% of resources is dedicated to the green transition on climate action and environmental sustainability

The decarbonisation of the economy will entail a deep and rapid change and demand wide-reaching industrial transformations. This raises questions about the impact of the twin transitions on employment. Are workers prepared for the transition? Are there job-to-job transition programs (education and training)? How are employees protected during this transition (employment security)? Are the jobs that are being created decent? Do they provide social protections? Are workers and their representatives and the communities supported by their governments, and companies or will they be left suffering alone the negative effects of a low-carbon transition? This research addresses the impact of the green and digital transition on quality of employment, which covers aspects as security, working conditions, training and investment in skills⁶.

1.1. Industrial transformations and employment implications

The move to a greener economy requires major structural changes including the transition to clean renewable energy sources and a reduction of CO₂ emissions in the global economy. The target of 1.5 degrees implies that CO₂ emissions from industry need to be 65–90 per cent lower in 2050 relative to 2010, and renewables need to supply 70–85 per cent of electricity in 2050 (IPCC 2018). It will entail a deep and rapid change across all sectors, from industry and energy to transport, and demand wide-reaching industrial transformations and technological shifts, the development of new energy patterns, new business models and more circularity in ways of producing and consuming (Brynjolfsson and McAfee 2014). This implies to augment digitalization by, for example, the adoption of artificial intelligence (AI), the internet of things (IoT), remote monitoring, industrial robots, 3D printing. These technological advances can help companies in becoming safer, more productive, more accurate, more sustainable, and more cost-effective, but it is also changing the nature of traditional manufacturing companies.

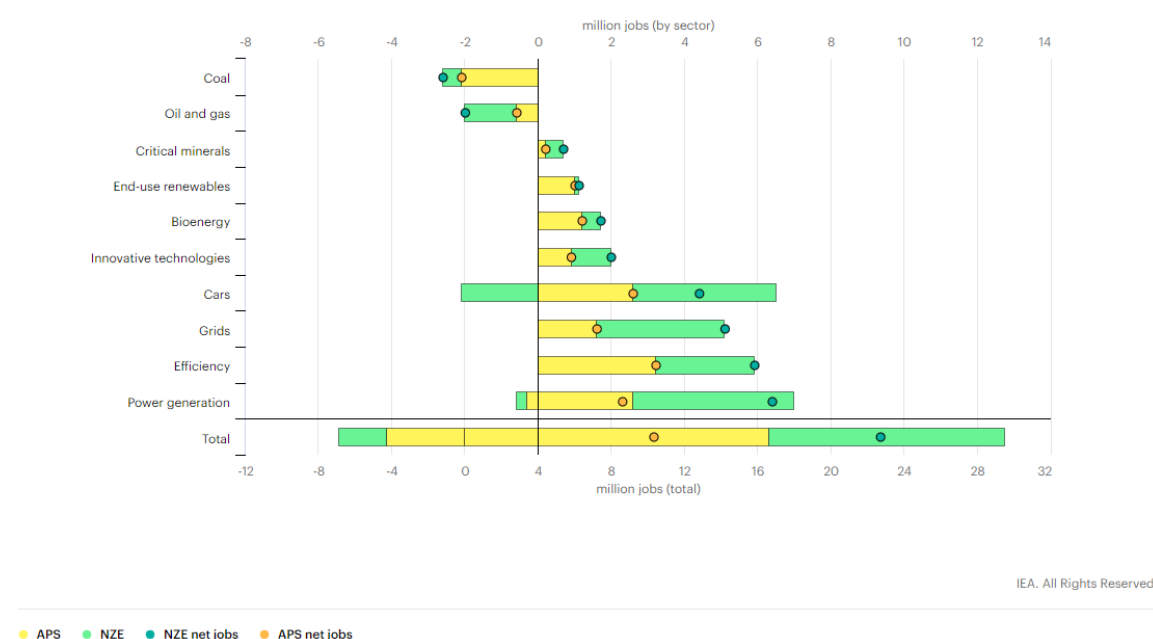
Although comprehensive research is limited, the shift towards a green and carbon-free economy will inevitably have a profound impact on employment. Based on existing studies, it is generally expected that the decarbonization of the economy will generate positive net employment effects, meaning that the overall number of newly created jobs will eventually outweigh the job losses. However, the impact of emissions reductions policies will likely be different according to the economic sector, and the positive and negative effects unevenly spread across countries and regions (International Labour Organization, International Labour Office, & International Institute for Labour Studies, 2011). Sectors such as the renewable energy and ecological construction stand to gain from the decarbonization of the economy. Employment in the renewable energy sector has continued to grow worldwide over the past decade. In 2020, it was estimated around 12 million people, mainly in the solar photovoltaic (PV),

⁶ [Quality of work | Eurofound \(europa.eu\)](#)

bioenergy, hydropower and wind power industries. This corresponds to approximately 1.3 million direct and indirect jobs in 2020 in the European Union, led by the bioenergy sector⁷. In total, the International Energy Agency (IEA) forecasts that an additional 13 million workers will be employed in clean energy and related sectors by 2030 in the Announced Pledges Scenario (APS), and this figure doubles in the Net Zero Scenario (NZE)⁸ (see figure 1). According to the most recent report of the IEA, the unprecedented global energy crisis (due to the invasion of Ukraine) has driven many countries to accelerate the transition to clean energy technologies.⁹

Sectors such as carbon-intensive industries and fossil fuel extraction and processing are expected to have (net) job losses (OECD, 2012; European Commission, 2019). The largest job loss is forecast for coal mining and refined petroleum (Cedefop, 2021). By 2030, an estimated 160.000 direct jobs could be lost in the European coal sector, which employed nearly half a million people in direct and indirect activities in 2018 (Alves Dias et al., 2018).

Figure 1: Employment growth in clean energy and related areas to 2030, in the Announced Pledges (APS) and Net Zero (NZE) Scenarios (Source: IEA)



In some sectors, employment outcomes are not straightforward and much will depend inter alia on environmental regulations, the speed of the transition, the implementation of new technologies, the adaptation of new business models, company and governmental investments. Stricter environmental regulations may risk the offshoring of high-carbon activities where emissions intensive sectors such as blast-furnace steel production offshore their activities to countries with less strong climate policies and

⁷ [IRENA and ILO \(2021\) renewable energy and jobs.pdf](#)

⁸ The Announced Pledges Scenario (APS) shows to what extent the announced ambitions and targets are on the path to deliver emissions reductions required to achieve net zero emissions by 2050. The Net Zero Emissions by 2050 Scenario (NZE) is a normative IEA scenario that shows a pathway for the global energy sector to achieve net zero CO2 emissions by 2050.

⁹ See <https://www.iea.org/reports/renewable-energy-market-update-may-2022>

lower emission constraints ('carbon leakage'). It may also necessitate radical changes in the production process affecting employment levels. For example, the automotive sector is undergoing radical transformations that is affecting both the products and the processes. The European Commission has set a strict legislation on emissions and a move towards zero-emission vehicles in 2035 (EC, 2021). This transition to electric cars and a phase out of combustion engines involves growing automation of manufacturing processes through digitalization, which could reduce the total workforce.

These employment changes also raise the issue of individual job transitions and of workers' skills and identities. For example, in Poland, coal miners have salaries above average of industrial sector and a working class culture and identity has developed in many mining areas. If pay and benefits are much lower for example, many workers may be reluctant to make the transition. Additionally, not all skills can be easily transferred. In fact, reports point out that this will be one of the main challenges, as the digital and green transition will require a significant workforce to be reskilled along the needs for new competencies and skills (Cedefop, 2021). The report of the IEA indicates that the skills of most of the fossil fuel workers would not be transferable and only some of them could use their skills and move into the emerging clean energy sectors such as offshore wind, carbon capture and storage, geothermal energy, hydrogen and bioenergy. It is estimated that only about 600,000 jobs in the oil and gas sector would have skills that are transferable to emerging sectors, out of a total 2 million jobs lost (i.e. 30%). Additionally, the transition does not necessarily happen in the same location and new jobs are not necessarily created in the same location where jobs are lost. For example, mining skills are transferable to critical mineral mining and other emerging activities, but these are not always located in the same regions (IEA report).

Since such a transition (is likely to) constitute(s) a radical disruption in skills and employment, the transition to a decarbonized and new digital economy has increased the sense of urgency to re- and upskill workers (Cedefop, 2021). Particularly, the adoption of industry 4.0 technology has received much attention because of its role in shaping new business models and impact on skills (e.g. Caruso, 2018; Susskind and Susskind, 2015; Brynjolfsson and McAfee 2014). Digital technologies can increase job quality by eliminating dangerous, arduous or repetitive task and create jobs by opening up new business areas, developing new products and creating new jobs in industry-related services focused on IT skills and infrastructure, however, these could also create redundancies and pose a real risk of job degradation by impacting on tasks, the skills requirements and the working conditions. For instance, the efficiency gains that come from optimization processes of production could reduce workers' autonomy over their own working time, the order of tasks or the pace of work (industriAll, 2021; Eurofound, 2021).

However, the impact of the green transition on quality of employment is perhaps even more under-developed. Do the new/green jobs offer decent working conditions? The digitalization of work was

mostly driven by companies for its potential towards great productivity gains and increased comparative advantage, and has now been accelerated by the strict regulatory framework to reduce emissions. This affects business models, production processes, and employment. The green and digital transition will not only create jobs, but also destroy and transform jobs (Brynjolfsson and McAfee 2014) and, therefore it posits the question about the strategies trade unions develop to deal with the employment consequences of the green and digital shift (ETUC, 2018). We will discuss the role of trade unions and social dialogue in anticipating and managing the transformation, but first we will focus on the transformations in the different sectors to understand the different challenges that different sectors pose.

1.2. Across sectoral variation

All sectors are faced with challenges that are related to decarbonisation driven by climate and environmental regulation, but also changing consumer preferences that is affecting how we produce and consume. However, similar challenges of green and digital transformations can have different outcomes depending on their sectoral contexts. In this report, we gather insights on the transformations in key industries such as the automotive and energy intensive sectors as well as new emerging sectors like renewable energy.

1.2.1. Accelerated digital transformation of the automotive industry

In the automotive industry, the transition is indicated to change the nature of traditional manufacturing companies. With the push to build only electric vehicles by 2035, the industry is set to undergo a comprehensive transformation in the years ahead. The challenges are diverse and relate to issues with the supply chain, labour shortages, battery cell production, charging infrastructure, vertical (dis)integration, and intensified market share competition, but perhaps the greatest challenge in the coming years will be to make sure that the workers are not left behind, i.e. working with new technologies, training and job search assistance for workers making internal combustion engines and ensuring good wages, working conditions, and workers' rights in the new world of electrical vehicle (EV) manufacturing.

The automotive industry is a key employer in Europe. It represents 7% of the EU's Gross Domestic Product (GDP) and provides employment to 13.8 million workers, which accounts for 6.1% of total EU employment. About 2.6 million people are employed in direct automotive manufacturing, representing 8.5% of EU employment in manufacturing¹⁰. The manufacturing industry consists of 226 vehicle assembly and production plants in the European Union¹¹. Since the last years the industry has been facing several crises and structural changes, such as the Covid-19 pandemic as well as the shortage of computer chips, that slowed down production and disrupted entire supply chains. Already before the collapse in manufacturing, the sector has been dealing with many structural changes that revolve around

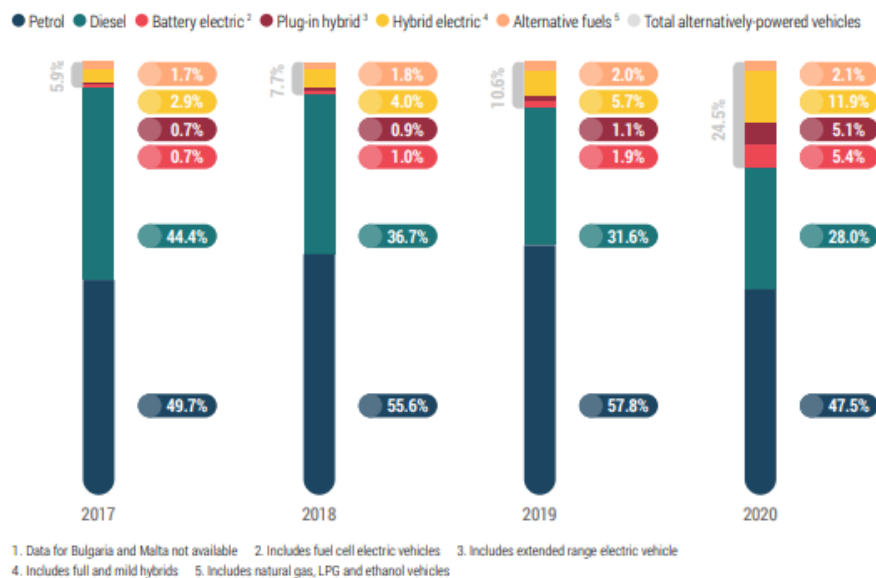
¹⁰ https://ec.europa.eu/growth/sectors/automotive-industry_en

¹¹ [Facts about the automobile industry - ACEA - European Automobile Manufacturers' Association](#)

“electrification, including 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.” (EC, 2017: 6).

A mobility revolution is inevitable and it is speeding up. According to a report from the European Environment Agency, transport was responsible for about a quarter of the EU’s total CO₂ emissions in 2019 of which 71,7% came from road transport. Passenger cars account for 61% of total CO₂ emissions from EU road transport¹². Unlike in other sectors, its emissions have not decreased since 1990. The EU nevertheless aims to achieve a 90% reduction in greenhouse gas emissions from transport to achieve climate neutrality by 2050, compared with 1990. The ‘Fit for 55’ EU climate package has proposed the very ambitious CO₂ reduction target for cars of 55% by 2030 (based on 2021 levels), moving to zero-emission vehicles in 2035¹³. These tightened CO₂ limits for the automotive industry can only be achieved with a full transition to battery electric vehicles (BEV) and a rapid phase out of internal combustion engine vehicles (ICEV). This transition is starting to show in the automotive industry with the expansion of the share of new electric vehicle registrations at the expense of petrol and diesel vehicles in the EU. Data from ACEA (The European Automobile Manufacturers’ Association), show a strong increase in BEV and (plug-in) hybrid electric vehicle (HEV). In 2020, alternatively powered vehicles increased from a 5.9% share in 2017 up to 24.5% of total car registrations.

Figure 2: New electric vehicle registrations in the EU (% of total new registrations)



¹² <https://www.europarl.europa.eu/news/en/headlines/society/20190313STO31218/co2-emissions-from-cars-facts-and-figures-infographics>

¹³ https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en and <https://www.europarl.europa.eu/news/en/press-room/20220603IPR32129/fit-for-55-meets-back-objective-of-zero-emissions-for-cars-and-vans-in-2035>

Battery-powered electric vehicles are expected to dominate the market in the end, while hybrid powertrains will serve merely as a temporary solution, facilitating both the technological and the social transition to pure electric vehicles. Transport & Environment (2021) estimated, based on their analyses of the production plans of carmakers in Europe, that BEV production would continue to grow to become the dominant technology in less than a decade, while, ICEVs, full hybrids (HEV) and plug-in hybrid electric vehicle (PHEV) are expected to decline. Alternative technologies such as fuel cell electric vehicles or compressed natural gas vehicles will not take in a large part of the car production. Thus, according to these plans, battery electric vehicles appear as the only credible future-proof technology that will be widely endorsed by car manufacturers in Europe (Transport & Environment, 2021).

The exit or transition from combustion engines to the electrification of the powertrain in BEV is likely to lead to a decline of employment. According to the ETUI-report, it can be expected that the employment effect in the automotive sector becomes increasingly negative as the level of emissions reduction and powertrain electrification increase (Galgóczy, 2019: 174). Because electrical cars consist of fewer parts, BEV manufacturing processes will require less labour input (IEA 2020). Additionally, suppliers that rely on the production of parts for ICE will either disappear or need to change their production processes completely in the face of a phase out of ICE. Manufacturing employment has already gradually been decreasing due to the automation of manual activities (e.g., the replacement of manual parts insertion by material handling robots), or the increasing efficiency of digital process control techniques, allowing a smaller number of workers to operate ever bigger and more complex production processes (Krzywdzinski, 2020). Digitalization has often provided the tools to cope with the new requirements in the auto sector such as the increasing demands on the quality and safety of cars or the pressure to reduce vehicle weight, and is now being expedited in light of the green transition to reduce CO₂ emissions.

The employment and social effects of these changes will be significant. In the course of the upcoming transition, many jobs will become either obsolete or transformed in manufacturing, but jobs will also be created. The net outcome in terms of jobs could even be positive when we take in a broader perspective and also include energy. The auto sector is witnessing increasing automation and the use of digital technologies, the adoption of new business strategies, and in addition, more electronics and software that may represent up to 35% of a car's value in next 5 years and possibly 50% in 2030. This will transform manufacturing processes in such a way that will have a substantial impact on skill needs and job demand in the short and long term (Cedefop, 2021). Automotive industry workers with more advanced technical skills will be needed as well as new expertise for the digital transition in manufacturing (Industry 4.0) to bridge the existing knowledge gap between the automotive and the Information and Communication Technology (ICT) sector and require not only more technically skilled workers, but also workers that have the ability to solve problems, to work in teams and adapt quickly

(EC, 2017). Matching skills demand and supply thus poses a growing challenge for the automotive industry.

Due to the fact that these jobs losses and gains are unevenly spread, however, large disruptions in many regions are expected. In the EU, auto manufacturing is concentrated in just few countries. Germany leads with over 50% of employment, then France (10%), Italy (7%), Spain (6%) and Sweden (5%) (2018). For auto parts manufacturing, a lot has been outsourced to Member States in the East, which are attractive for their skilled workforces and lower labour costs. Eastern EU countries now have the highest shares of workers employed in the automotive industry. When we look at the expected production of electric car production per country, Germany would have the largest production volume of BEV (37% of EU production), followed by Spain (14%), France (10%), and Czech Republic (8%).

The push for electric cars driven by the CO₂ standards causes a wider industrial transformation that could threaten the established European manufacturers and suppliers. Electrification of powertrain will affect employment significantly, but the entire auto industry is profoundly changing: relationship suppliers - OEMs, new competitors, new value added batteries (competition Asian countries). New entrants, including hardware and software companies, digital service providers and battery manufacturers. In this respect, Asia, and particularly China, has strong advances in EV technology. Europe is nevertheless quickly increasing its market share in batteries, building up capacity and competence. As the share of electricity from renewable sources is set to increase in the future, electric cars should become even less harmful for the environment, especially given EU plans with regards to batteries.

1.2.2. Energy intensive industry (EII): transforming to green production processes

Energy intensive industries (EII) or foundation industries such as steel and chemical are crucial for Europe's industrial base. The EIIs play a central place in emissions reductions due to its high industrial emissions; however, deep cuts in these emissions are difficult since carbon is still inextricably connected to current production processes. In addition, they face similar challenges coming from climate policies (concrete proposals in 'Fit for 55'-package on CBAM and ETS) such as insufficient market for low carbon products, uncertainties and complexity of the regulatory and legal framework, long approval procedures, concerns about international competitiveness and carbon leakage. In order to cut emissions, the EIIs are looking to change production processes either drastically, exploring materials efficiency, new manufacturing processes and new circular business models, including the use of hydrogen technology, or by using carbon capture and storage (CCS) which would mean a less disruptive change. Specific challenges related to such changes are linked to the high costs of (green) electricity, the supply of green hydrogen and feasibility of using CCS. Additionally, the current energy crisis and Russian invasion in Ukraine shows that the fossil-fuel dependency is not sustainable in the long-term.

The crisis and uncertainty with regards to energy supply make it even more difficult to make the transition in the short term as it requires high and long-term investments (ETUI¹⁴, 2022).

The EIIs have received a lot of attention for its potential role in the green economy, but the employment effects of such changes have been under-researched. In the decarbonisation efforts, it is nevertheless important not only to keep industrial competences in Europe, but also employment. About 3.2 million workers are employed in iron and steel, minerals, refineries and chemical industries in the EU 27 (2020). This represents about 11% of total employment in industry and contribute about 15% of total value added of manufacturing in Europe. The expectation is that the EII would remain rather stable or even grow due to growth in certain areas. Besides construction, the industries would benefit from green investments like renewables infrastructure, retrofit programs that need materials.

The green transition involves far-reaching transformation processes, but - with the exception of the phase-out plans of coal, which will have a huge impact on employment in certain regions in Europe, the changes in other EIIs will be more gradual. Therefore, we do not expect the same disruptive changes as we see in the automobile sector for example, but employment will inevitably undergo many changes. Up until now, job losses have been mostly due to digitalization advances. The future employment impact of the green transition will depend on the technological advances and more specifically which type of technology will dominate or become most sustainable for the future. Currently, this is not yet clear. Although many companies, including oil and gas companies, are unveiling their green transition plans for the future, these plans are still mainly theoretical. New technologies like CCS are still very expensive and it is estimated that only a minority of the employees (30%) could be used or shifted to these new activities.

Additionally, employment effects will depend on the region and on national industrial policies. This may be relevant for the infrastructures that are set up for the future e.g. CCS in the UK. Moreover, in order to carry out the transformation successfully, political support from the EU and the federal government is needed. This is also true for the steel industry where the entire process needs to be adapted, where hydrogen must be used as a reducing agent in the blast furnace route in the future and thus replace coal. On the electric furnace route, conventional electricity must be replaced with electricity from renewable sources. Unions are therefore fighting for research and investment funding, for the expansion of the necessary energy infrastructure and for a European trade policy that rewards climate-friendly steel production instead of punishing it (IndustriAll).

An important EII is the chemical industry where Europe is the second-largest chemicals producer in the world. The industry plays an important role in meeting the long-term climate protection targets for 2050. It is undergoing a triple transformation that will last for decades. In addition to the green and

¹⁴ <https://www.etui.org/decarbonizing-energy-intensive-industries-what-are-risks-and-opportunities-jobs>

digital transition, the sector is facing the need to adapt to the changes in the health and environment impact of the chemical substances (see EU's Chemicals Strategy for Sustainability¹⁵). Companies thus need to develop sustainable – economically, ecologically, and socially viable – alternative processes. To do this, they require economic conditions and an energy policy framework that make this kind of forward-looking project possible. The key prerequisites are that energy and raw materials must be affordable and available in sufficient quantities¹⁶.

The challenge for EU manufacturing is to ensure sustainability or finding ways to reduce dependency on non-renewable resources to produce chemicals in an environmentally acceptable way, in the midst of increased international competition - especially the emergence of Middle Eastern countries and China, India and Brazil, rising energy and feedstock prices, and new regulations. In a study carried out in October 2019, the German Verband der Chemischen Industrie (VCI) analysed the process engineering requirements for greenhouse gas-neutral production in the chemical industry in Germany¹⁷. According to the study, the transformation of the chemical industry is technologically possible by 2050 due to new methods of closed-loop circulation, CO₂-free hydrogen production and the use of CO₂ as a raw material. However, greenhouse gas-neutral production can only be realized with enormous quantities of green electricity at internationally competitive prices for the electrification of production processes. An unsolved political, economic, and social question is how the enormous capacity of renewable energies can be built up while at the same time ensuring the supply of electricity to companies at an affordable price.

1.2.3. Transitioning from fossil fuel to renewable energy: phasing in and phasing out

The transformation of the energy system from fossil fuel to clean renewable energy sources is indispensable for emissions reductions. The energy sector is responsible for more than 75% of the EU's greenhouse gas emissions. Increasing the share of renewable energy across the different sectors of the economy is therefore a key building block that could significantly help foster transition in the energy sector to reach the EU's climate objectives. EU's strategy is to reduce use of fossil fuels by 40% in 2030 by improving energy efficiency, producing biofuels, and accelerating the deployment of renewable hydrogen. Russia's invasion in Ukraine has accelerated the need for urgent action to reduce EU's dependency of Russian energy imports, leading to immediate strategic EU policy changes (see REPowerEU¹⁸ plan with measures to drastically reduce Russian gas imports).

¹⁵ European Commission, 2020, Chemicals strategy, available at: https://ec.europa.eu/environment/strategy/chemicals-strategy_en

¹⁶ <https://www.vci.de/langfassungen/langfassungen-pdf/vci-study-greenhouse-gas-neutrality-in-the-german-chemical-industry.pdf>

¹⁷ Auf dem Weg zu einer treibhausgasneutralen chemischen Industrie in Deutschland, VCI, DECHEMA, and FutureCamp 2019.

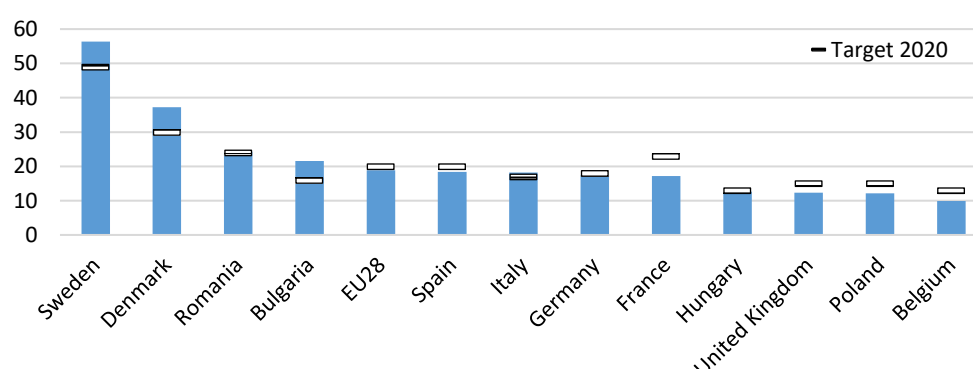
¹⁸ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A108%3AFIN>

The Renewable Energy Directive is the legal framework for the development of renewable energy across all sectors of the EU economy. The Commission proposed a revision of the directive in July 2021, as part of the package to deliver on the European Green Deal, raising the ambition of the existing legislation. Each EU country is required to establish a 10-year integrated national energy and climate plan (NECP) for 2021-2030, outlining how it intends to contribute to the 2030 targets for energy efficiency, for renewable energy and for greenhouse gas emissions.

Across the EU, the share of renewable energy in gross final energy consumption has increased in recent years from 9.6% in 2004 to 18.9% in 2018. The rapid clean energy transition has increased production and employment in renewable energy that kept growing even during the COVID-19 pandemic. In the report of the International Renewable Energy Agency (IRENA) and the International Labour Organisation (ILO) (2021), the direct and indirect jobs in renewable energy in the European Union (EU27) was estimated at 1.3 million jobs (of the 12 million worldwide), mostly in solid biomass (for heat and electricity), wind power, liquid biofuels and solar PV. Renewable energy sources generally require a more specialised workforce so the biggest growth in labour demand is expected in high and medium skilled categories (ETUI, 2021: 51).

Renewable energy has a strong foothold in Europe. Already in 1991, Denmark installed the world's first offshore wind farm "Vindeby" which included 11 wind turbines. In the same year, Germany introduced Europe's first 'feed-in-tariff' for renewables; a policy mechanism designed to accelerate investment in renewable energy technologies. Available resources are nevertheless different across EU countries that have their own unique energy markets. This means that each Member State will have to follow its distinctive path when it comes to meeting its obligations under the Renewable Energy Directive. The country differences in share of energy from renewable sources and targets is shown in graph below. In general, the Nordic countries, especially Sweden and Denmark are the furthest exceeding the relative high targets, while other Member states, such as France, UK, Poland, and Belgium, have not yet reached their target.

Figure 3 Share of energy from renewable sources (2019, in % of gross final energy consumption) (Source: Eurostat)



1.3. Social dialogue and trade unions involvement

In order to prepare workers in a timely manner for a shift towards a digital, resource efficient, climate-friendly economy, scholars have called for the involvement of trade unions by pointing to social dialogue and collective bargaining as key aspects in order to manage the transition (Galgóczi, 2019). In times of disruption, early and effective involvement of trade unions is considered key to mitigate the impact of the digital transformation on jobs. “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 trade unions activities” (ETUC, 2018: 6).

Collective bargaining systems and workers’ voice arrangements have proven to be important tools in securing quality jobs or as states in the OECD report (2019: 13) ‘The quality of the working environment is higher on average in countries with well-organised social partners and a large coverage of collective agreements’. These mechanisms will prove important in the move towards a green economy to “enable social partners to discuss and negotiate solutions that mitigate negative employment consequences and guarantee high quality jobs throughout the transition” (industriAll Europe, JT Manifesto: 5).

1.3.1. Just Transition approach

The digital and green transition will affect all parts of society and change the face of industry on a global scale. One of the biggest challenge will be to ensure that the transition is fair and leaves no one behind, a longstanding trade union objective that has recently been echoed in the just transition campaign of the European trade union industriAll Europe “Nothing About Us Without Us”. In their manifesto, just transition is defined as follows: “Just Transition means transforming the economy in a fair and inclusive manner to ensure the maintenance and creation of good quality jobs” (industriAll Europe, 2019). The mitigation of the employment and social consequences of the transition towards a carbon-neutral economic model should be a priority. It calls for a long-term strategy not only for technological innovation and for public investments in research and development, but also for the promotion of good-quality jobs.

This need to be able to anticipate change and recognize the rights of workers during the transition is captured by the concept of a ‘Just Transition’. It is ensuring that workers, unions, and civil society organizations are at the table when designing and delivering plans for climate action (ILO 2015). The concept Just Transition was originally developed by the labour union to underline the importance of workers’ rights and interests in times of restructurings. The 2015 ILO guidelines for a just transition highlight the need to secure the livelihoods of all those who might be negatively affected (directly or indirectly) by the green transition and recommend the consultation and the association of trade unions in the elaboration and implementation of low-carbon policies at “all possible levels and stages”. These

guidelines are developed to promote decent work and social justice in the energy transition, addressing all aspects from the quantity to the quality of employment.

The trade union movement has successfully been able to push the social and employment dimension into the decarbonisation plans. In this respect, the Just Transition approach has become an integral part of the global union agenda on the environment, e.g. the preamble of the Paris agreement invites parties to “take into account the imperatives of a just transition of the workforce”, as well as of the European Green Deal (European Commission, 2019b; 2020). The Just Transition Framework thereby attempts to combine ambitious climate policies (environmental justice) and workers’ concerns (social justice). The objective is also to inform and prepare trade unions to play an active role in the design and implementation of the national strategies for decarbonisation as well as in the development of just transition frameworks (ETUC, 2018).

The trade union movement supports the aims of decarbonizing the economy, but demands at the same time to protect jobs, to involve trade unions in the transition, and to provide decent work, social protection, and training opportunities for workers affected by global warming and climate change mitigation policies (Stavis and Felli 2015). It is a continuous fight of trade unions, where more recently the European trade union organisation industriAll Europe launched the Just Transition campaign that focused on workers’ experiences and sharing evidence across different industrial sectors and across Europe¹⁹. In this way, it is possible to identify challenges, to draw evidence-based conclusions and make practical recommendations for policymakers across Europe to ensure a transition to a green economy that is fair for all workers and that ensures good quality jobs. Their Just Transition Manifesto includes five key demands: an industrial policy that is fit for ambitious climate goals and good quality jobs; funding of the transition; stronger collective bargaining and social dialogue; a toolbox of workers’ rights and companies’ duties to anticipate and shape the change; and tackling new skills needs and a right to quality training and life-long learning for every worker.

This dual role can pose real challenges for trade unions to find a balance between the need for environmental protection and climate action and the need to preserve the jobs of their members e.g. the phasing out of coal production in Poland or the switch to electrified cars in Germany (Galgóczy 2019). In this ‘jobs vs. environment’-dilemma, the main challenge for trade unions as membership based organisations lies in the fact that many of the jobs that will be negatively impacted by greenhouse gas emissions reductions are located in sectors of the economy that are still well unionized and covered by relatively advantageous collective agreements (Thomas and Pulignano, 2021). Studies show that workers are more likely to be unionized in ‘brown’ industries with a large footprint due to a combination of a long tradition of unionization and larger sized workplaces that are easier to organize (Schnabel 2013, Scheuer 2011), while many of the newly created jobs in the green economy where many are not

¹⁹ [Just Transition \(industrial-all.eu\)](https://industrial-all.eu)

(yet) well unionized. Jobs in green emerging sectors like renewable energy could then entail a degradation in job quality compared to those in carbon heavy sectors like oil or petroleum where trade unions have traditionally been strong and able to guarantee high wages through collective action (Jaeger et al., 2021). For example, jobs in ‘green construction’ and waste disposal are often characterized by poor working conditions with comparatively low wages and low interest representation (Holtgrewe et al., 2015).

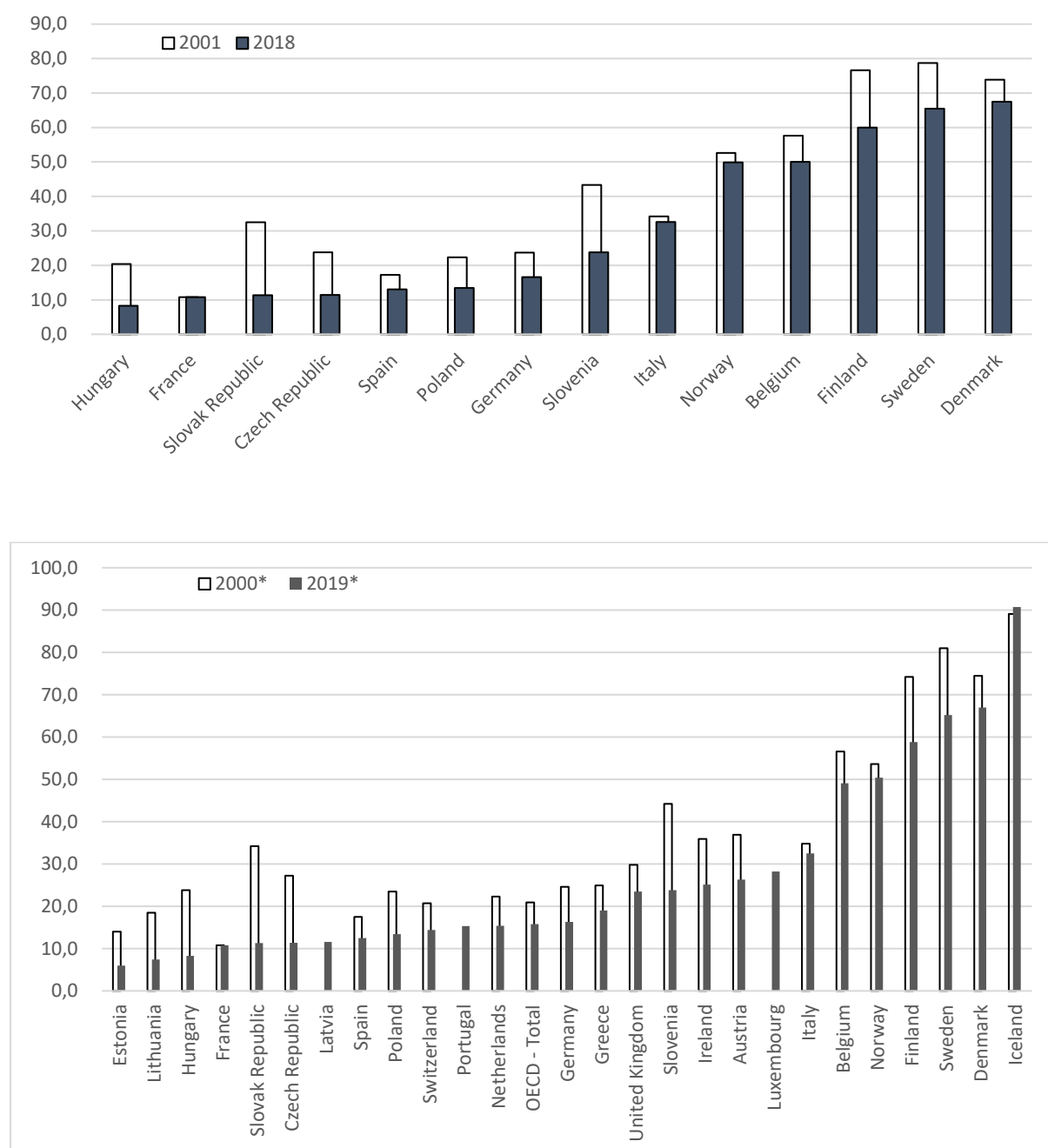
It follows that a just transition strategy for the energy sector (e.g. phasing out coal) needs different approaches than e.g. the automobile sector. For example in the energy sector, the emerging low-carbon economy is expected to compensate for the job losses in carbon-intensive activities across the whole economy, however, these jobs will not necessarily appear at the same time and in the same place where jobs are being lost (Galgóczi, 2019).

1.3.2. Different industrial relations systems across European regions affect outcomes of twin transition on job quality

Employment implications will depend on national and industrial policies that are developed at different levels. Although the Commission has set up common objectives for the Member States, there are significant disparities among regions within the EU that arise from different institutional set-ups, financial capacities, industrial activities and strategies. Additionally, Member States have followed different paths in digital developments that was already evident before the COVID-19 pandemic with low and fragmented investments and slow adoption of digital innovations in both the public and private sectors. Despite increased digital spending in the past years, gaps in digital developments will likely cause countries to continue to evolve at different speeds across Europe. How the transition will be managed across Europe will depend on the national industrial relations systems, creating differences between countries with strong institutional frameworks for good social dialogue, and countries that lack important institutional features necessary for the inclusion and participation of workers and their representatives in the anticipation and management of the transformation.

Although decarbonisation is a common objective, concrete transitions take place in work environments that are determined by the capital-labour relationship (Galgóczi, 2019). In the past decades, however, neo-liberal policies have weakened trade unions in many European countries. Deregulation and specifically decentralization of collective bargaining has increased the regulation of wages and working conditions at the firm level. This has put enormous pressure on trade unions that are faced with increasing power imbalance at the local level where negotiations and outcomes are becoming more dependent on - if there is a local representation at the company - the power of local trade unions, and employers. The context of declining trade union density (figure 2) and falling collective bargaining coverage has diminished the capacity of trade unions to weigh on the national and industrial policies in the management of the twin transition.

Figure 4: Trade union density declined in all countries (Source: OECD.Stat)



Despite increasing pressures on trade unions across all countries, there are significant differences in national industrial relations systems and traditions that could affect the opportunities and restrictions or how trade unions are able to manage the transition. A much-used typology of Visser in Table 1 sheds light on the role of industrial relations institutions in shaping employment conditions and job quality. It clusters different countries and points to complementarity among industrial relations regimes, welfare state regimes (Esping-Andersen, 1990), employment regimes (Gallie, 2007) and production regimes (Hall and Soskice, 2001). The typology can help us identify the set of challenges that trade unions face

to manage the twin transitions in different countries and understand the tensions and diverging points of view between national confederations (Thomas and Pulignano, 2021)

Table 1: Industrial relations regimes (Source: J. Visser extended on the basis of Ebbinghaus and Visser (1997), Crouch (1993; 1996), Esping-Andersen (1990), Schmidt (2002; 2006), and Platzer and Kohl (2007)).

	North	Centre-West	South	West	Centre-East
Production regime	Coordinated market economy		Statist market economy	Liberal market economy	Statist or liberal?
Industrial relations regime	Organised corporatism	Social partnership	Polarised/state-centred	Liberal pluralism	Fragmented/state-centred
Power balance	labour-oriented	Balanced	Alternating	Employer-oriented	
Principal level of bargaining	Sector		Variable/unstable	Company	
Bargaining style	Integrating		Conflict oriented		Acquiescent
Employee representation	Union-based/high coverage	Dual system/high coverage	Variable*	Union based/small coverage	Union-based/small coverage
Welfare regime	Universalistic	Segmented (status-oriented, corporatist)		Residual	Segmented or residual
Countries	Denmark, Finland, Norway, Sweden	Belgium, Germany, Luxembourg, Netherlands, Austria, Slovenia	Greece, Spain, France, Italy, Portugal	Ireland, Malta, Cyprus, UK	Bulgaria, Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Romania, Slovakia

** In France, employee representation in firms incorporates both principles, in Spain and Portugal it is dualist. In Italy and Greece, it is merged with the unions but based on statutory rights.*

Trade unions operate within institutional structures that give them opportunities and limitations to defend and/or to act on behalf of the workforce. Consequently, their position will vary across countries depending on the institutional support they receive and bargaining power they have in order to manage the transition in a just way. Trade unions are in a more favourable position in countries where there is good social dialogue, with high levels of coordination between employers and unions, where employers are inclined to invest in the skills of employees and thus interested in long-term employment relationships that is developed through integrated bargaining. Conversely, trade unions take in a relatively weaker position in countries that lack this strategic cooperative rationale in labour relations, where the role of social partners is not acknowledged, and where bargaining predominantly takes place at decentralized levels. Likewise, good social security systems can support trade unions' just transition approach to cushion the impact of the transition during the transition period.

From this, it can be expected that an encompassing bargaining structure that collectivizes risks, rather than individualizes, may allow trade unions to develop strategies to manage the twin transition in a just way. In other words, sectoral collective bargaining is key to ensure a just transition. By contrast, weak collective bargaining in a low-regulated, employer-oriented, decentralized industrial relations framework may limit collective control over employment conditions and leave the transformations to

employers' discretion, thereby increasing the risk of disregarding workers' rights and job quality in the process.

1.4. How does the war in Ukraine impact the twin transition?

While Europe is speeding up the green transition with the NextGenerationEU, a new energy crisis has recently emerged that has created new challenges putting pressure on large capital investments that are required to bring about the needed change in the long-term. In response to the recent invasion of Russia in Ukraine, the Commission presented the REPowerEU Plan on 18 May 2022 with the aim to rapidly reduce dependence on Russian fossil fuels and fast-forward the green transition by energy savings, diversify energy supplies, and accelerate renewable energy. In this respect, the Commission proposed to make targeted amendments to the RRF Regulation to integrate dedicated REPowerEU chapters in Member States' existing RRFs.

To what extent IR and social dialogue is resilient?

Do we need IR institutions? can help to mitigate shocks in medium term? What is happening? What is the role of collective bargaining? What do trade unions do?

There are interventions in countries and social partners e.g. in Germany looking for solutions: co-determination can help to find better and faster solutions?

How do IR, social dialogue is important to mitigate, institutions exist, but are perhaps not being used, like in Belgium? -> discuss different scenarios per region

Part 2: Case study analysis: regional challenges across Europe

In this part, we focus on how trade unions anticipate and manage the digital and green transition in different European countries. The fact that the sectors are regionally concentrated in the European Union means that the job gains and losses are distributed unevenly. Employment in carbon-intensive industries is mostly located in the Central and Eastern European member states (OECD, 2012), while Nordic countries are leading in renewable energy. By looking at specific sectors or cases across different regions, we try to obtain a broad European comparative overview focusing on the regional challenges that differ depending on economic contexts, industrial relations systems, and transitionary phase. We describe how trade unions are addressing the challenges with regards to the twin transition to reaching the strict emission standards of a carbon neutral economy across the different European regions.

2.1. Central-Western European countries, strong social partnership

In Western European countries, we find high levels of coordination of employers and unions' behaviour where labour relations are built on mutual recognition of social partners. Centralised collective bargaining structures contribute to a better anticipation and management of change. Having an active

role in the decision-making process may also be important to steer the process from the very beginning in a way that prioritizes workers. We look at two coordinated market economies, Germany and Belgium, to illustrate how trade unions are managing the twin transition in a context of strong social partnership and where workers rights are strongly institutionalized. It shows how, within similar contexts, diverging collective bargaining systems in Belgium (centralized) and Germany (decentralized) affect how trade unions manage the upcoming challenges related to the digital and green transition, which in turn affects the anticipation and preparation of change.

2.1.1. Co-determination gives workers a voice in the management of a company

The German industrial relations system is known for its strong institutional co-determination (*Mitbestimmung*) with Works Councils (*Betriebsräte*) at the company level. Both bodies can participate in company decisions and thus contribute to the interests of the workers. This co-determination system allows German trade unions to play an important role to ensuring a just transition by pursuing a proactive strategy of investigating and raising awareness of the impact of digitalisation and decarbonisation on employment and coordinating their efforts on national, sector and company level to keep future quality jobs in Germany. On the one hand, German works councils have strong information, consultation, and participation rights and access to economic and financial information (EFI) of the company (based on the Work Constitution Act of 1952). Moreover, the model of co-determination gives workers a voice in the management of a company where they are given a seat at the table of the supervisory board. This can be considered an additional source of information for employee representatives (Doerflinger et al., 2017) since company plans and future investments are discussed in the supervisory board. It can be used to steer the process of digitalization. In fact, co-determination and co-design of new technologies by employees and works councils are important conditions for using new technologies for improving work quality (Krzywdzinski et al., 2021).

IG Metall has built up expertise for managing the challenges raised by the acceleration of the twin transition: “*We have a tradition on working on projects in companies to tackle change in companies.*” (Trade union officer, IG Metall). Several projects were developed on topics of digitalization. For example, the project “Arbeit 2020 in North Rhine-Westphalia (NRW)” resulted in a ‘Work and Industry 4.0 company map’ (‘Betriebslandkarte Arbeit und Industrie 4.0’²⁰) that supports unions and companies dealing with the transformations induced by digitalization by showing the different effects of a technological change in different areas of the company and to develop suitable design approaches. The systematic, structured, and participation-oriented analysis is based on workshops with works councils, employees, and managers from various departments or areas of a company with discussions on the status and development of digitization and the consequent changes in the workplace. In this respect,

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https://www.arbeit2020.de/fileadmin/Arbeit2020/4.1_Broschueren/Betriebslandkarte_Anwendungsleitfaden.pdf

works councils and employees can actively participate in this dialogue process and contribute their own ideas for shaping the future working environment in the company.

Interviews with trade union officers indicate that the works councils, supported by IG Metall, have been able to create pressure in their companies to invest in innovative and climate-friendly technologies and products, to restructure their production processes, to develop sustainable business models and to open up new opportunities for value creation.

*“They gave everyone Google glasses, but no one talked to the people, they developed it in IT, but it did not work in practice. We restarted the whole process, working together with management and developers. In the end, these glasses were only used to check the end product and react to malfunctions [...] Our approach is always: you have to **develop bottom-up** not top-down.” (Trade union officer, IG Metall)*

*“We have examples where due to pressure of works council and IG Metall, new products for e-mobility could be agreed upon in Collective Bargaining Agreements (CBA) instead of continuing with the old combustion engine products. **This needs pressure by the works council and the unions**, but we have for example in Hannover in Volkswagen (VW) where there is battery assembly (joint venture JV with Northolt), where WC and IG Metall made VW agree that the CBA is going to be valid for new workers in JV and on outsourcing.” (Trade union officer, IG Metall)*

IG Metall has negotiated sectoral agreements for the metal and electrical industries taking into account the twin transition in order to safeguard jobs and secure good quality working standards to support the many companies that are facing the transformation to CO₂-neutral products and production, to e-cars and hydrogen, to digital production and business processes. For example, in the 2021 agreement an annual transformation allowance (T-money) is negotiated that not only stabilizes the income of the employees, but can also be used to reduce working hours in order to secure jobs and to avoid potential compulsory redundancies²¹. However, it is left over to the company-level to negotiate further. German trade unions have been confronted with a decentralization of collective bargaining during the past decades, which reduces the impact of sectoral collective bargaining on all employees within the sector by allowing companies to opt out and temporarily reduce working conditions, wages, and other fringe benefits during times of restructurings in exchange for future investments and job security. This means that negotiated outcomes - that are beneficial for workers - are dependent on the company (size), works councils (strength) and industrial relations (relationship worker representatives and management).

Unions have found a way to deal with future challenges in a pro-active way by introducing so-called ‘future collective agreements’ (*Zukunftstarifverträge*). These agreements offer framework rules for

²¹ www.igmetall.de/tarif/tarifrunden/metall-und-elektro/tarifergebnis-fuer-die-metall-und-elektroindustrie-2021

future collective agreements in the companies, in which, for example, targets, personnel requirements, and qualifications for the work of the future are negotiated. IG Metall found that about half of the companies have not yet developed any future company plans to increase their chances of survival and growth of the business. To respond to this uncertainty, the future collective agreements would allow works councils to pro-actively discuss economic strategies and future plans with companies that are either facing or will face difficulties due to the twin transition. This is part of the co-management of trade unions to getting directly involved in the process. The objective is to engage in a discussion on the (potential) impact of the transition on employment and to involve workers and their representatives more in issues that must be tackled for the future of the company such as technological innovations, qualifications, and employment. Such agreements allow unions to actively intervene and negotiate with employers to talk about long-term strategies in order to avoid potential negative scenarios like plant closures, redundancies, and skills mismatches. It allows to managing the transition in way that prioritizes workers.

2.1.2. Extensive worker rights, but reactive rather than pro-active approach to anticipate and prepare for change

Organisational changes, innovations, and implementation of new technologies in the workplaces are usually considered the prerogative of the company and are mainly managed by trade unions at the company level. Also in Belgium that is known for its highly centralised structured industrial relations system where social partners can make (inter)sectoral Collective Bargaining Agreements (CBAs) that cover all companies within the sector. Workers representation structures at the workplaces are realized through a double-system of works councils and trade unions. The trade union delegation is entitled of negotiation rights with management. The works councils, which are all unionised, are involved in social, economic, and financial policy related to the organization of work in the company. The works councils have extensive rights to receive economic and financial information (EFI) of the company they work for (Doerflinger et al., 2018). The works councils can issue advice, make suggestions or objections about or against collective measures that may change the work organisation in terms of employment (CBA 9, art.10). Aside the works councils, there is also a committee for prevention and protection at work (CPBW) that mainly plays an advisory role on all proposals and measures, such as the planning and introduction of new technologies and the effect on the safety and well-being of employees in the performance of their work.

Beside CBA39 on union involvement in the implementation of new technologies in companies and on job security during the process that was negotiated in the 1980s, there are no specific sectoral agreements on the green and the digital transformation within the automotive sector for example. This means that there are no specific collective agreements dealing with the challenges that are related to the green or digital transition such as qualifications, reskilling of workers, preparing workers for the transition in a timely manner. According to a trade union officer, there are other more urgent priorities,

following the Covid-19 pandemic and the Russian-Ukrainian war, such as inflation and wage negotiations. Also from employers' side, there is no need for collective solutions; they would rather develop company plans without too much interference. The absence of sectoral plans to deal with the future employment within the sector leaves important issues such as training or preparing workers for the shift to electrical cars to be decided at the company level, creating much room for employers' discretion at the company level to manage the transition as they see fit.

Compared to Germany, trade unions in Belgium take on a more reactive approach by closely monitoring and evaluating the impact of digitalization on employment. The impact of the increased digitalisation processes that are pushed by the green agenda are mostly dealt with at company level. Thus far, they lack an overarching or more centralized strategy to manage the potential impact of a more radical transition on employment. There is a growing sense of awareness of the potential impact of green and digital transition but the discussion has only just started.

“How can we foresee the discussion that can appear after the introduction of new technologies and make a win-win out of it? For example at some point the low-skilled will be processed out and there will not be a job anymore or they will need to make a shift, be reskilled or upskilled. Can we already make a training plan? We need to be more pro-active instead of re-active. This is the most urgent strategy for the trade union.” (Trade union officer, METEA ACV)

Belgian trade unions deal with the issues arising from new technologies by negotiating informal or formal agreements at company level to mitigate negative effects for workers with threats of strikes as a last resort. Trade unions thus monitor the impact of these changes on employment and working conditions and intervene when this is evaluated negatively. However, this may hamper the anticipation of change and adopting a long-term perspective to look for solutions beforehand.

There are strong protective and high participative standards in Belgium, where workers are backed up by substantial rights and economic and social institutions that reduce power imbalances and enhance the possibilities to reach compromises. Trade unions have extensive information and consultation rights at establishment level. In addition, the bargaining power of trade unions is strengthened by protective standards, i.e. statutory minimum wage and ('erga omnes') extension procedures of collective agreements (Bosch and Lehdorff 2017). Although it has become increasingly difficult to reach (inter)sectoral agreements, most reforms have been put in place after social dialogue. The highly centralized and coordinated industrial relations system offers a high degree of 'inclusiveness' which means that there are “formal mechanisms that extend the wages, benefits and working conditions negotiated by workers in industries and occupations with strong bargaining power to workers in industries and occupations with less bargaining power” (Appelbaum et al. 2010:7). This has resulted in high collective bargaining coverage rates and strong trade unions in Belgium. The proportion of employees covered by collective bargaining has a coverage rate of 96 per cent and union membership

is 49.1 per cent (2019). Unlike other European welfare states, trade unions have been able to preserve this relative strong position in the industrial relations landscape. This exceptional position can be ascribed to the fact that they are firmly institutionalized in Belgium. The absence of co-determination in Belgium, however, inhibits the possibility for the trade unions to be part of the management decision-making processes

Workshop Summary (Syndex)

- ▶ Belgium:
 - As of yet, no clear national or sectoral trade union strategy to address questions of just transition.
 - Unions not used to tackling radical change driven by technology. Past instruments are theoretically available, but have historically remained unused (e.g., CBA provisions on triggering consultation because of technological change).
 - No clear visibility on the exact implications of change.
 - Unevenness: fewer risks in companies where unions are strong and have a long-standing tradition.
- ▶ Netherlands:
 - In the impact / potential action assessment stage.
 - Job content and quality not a typical objective for trade unions. Collective bargaining focused on wages, pensions.
 - Fragmentation could be a problem. A more unified approach would be necessary, at least at the sectoral level, but industries are fragmented (chemical, energy).
 - The need to raise awareness. Union members are rarely conscious of the risks.
- ▶ Austria:
 - No social dialogue on the national R&R plan.
 - Co-determination offers a strong basis and grants unions an institutional role in assessing the transition at all levels
 - Works councils are also a strong instrument, but members are not always aware of the implications of technological change.
- ▶ Germany:
 - Awareness raising already for several years.
 - Co-determination allows unions to assess the transition on the ground and contribute to the debate at all levels from the very beginning. Formally, it does not offer unions the possibility to veto strategic decisions by employers.
 - Historically defensive position: protecting jobs threatened with delocalization to low-cost countries.
 - The risk of compromises in terms of wages and working conditions persisting, as delocalization plans are boosted by the green transition. Considering shifting strategy with more offensive “future-oriented” collective bargaining agreements.
 - Despite strong sectoral organization, workers in smaller companies in the upstream supply chain might be left behind, since tackling complex issues requires powerful unions that are typically present only in large companies.

2.2. Southern Europe, potential pincer effect

The impact of the twin transition is likely to be high in particular regions in Southern countries with great uncertainty about the future and possible relocations of companies to Eastern European countries. In Southern countries, collective bargaining is significant, but the degree of centralization is only intermediate. There is a lower degree of coordination due to fragmentation of both trade unions and employers’ organisations. Trade unions have comparatively weaker organizational strength and bargaining power. Here, the government also plays an important role in economic governance and in the tripartite industrial relations system.

2.2.1. Good company-level agreements and state interventions

In France, the automotive sector is undergoing tremendous changes in the upcoming decade with the switch in production to 100% BEV (Transport & Environment, 2021). Social dialogue at the company

level allows trade unions to anticipate these changes through the information and consultation rights. Each year, works councils need to be informed and consulted on strategic orientations and its consequences e.g. in terms of employment, skills, or work organization. This puts trade unions in the position of negotiating the issues arising from the company's strategic orientations.

In response to the pandemic that hit France particularly hard, the state developed a national recovery plan to invest and keep jobs in France (i.e. 'France Reboot'). A significant amount of more than €1 billion will go towards financing training/career change for employees in declining business sectors and for job seekers via existing schemes. The French state is the most powerful shareholder of Renault that has come under pressure to preserve jobs and keep EV technology in the country. Renault Group has signed partnership agreements with Envision Automotive Energy Supply Corporation (AESC), a former Nissan subsidiary acquired in 2018 by China's Envision, and Verkor of France to supply electric vehicle batteries for its EV production hub in northern France. French president Emmanuel Macron confirmed on June 28th 2021 that AESC will invest €2 billion to build a battery cell production site next to the Renault Group factory in Douai. The factory would create 2,500 new jobs by 2030. The French government will invest €200 million in the project. The gigafactory, whose construction will take place between 2022 and 2024, is set to produce 9 GWh per year and will mainly supply the Renault Group from 2024. It could increase its capacity to reach an annual production of 24 GWh in 2030. "The combination of these two partnerships with Renault ElectriCity will create nearly 4,500 direct jobs in France by 2030, while developing a robust battery manufacturing ecosystem in the heart of Europe," Renault said in a statement²². Renault ElectriCity brings Renault's three manufacturing sites at Douai, Maubeuge and Ruitz employing a total of 5,000 people, together to create the largest and most competitive EV production facility in Europe.

Social partners were able to make agreements on the social rights of the employees and the creation of Renault ElectriCity as of 1 January 2022. The new division aims to produce 400,000 vehicles per year, create an additional 700 jobs at the region, and should also see the integration of a battery factory on the Douai site, in partnership with the Chinese group Envision. Although, it provides guarantees to the employees of the new division in terms of remuneration, organization of working hours, and management of mobility, it also confirms the care-out of the new entity, which is likely to have some negative consequences for workers in terms and conditions. Additionally, it specifies the structures of social dialogue and reaffirms the importance of social dialogue as key to the group's performance. It also organizes the development of skills, key for the group's electrical transition, the evolution of professions and ensuring the employability of workers.

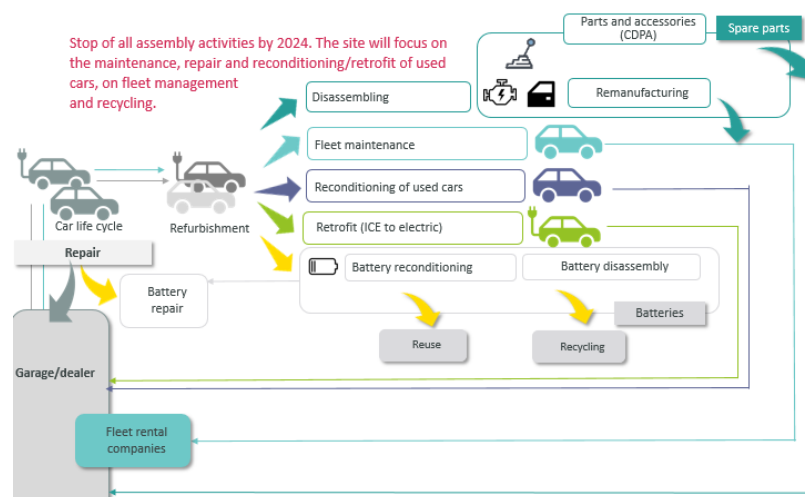
Renault plans to transform the Flins plant into the first European factory dedicated to the circular economy of mobility. The company is currently doing assembly, Parts (metal sheets and deep drawing)

²² [Renault Group places France at the heart of its industrial strategy for EV batteries - Newsroom Renault Group](#)

and Remanufacturing (refurbishment). There are about 4000 workers. The project is to convert the Renault factory in Flins into a 're-factory', which is a new business model where they plan to stop their current assembly activities by 2024 and focus instead on the maintenance, repair and reconditioning/retrofit of used cars, on fleet management and recycling. At the Douai site, the Megane E-Tech electric car is seen as the way forward for the brand's future. According to Renault, the car will be 90 per cent recyclable. Each vehicle will use 28 kilograms of recycled plastic in its construction and its materials will also be reclaimed at the end of its life. The recycled materials will be re-used at a new Gigafactory designed for this purpose in Douai in the north of France. The new Gigafactory will open its doors in 2024 and will have a focus on recycling the valuable metals used to make lithium-ion batteries. The employment in the new re-factory activities is expected to partly compensate this stop of production. By 2030, Renault plans to employ 3,000 people in Flins (from 4000 employees in 2021). This requires staff retraining, however, the company will also call on subcontractors to replace Renault employees. The training and reskilling includes internal recruitments at the Flins plant on the one hand, as well as certified training program, consisting of a common core curriculum (after-sales strategy, sustainability of materials, recycling, etc.) and training courses more specific to the Factory VO (electromechanics, smart repair) on the other hand.

Renault Group has also launched a Refactory project at the Seville plant in Spain.

Figure 5: The 'RE-FACTORY': A new business model (Source: Syndex)



Anticipating future long-term needs and preparing employees as well as possible for future developments is considered an essential element of the project's success. It is a response to the demand to maintain jobs in the French automotive industry. However, trade unions in France face many challenges to manage the transition such as the organizational strength and bargaining power to reach collective agreements necessary to tackle the challenges in a more inclusive and encompassing way.

Workshop Summary (Syndex)

- ▶ Renault Electricity: A new Renault subsidiary (Douai + Maubeuge + Ruitz), EUR 3bn investment, integrated BEV manufacturing, 400k vehicles / year.
 - Sites currently threatened by low volumes.
 - Creation of 700 new jobs.
 - Emphasis on skills and training.
 - The company demands increased flexibility and lower labour costs.
- ▶ What about Renault's plants in Spain?
 - Combustion engine technology moved from France to Spain (for ex., gearboxes from Ruitz).
 - Practices pioneered in France portable to Spain?
 - Agreements on information and consultation + training (Spanish chemical industry, SEAT).
 - Spanish unions also faced with choice of jobs vs. increased flexibility & lower labour costs.
- ▶ Multinationals first addressing the question of transition/s in their home countries.
 - Greece? Italy? Portugal? Spain?
 - A potential pincer effect: home countries and cheaper Eastern periphery.
- ▶ "National champions"?
- ▶ CGIL negotiations with ENI concerning the reconversion of petrochemical capacities to produce biodiesel.
- ▶ Planned acceleration of green/digital transitions + COVID-19 may require a revitalization of industrial action: strikes in Italy to push for union involvement in national policymaking.

2.2.2. Tripartite industrial relations system

Decarbonisation poses a great challenge in chemical and energy sectors. Main challenges present itself in reconverting production lines as well as in terms of reskilling the labour force.

Italy faces additional challenges due to the industrial structure of the country, i.e. most of the Italian enterprises are small and medium sized, the lack of R&D centres and the lack of production lines for high value technology. Italian trade union representatives have raised their concerns on dealing with the accelerated pace of the twin transition:

"In these conditions, the energy and chemical industry sectors could face significant layoffs as companies restructure their supply chains and relocate production." (FILCTEM CGIL representative)

The manufacturing sector in Italy is heavily reliant on imported gas. Despite heated debates on whether natural gas can be considered an acceptable source of energy during the transition, gas consumption remains particularly relevant for Italian manufacturing precisely because of the significant social impact in various sectors, which are highly dependent on the usage of gas. Presently, 38% of energy produced in Italy is done through renewable sources (geothermal, biofuel, with solar and wind already making up to 23% of the respective 38%). However, the biggest problems faced by the sector have to do with the

storage of energy – Italy has no production lines for batteries to store energy, and with high value components – Italy has no production plants of wind turbines. Trade union representatives see opportunities in reskilling programs in these two directions to help secure employment as well as new investments. As regards the remaining 60% of energy produced in the country, seven refineries have to be converted and repurposed for energy production out of renewable sources.

Trade unions demand a larger role of the state. Trade union representatives have therefore listed some concrete proposals: establish an industrial policy with specific objectives that can protect jobs in sectors where the threat of major labour redundancies is greatest, and an industrial policy that comprises concrete plans for new production lines (onshoring R&D facilities as well as onshoring comprehensive parts of the supply chains for the automotive and energy sectors); set up an agency for the sustainable development of the industry funded by a special fund for the industrial transition (ideally between 1.5% and 5% of GDP) to retrain workers with a focus on digital and industrial technology competences; make legislation to limit re-location of production chains as a matter of corporate social responsibility (particularly when companies receive state subsidies); and reduce excise taxes on biofuel (at least to a level equivalent to that of traditional fuel), and to provide state incentives to generate a domestic market for biodiesel in Italy as part of the sustainable transition process.

Trade unions rely on good social dialogue, e.g. specific industrial plans for energy and chemical industry, as well as on comprehensive national strategy of reindustrialization along the lines of emission reduction targets set by the European Green Deal. There are examples of good agreements in Italy. For example in the energy sector, Filctem-Cgil, Femca-Cisl and UILTEC have signed an agreement with oil group ENI, which combines early retirement and new hiring. As many as 900 workers may take voluntary retirement, whereas 500 new staff will be hired in order to facilitate the transformation to low carbon emissions by introducing new skills. The project will be accompanied by a training plan for some 20,000 workers. The training plan provides for 1 million hours of training per year, on subjects related to the circular economy, energy transition, digitalisation, and sustainable development. Alongside this, ENI will encourage voluntary training. The procedure of ENI is part of the Italian 2021 finance law that aims to foster generational renewal in large companies. Two agreements have been signed, one with the Ministry of Labour, the other between the company and the unions to manage the process. The generational and skills renewal program is also part of ENI's redefinition of industrial relations and guide to energy transition and digitalisation.

With ENEL, trade unions have secured an agreement, which includes assurances that all workers who transition from carbon-based production will be offered job placements inside the company.

The latest sectoral agreement in energy includes provisions regarding reskilling programs for workers facing redundancy. The agreement has been expanded to include companies in the energy sector transitioning to all renewable sources of energy.

Italy also has an important automotive sector that is undergoing various restructuring against the background of European Green Deal. The automotive supply chain is concentrated in the North of Italy. Trade union officers are concerned that this will have a significant impact on employment without support from the state:

This kind of sustainable transition already implies significant labour redundancies unless adequate public policies are put in place to avoid unemployment and ensure the reskilling of workers. (FIOM CGIL representative).

The main challenges in the automotive industry is the lack of transparency of companies regarding their upcoming restructuring plans, and the lack of a concrete industrial plan for the Italian automotive industry from the part of the central government. Restructuring plans of companies include the closure of plants and relocation of production lines in other EU Member States. For example, Dynamic Technologies and Speedline have announced redundancies in Friuli Venezia. Other restructuring projects reflect changes in the type of production. For example, in Campi Bisenzio, the GKN has decided to close down the Firenze Driveline production site. As it proceeded with the collective dismissal of workers in the absence of any consultation, the Court has for now blocked the dismissals, but the closure of the plant remains inevitable. In these conditions, the trade union is pushing to negotiate job placements for the workers in the new production plant of GKN. This will be either a production line for machinery needed in the pharmaceutical industry or component parts for renewable energy.

Additional restructuring plans will result in new regional industrial setups in Italy. Stellantis motor group, a leading global automaker, decided to open the new battery factory for electric cars in Termoli and not in Turin. The project will cost 30 billion euros and will be operational in 2025. At the same time, it seems Stellantis wants one single production line in Turin for all Maserati cars. The trade union is currently fighting against this decision and seeks to negotiate the maintenance of existing separate production lines for different cars as a way to ensure occupational levels.

Stellantis renews its white-collar workforce and signed a so-called expansion agreement where 390 voluntary early retirements (within 5 years of regular retirement) will leave the company by November 2021 at the latest and in return 130 young people with professional profiles will be hired on permanent employment contracts. The agreements also provides for a training plan and the use of short time working with a reduction in working hours of 20 percent on average at group level. There will also be paid lay-offs based on a principle of rotation among workers. Professional training will take place during the period of lay-offs and the company will pay workers allowances that will cover, together with redundancy found, the entire salary. According to a joint press release from the Italian metal unions, the result reached is positive, because it protects, renews and reskills the workforce.

Example of a ‘good practice’ in the automotive industry is the collective bargaining agreement with Lamborghini (2020). In this respect, it is important to note that generally CGIL has historically had a good working relationship with the company. This includes the provision of 12-month training hours in e-learning mode (for which normal salary will therefore be recognized) for all workers who, starting from April 2020, will have closing days covered by the Redundancy Fund (CIGO Casa Integrazione Guadagni Ordinaria) and have no annual leave days left from previous years. Additionally, in 2021, the trade union negotiated that 60 temporary contracts be changed into permanent work contracts.

On the issue of new skills and retraining programs, the trade union has requested the continuation of Fondo Nuove Competenze (funded by the national budget and the European Social Fund): this is a nation-wide program instituted in 2020, which allows companies to allocate part of the working time to training programs for workers. The salary hours of the trainees are paid by the Fund in an effort to tackle the need for new competencies in various economic sectors against the background of the pandemic but also in the context of the ongoing digitalization and green transition processes.

A socially just transition and job security cannot be secured in the absence of a concrete industrial policy with specific measures for strategic sectors such as the automotive industry, which faces major labour redundancies in the upcoming period. An industrial plan for the automotive industry should comprise new production lines particularly in the auto-components industry but The Recovery and Resilience Plan of Italy does not contain these kinds of concrete industrial plans. Trade unions will continue to insist on social dialogue as the best instrument to ensure a socially just transition as well as with mass mobilizations across the country as an effective instrument of trade union negotiation. The state is expected to play a central role in terms of establishing concrete public policies to safeguard employment.

2.3. Northern Europe, combining institutional features that facilitates a Just Transition

The Nordic countries have built up an advantage with regards to the green and digital transition. There is a longstanding tradition of managing restructurings due to digitalization that serves as preparation for managing twin transition. The adoption of new and advanced technologies is seen as necessary to secure the economic model. This has led to strong economies with highly skilled workforces, a high share of renewable energy and low energy prices. In this context, the twin transition is generally positively approached as an opportunity, and new investments for the development of new industries (battery plants, hydrogen, etc.) that will create many jobs in the near future.

There is also a lot of support from the national-political level. For example, the Finnish government has set ambitious goals in climate roadmaps 2019-2021 for each sector in cooperation that will require big investments in new technologies and processes in the sectors. There are also positive employment

opportunities in renewable energy where they are increasing the wind power and solar plants. The biggest concerns come from energy intensive industries that is related to energy supply and imports from Norway and Russia. The Danish government has installed (green and digital) commissions to deal with the issues of the transition. Leaders of the trade unions and employers' associations would give policy recommendations on the digital and green transition.

Industrial policies are developed through high levels of coordination between employers and unions and centralized bargaining that promote a strategic cooperative rationale in labour relations, where organized labour plays a significant role in decision-making process. In such organised corporatism regimes, employers are inclined to invest in the skills of employees and thus interested in long-term employment relationships. Union density in industry is high (80-90%) and they have centralized and sectoral collective bargaining that cover the working conditions across different sectors and companies. Trade unions are generally involved in all relevant issues in society including the green and digital transition. In such inclusive employment regimes, trade unions focus more on supporting people to make successful transitions between jobs, rather than on job security.

In the Nordic countries, people are able to make job-to-job transitions relatively easy. This is a prominent feature for example in the so-called Danish 'flexicurity' model. In this model, there is little protection against dismissals, but there is a high level of income security through generous unemployment benefits and strong active labour market policies (Bredgaard et al., 2006). The role of the social partners, i.e. trade unions and employers' organizations, is considered important for developing and legitimizing this model. In Finland, there is a system in place, a 'transition security process', with the aim to protect people during big restructurings e.g. providing training for people or find new jobs for people. This legislation would help people find new jobs before unemployment, or they would receive unemployment benefits, which can be combined with an education.

The Nordic trade unions share an optimistic outlook and feel that job losses and wins roughly balance each other, without any dramatic negative effects. They see that there are potential job losses for part of the workforce due to further automation and robotisation, but also that new jobs are being created due to investments in current and future companies, for example in relation to the green transition in the automotive industries (battery plants) and in the steel industry (new steel work). Moreover, it is viewed as essential for people in Nordic countries to secure their living standard since they need to compete on high-technological advances and a high-educated workforce to gain higher wages and attract investments.

The cases in the Northern countries show how trade unions manage the transition within an institutional setting that creates an opportunity structure to do this in line with the just transition approach.

Workshop Summary (Syndex)

▶ Economic fundamentals

- High-tech economic specialization, not competing on labour costs (high skills, cheap/renewable energy, labour cost concessions not on the table).
- Off-shore wind, CCS, hydrogen, EV battery plants (still early, but positive initial impact).
- Acute labour shortages.
- Some exceptions: oil & gas (NO), energy-intensive industries (FI).

▶ Strong welfare state

- “Flexicurity” greatly facilitating job transitions.
- Unemployment benefits + reskilling opportunities.
- Comprehensive state-funded education system.

▶ Strong social dialogue

- Focus on people, not on jobs.
- Centralization of collective bargaining: sectoral and national-level approaches backing comprehensive roles for unions at company level.
- Both employers and unions invest heavily into education/reskilling.
- Some exceptions: localized outcomes (NO), passive employers (FI).

▶ History of embracing technological change

- Habituation to constant job and skills changes.
- Long experience in managing digitalization serves as preparation for managing green transition: social dialogue, reskilling, institutional consolidation, devising of adequate instruments (e.g., LIFO to protect older workers in SE).

▶ Not all is perfect:

- Some changes might not be as smooth as usual: the case of the Neste refinery closure in Naantali (FI).
- Employers are not always cooperative and aware of the implications (DK/SE vs. FI).
- But still...

2.3.1. Good social dialogue in Northern countries

Swedish trade unions have a positive future perspective regarding employment. Digitalisation and automation – though related to significant change and employment impacts – are the main drivers of productivity increase and regarded as a process that is generally important for the global competitiveness of Swedish manufacturing. According to a trade union officer: “*Automatisation, computerization has led to job losses, but it has also helped unions to secure better jobs*”. Plus the technological advances are viewed as necessary in order to compete with low wage countries: “*We have to be at the forefront of technology to be able to secure the living conditions in Sweden*”. In addition to technological advances and high technological workforces, a trade union officer adds: “*Sweden has become more interesting for these investments due to low energy prices, mostly green energy, and low CO2 emissions in the energy sector.*” So, trade unions embrace the change connected to the twin transition as a way forward to keep economic activities and employment that is characterised by comparatively high wages and above average working conditions in Sweden.

In Sweden, wage levels and general working conditions are negotiated on the national level: “*Our tradition is that we try to save the person that would lose their job or face transition, by investing in education and helping them transition into a new job.*” This person-centred approach is facilitated by,

on the one hand, the labour market structure in Sweden where there is a labour shortage and where currently new jobs are being created, and, on the other hand, by the institutional framework that supports job-to-job transitions by offering accessible education and training facilities to people to re- or upskill: *“the government makes education possible for members if they want to transition. Our members can choose to take a year off - companies cannot say no, they will be able to have almost the same wage, and choose their education”*. Retraining is part of the Swedish tradition, where people are used to adapting to changing work environments. These training efforts will likely become even more important in the green transition.

In Sweden, union’s local officials are on the supervisory board of the companies, therefore, they are involved in the strategies. In general, trade unions and employers associations have good collaborations on national and regional level and make agreements on a whole range of issues such as industrial policy, transport, R&D, and education. Unions and employers have for example set up schools to help the industry to have the competences that is needed. During the pandemic, digital platforms have been developed that are currently being evaluated in order to train members to get new skills to make a transition:

“For example, in SKF, they changed production from mostly manual assembly to surveillance and programming machines [...] They gave the workforce the possibilities to follow education online....now it is the most productive factory. Not all made the transition, but most did, and others were supported to a new job.” (Trade union representative)

According to the trade union representatives, good social dialogue help them to save and secure jobs: *“In [Steel company] with 1000 members, if you would change to electric furnace and you don’t bring in hybrid, we could lose 700 jobs, but due to good dialogue with management and with other types of investments, which could lead to quite a few jobs and we could make the transition in a decent way.” (Trade union representative)*

Also at the Scania plant (automotive sector) in Sweden there is a good collaboration with management and trade unions are involved in future company plans: *“We are on board of the company so we have a good idea on strategy regarding these topics, electrification in general and investments we do in different segments of our operations.”* In this plant, they are in the experimental phase where different investments have been made to evaluate which will be the future jobs. There is a new battery factory that is very highly automatized, which would probably lead to less jobs, but also better, more highly skilled jobs with good in-house training and re- and upskilling opportunities.

One of the main challenges for trade unions in Sweden is to secure their high union density, which gives them the strength to guarantee the right working conditions such as fair wages and pensions. Therefore, they need to keep union density at the workplace high (now close to 80-95%) and organize the large number of people that will be needed in the new factories that will be built e.g. new battery plants in

the North. Although there is a strong legislative framework for union organising (*“In Sweden, they cannot avoid us by legislation, we have the right to organize, if we have one member, we can demand a collective agreement”*), they will need to find new resources to organize these people (*“So we need to get this high numbers in the new factories, otherwise we lose our legitimacy”*). On a more national/political level, trade unions are urging the government to set up the policies and right infrastructures that is needed to make the transition, e.g. investments in big electrical cables, faster permits for example for mining of raw materials, or building energy grids to scale up energy supply.

Other positive examples can be found in Denmark. Their recent national collective bargaining agreement (CBA) explicitly mentions the consultation of workers in case of a large transition (green or digital) - even though this was generally the case (both in formal and informal agreements between both parties), this was added to the CBA due to the acceleration of the transition. Trade unions approach the digital and green transition as very positive in Denmark because it is considered beneficial for their workers. The majority of the job stewards see benefits in terms of the creation of jobs, better working conditions (less injuries, accidents, or health problem) and increasing productivity. For example:

“A large company that produced ships that was very labour intensive was closed down because we could not compete with the rest of the world on wages and you could not really robotize such a manual process [...] We now have at that particular place one of the largest robot clusters of Europe [...] where our members earn more money and there are more jobs.”

Specifically for the green transition, the Danish companies would have a competitive advantage due to the fact that they are already frontrunner in production of green energy e.g. wind mills and green, energy saving products. Moreover, the phase out of fossil jobs by 2050 provides a larger time span for the social partners to find good solutions for workers as jobs that are lost will be created. For example: *“We have a big industry with fossil fuels, right now the transition will go to carbon capture storage (CCS) and our calculations show that we will end up with the same amount of jobs. So the jobs that will disappear will be created again on the same geographic location.”* (Trade union representative)

The job-to-job transitions are facilitated by a good social safety net provided by the welfare state e.g. free education and generous unemployment benefits from social security system, on the one hand, and from the union and employers on the other hand, through a well-functioning collective bargaining system with good collaboration between trade unions and employers organizations that use their financial resources to support their common objectives such as educating, reskilling people (*“we pool all the money that we get and use it for people who need it to pay for education”*):

“If a factory closes down or an area in Denmark is hit by unemployment, we have a lot of money, not only financed by the state (you can get that as well), but by the employers and unions together, specifically to deal with what skills/competences are needed for those people. That has been

particularly used to upskill the labour force when it comes to robots and technology.” (Trade union representative)

2.3.2. Time to prepare workers is crucial for a Just Transition

Finnish trade unions are part of some of the working groups at national level, but there are no company or sectoral agreements that specifically deal with the transition. One exception is the peat industry that will phase out by 2030 where they have made an agreement. There, the funding of the European Just Transition Fund and support from welfare state and reskilling programs are used to manage the transition. This, however, does not cover many workers and the industry exists mostly of self-employed entrepreneurs. The same is said for the gradual phasing out of coal producing plants, that are small, there are not too many workers, and the workers (experts) can easily move to other jobs.

The main challenge for trade unions is related to employment and skills. According to the trade union officer the discussion on the impact of the transition on employment, what qualifications and which training are needed in the future is missing in the sectoral road maps that are described as being mainly business plans for different industries. There seems to be no clear strategy to address the need to re- or upskill a significant part of the workforce during this transition. The Finnish trade union representatives point out that the inclusion of employment and re-skilling policies in Finland is not very strong and companies do not take on this responsibility:

“Companies think that skills and training should be produced or given by somebody else than the company, meaning the government or the person him/herself. Of course bigger companies own training systems, but the average is 3 to 6 days per year. When the company is changing the production for instance, they often ask help from government for training and the attitude is that society should give skilled workers to companies, instead that companies should train workers themselves.” (Trade union representative)

Trade unions thus urge companies to take up more responsibilities for providing training opportunities for workers. In addition, worker representatives and workers should be informed in a timely way in order to be able to prepare in advance for upcoming changes. This was lacking in the case of Neste in Finland, where the big fossil oil company decided to change their production mode and focus on more sustainable products. However, this information was not communicated much in advance, leaving little time for workers to prepare for the transformation, and the company had put forward little alternatives for the workers. As a result, many workers were faced with unemployment. Such examples show what could happen when climate change pressures the company and why Just Transition measures are needed.

...they all got unemployed, some found other jobs, some retired, but there was no Just Transition. This company should have discussed this earlier, so we could think about employees, whether they

could move to the new factory and train them, or if they wanted, they would have time to change jobs. Well they did not do that, they just said, well tomorrow it is finished. (Trade union officer)

Another challenge for trade unions is related to the labour shortage that is also due the country's demographic ageing population. The higher incidence of agency work has triggered a new wave of migrant workers from Central and Eastern Europe, and has raised a number of issues related to the respect of labour legislation, social integration, and effects on Finnish local labour force. Elderly people are often targeted in restructuring, while early retirement schemes have become more difficult and unskilled workers have been faced with fewer jobs in manufacturing.

3. Central and Eastern Europe (CEE), collective bargaining under pressure

Central and Eastern European (CEE) countries are confronted with real challenges in dealing with the twin transition. The economies are highly dependent on fossil fuel or carbon-intensive industries so there is a high share of employment in energy-intensive sectors that needs to prepare for the transition to a decarbonized economy. These countries are highly dependent on foreign ownership where investments are based on cheap labour costs. Employers are thus generally less inclined to invest in education/training opportunities to up/reskill worker or engage in long-term employment relationships. Additionally, there is low social protection offered by the state, with little educational and training opportunities that facilitates workers' job-to-job transitions.

In addition to the economic realities in CEE countries, trade unions often face limitations to managing the digital and green transition, which informs their concerns and scepticism about Europe's decarbonisation policies that will likely have a severe impact on employment. These countries often lack the firm legislative and institutional framework that would allow social partners to have good industrial relations necessary to deal with the changes in a way that prioritizes workers. There is low collective bargaining coverage and low organizational density, resulting in a less effective and fragmented organized labour. Bargaining usually happens at decentralized or company-level, where labour is excluded from a significant role in decision-making regarding investment and restructuring. The lack of information or involvement in national level or company-level plans makes the future insecure. Trade unions lack legislative support or power resources that allows them to control and manage the twin transition.

Many CEE countries, such as Slovakia, Hungary, the Czech Republic, and Romania, have a significant share of their GDP linked to the automotive sector. Because these plants in the CEE region are more specialized in the production of parts and components for combustion engines, they will be seriously impacted by the green transition and either disappear or change production altogether, which would imply that these companies would need big investments for the transformation. The automotive industry, however, is largely controlled by foreign companies and decisions are made in corporate

headquarters abroad (Jürgens and Krzywdzinski 2010). The impact on employment is therefore highly uncertain in these regions.

National governments have generally not promoted good social dialogue for good quality jobs. They have often provided incentives especially for foreign capital. In fact, governments have been careful to keep minimum wages low and give companies far-reaching opportunities to use temporary forms of employment (agency work, fixed-term contracts) (Jürgens and Krzywdzinski 2010; Krzywdzinski 2014b; Maciejewska et al. 2016). Meanwhile, governments have been reducing the security of bargaining. This involves measures that affect trade unions' institutional power resources, such as tightening representativeness criteria as a precondition for union recognition for bargaining purposes; making it easier for non-union representation structures to negotiate company-level agreements and, particularly in central and eastern European countries, degrading the regulatory role of tripartite social dialogue institutions (Muller et al, 2019).

The lack of governmental support and institutional features, which does not support social dialogue, does not offer a good starting point for a Just Transition. On the other hand, there are still a lot of investments in these countries, and the transition is used by companies to relocate their business to CEE countries at the expense of West- and South European countries.

Workshop Summary (Syndex)

▶ Economic dependency

- Very high share of foreign ownership.
- Lack of strategic visibility and control.
- Subordinate positions in transnational value chains.
- Governments appease foreign capital primarily according to narrow economic and quantitative criteria, disregarding job content and quality.

▶ Weakness of national-level tripartism

- Historically on the decline.
- Legal frameworks limit effectiveness.
- Employers preferring alternative channels to influence public policy.

▶ Sectoral social dialogue has been all but eliminated

- Decentralized collective bargaining actively pursued by foreign employers and turned into policy over the past 10-15 years.
- Lack of coordination even for typically sectoral issues like skills and training.

▶ Company-level social dialogue tends to be narrow in scope.

- Wages remain top priority for employees and trade unions.
- Quality of social dialogue varies widely depending on corporate approach and local trade union history.
- Local management has limited capacity and willingness to engage in discussions on strategic issues.

3.1.1. Lack of social dialogue and institutional support for a just transition

The trade union representatives across several central and eastern countries indicate that there is no social dialogue on the twin transition. There are collective bargaining agreements with employers, but these are focused on bargaining issues like wages. There are no concrete plans of the government. Additionally, the economic structure and dependency on foreign capital makes it difficult to anticipate change. Sustainability, future investments, jobs and working conditions depend on what will be decided in other countries and on European directives (e.g. minimum standards could give some stability for people). This makes it difficult for worker representatives to assess the impact of the transition: which jobs will be lost? Which jobs will be needed? This insight is needed in order to adapt our strategies in terms of education and training and industrial policy.

Croatia

In Croatia, the future perspectives are bleak as they face many challenges. Looking at the oil and gas industry, there have been many restructurings due to natural decline in production and digitalisation processes. This comes with an enormous loss of members for the trade union organisation. The European Green Deal is now urging to decrease production from fossil fuel energy. This means that many firms will need to adapt, but there are no reskilling plans. At the company level, they make agreements on salaries and have made protection and safety at work core issues for which they have been able to set up occupational health and safety committees.

The main concern for trade unions is the lack of reskilling strategies, especially for the workers that are left behind, and the lack of insight in the company plans. There are plans of companies to make a shift towards renewable energy, however *“we don’t have real plans on how many people/workers will be involved in this production, in these plans. That is a big problem for us trade unions and for whole workforce in oil business”*. Trade unions see the workforces diminish over time. On the one hand, there is an ageing workforce, where many of the workers are waiting retirement and are not interested in reskilling: *“there are many people above 55 and they want to get fired so they will have severance pay which is better in our collective bargaining agreement than in law”*. On the other hand, employers have not invested to attract and train young workers. Moreover, many young people (have) migrate(d) to other countries where wages are higher than in Croatia. As shareholders, the state supports the transition and sustainability of the companies, however, it does not get involved in work-related issues such as qualifications of workers. Due to these insecurities in the sector, trade unions recommend their members to reskill for other jobs. However, this would be at their own initiative and at their own costs.

According to the trade union representative, the awareness and importance of the impact of the European Green Deal and Just transition has not yet reached all trade union leaders and affiliates, but there are some steps in the positive direction: *“Government included us in the resistance plan (RRP), so we are in working groups and participate in developing this plan, something is moving.”*

3.1.2. Positive steps for more trade union involvement

Czech Republic

Regional social dialogue institutions in place, but their effectiveness varies.

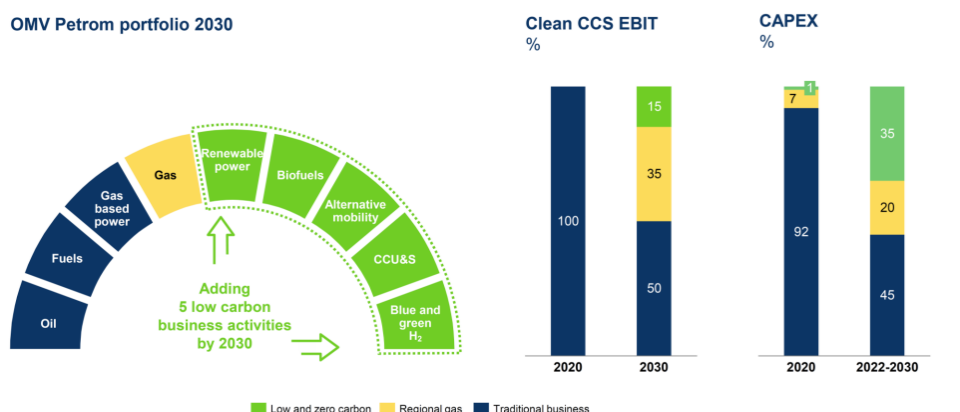
Romania

Positive examples came from the steel and energy sectors in Romania. Romania has an important oil and gas sector, and produces 90% of their own consumption, which makes them less dependent on imported gas compared to other countries. In line with the European Green Deal, the government has set ambitious climate goals where they collaborate with oil and gas companies to develop green transition plans. In Romania, employers see opportunities in energy production and there are projects in the pipeline that would enable them to export to neighbouring countries. For example, Rock Tech Lithium invest 400 mln Euro in a factory in Romania.

There are examples of good social dialogue within the steel sector on company level. For example in Tenaris that is a leading manufacturer of pipes and related services for the world's energy industry and certain other industrial applications and also supply pipes and tubular components for low-carbon energy applications. Tenaris production is exclusively based on EAF technology (the cleanest available). EAF CO₂ emission is three times lower than the traditional method of making steel in blast furnaces (BOF) and is one of the pillars of decarbonization and a sustainable alternative. The company invests in new production line for airbag components at its component center in Romania to serve the automotive sector. The investment includes up-to-date technology with an automated testing process in a more cost-effective manufacturing process. Unions are actively involved.

There seems to be a relatively good social dialogue with Concordia (employer confederation) in the gas and oil company Petrom. The company has recently unveiled its strategy for 2030 where they announced a transition towards green activities i.e. shift and invest in renewable energy. In 2030, 35% would be directed towards these new low carbon business activities, however, this is still theoretical.

OMV Petrom portfolio 2030



During the workshop, however, the point was raised that there are no sectoral collective bargaining agreements and that collective bargaining coverage is very low (14%). The employers organisations nevertheless stated that they are open for discussion: *“the law does not prohibit us from talking. Right now sectoral agreements are gone, now we need to see if we can come to an agreement”*:

“We are discussing together with authorities in order to find the best solution for social dialogue to be able to include trade unions, we are still looking for the best solution, to have a good amount of labour force, of course government is responsible to help us by not fighting us and let us do our business, at least in oil & gas things are quite well.” (Employer association, workshop industriAll)

A sectoral agreement is considered a top priority, because there is a need to have more clarity on the issues related to the transition e.g. *“how many jobs will be lost or will not exist in future and which related jobs will we have in the future after the switch from carbon footprint jobs to other”*.

The 2011 Social Dialogue Law passed under pressure from the Troika, and foreign investors decentralised collective bargaining. The Romanian unions now hope for a reform of the law that is currently under review by the Romanian Parliament. One of the concerns is the modifications of social dialogue law that they have been discussing with employers union: *“it is important for us to have a joint vision regarding the social dialogue law. We can change things a little and put this law on the table”*.

4. Risk of increasing regional inequalities

The impact of the twin transition is context-specific. It is clear that there are significant differences across European regions in terms of economic realities, industrial footprint, dependency on foreign own capital, institutional settings, industrial relations, union strength, and social and cultural traditions. All countries thus have different starting points. This means that the twin transition will have a different impact depending on the region. Existing regional inequalities could be enlarged or new inequalities could be created when the transition is not managed in a way that recognizes regional challenges. Additionally, different contextual settings and industrial relations systems affect the degree to which trade unions are able to manage a Just Transition.

4.1. The battery race in Europe

Many states have decided on phase-out dates for fossil fuel combustion engines. This has boosted the share of electrical vehicles (EV) drastically in past years. The rapidly growing electric vehicle sales across Europe has driven the need to produce batteries in high volume. To accommodate to the accelerating EV market, Europe has set out ambitious plans to create competitive battery cell manufacturing in Europe supported by a full EU-based value chain, as most of the EV battery production is currently still located in Asia. China, one of the most important export markets, made a political decision in favour of electric cars as a future alternative. But even on the German and European

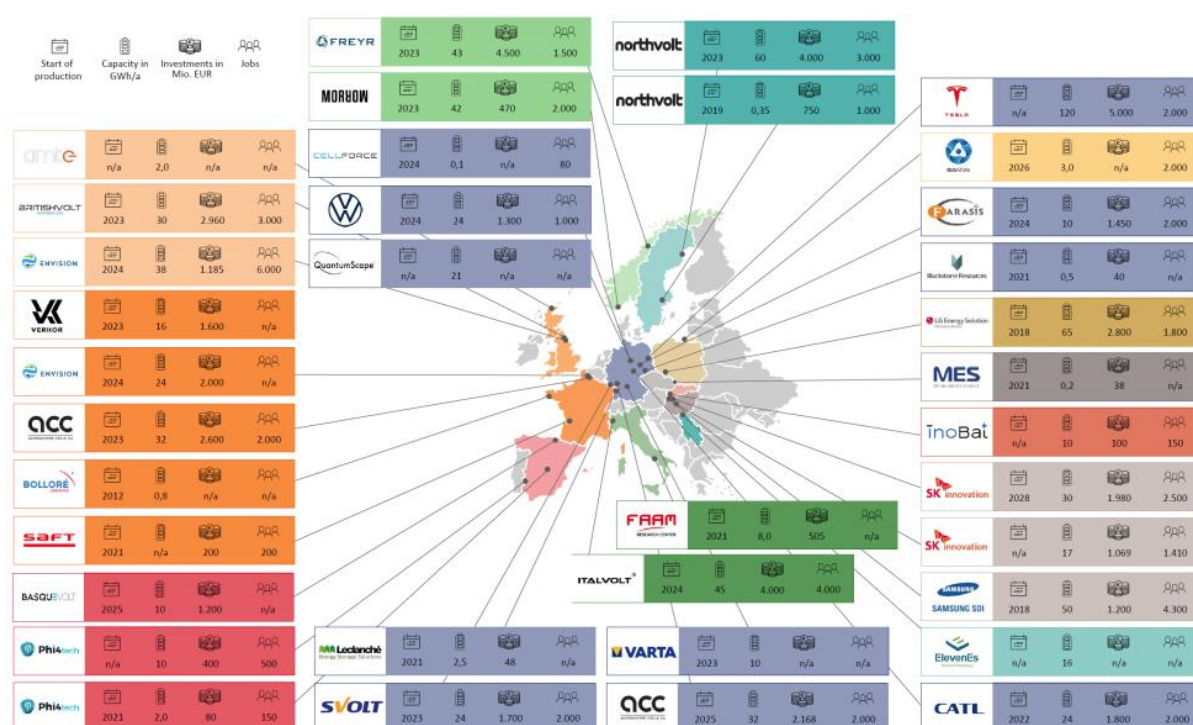
home market, the tightened CO2 limits for the automotive industry by 2030 can only be achieved in reality with battery-electric drives, i.e. purely battery-powered vehicles and plug-in hybrids. Batteries are set to become the new major contributor of added value.

The demand for batteries will double in the next two to three years. This has led to a race in Europe to set up battery plants in order to cover future needs. To promote EV and create green jobs in EU, the Member States started investments to develop local EV battery capabilities.

The auto industry has been confronted with geopolitical and economic challenges e.g. pandemic, war, chip shortage, shortage raw material, and energy prices fossil fuels that has shown the fragility of global supply chains and high dependencies on foreign primary products. Shift from cost competitiveness to diversification. Today, we see the industry is transforming and trying to develop strategic autonomy, secure access to raw material, focus on recycling, and gain control on whole battery value chain. Battery cell production across different EU countries such as Germany, Sweden, Hungary, and Italy have become interesting because of their energy supply, logistics, technological advances, and/or high support/subsidies from the government. This would increase EU's share in global battery cell production to 25% in 2030, and create about 52.000 direct jobs within EU. This would make Europe the second largest producer of batteries after China by 2030.

According to a report from the non-profit Transport & Environment, by 2021, 38 gigafactories are being built or planned in Europe and the UK, 27 of them with full or partial financing. The biggest market is set to be in Germany that leads the way for the future of European battery production capacity (gigafactories of Daimler, CATL, and BMZ). The Swedish battery maker Northvolt, which is planning to establish one of the region's largest factories, has teamed up with car manufacturer Volkswagen to build an additional plant in Germany. Huge investments are also planned in France and Italy by 2030, that would overtake Hungary, which is currently the second biggest market. Hungary takes the lead in Central Eastern Europe to join the European Battery industry's goals with a strong battery industry in order to achieve the national as well as the European climate-goals. Examples of planned battery cell production sites under public/private partnerships include Verkor in France, Britishvolt in the UK, Italvolt in Italy, Basquevolt-Nabatt in Spain, and Freyr in Norway. Not only European companies have benefitted, for example, Tesla's Berlin gigafactory received some \$1.4 billion in German federal and state support.

Figure 6: Battery cell production sites in Europe (Q4 2021) (Image: IPCEI)



4.2. Diverging job quality outcomes

EU officials announce these plans to create new jobs as industries across the continent increase capacity to supply batteries needed for electric vehicle production. However, it is important to also take into account the job quality in this growing EV battery manufacturing. The different experiences shared by the trade union representatives with regards to the battery plants in Hungary and Sweden shows strong diverging outcomes for workers in this respect that can be related to the different institutional features, industrial relations and employers strategies in both countries.

The Hungarian automotive industry rose significantly mostly due to the expansion of German-owned companies in the past decades, and is now also witnessing a lot of investments in battery gigafactories. Such investments are linked to the advantage of relatively low production costs in Eastern European countries. The presence of a car manufacturer, but also the investments of the supply network linked to the factories are important for the country's economy. The government's plan is "to become the key element in supply chain of batteries, to make Hungary one of the biggest battery producer". Hungary is the 10th largest exporter of electric batteries in the world, and is expected to grow further under growing foreign investment projects from the Far East. In 2020, China was the largest foreign investor in Hungary by volume (with over \$5 billion worth of investment). These battery cell production plants, however, risk job quality degradation. It does not seem to create new jobs for local workers, but rather relies on bad job, which are done by migrant workers: "The government's plan is to fill these jobs to attract foreigners, mostly Ukrainians, e.g. at Samsung factory (just outside Budapest) a lot of Ukrainians working there now, because there is a labour shortage". Moreover, the Samsung battery

plant in Hungary suggests a significant deterioration of job quality: little employment security (temporary contracts), low pay, and bad working conditions (dangerous and unhealthy jobs), where trade union representation is not allowed at site.

In Sweden, the first battery gigafactory is planned in the north, a not industrialized region. In this region with a population of 500.000 people, it is expected to create about 100.000 jobs by 2030. The Swedish company Northvolt, in a partnership with Volvo Cars, will build a second plant in Göteborg, near the west coast. The new battery plant at Scania for example is highly automated, so the trade union representative expects fewer jobs, but also better jobs as these are more highly skilled. The Swedish law support unionization and social dialogue. So there is a right for trade unions to organise themselves within the company, which allows them to represent and defend the interests of the workers. These companies will have to comply with the high standards that have been agreed in the national and sectoral collective agreements. Trade union representatives have indicated that they have already established good relations with the management of the new battery production plants.

In the decarbonisation of the economy, we need to avoid deteriorating working conditions in a race-to-the-bottom, by (re-)establishing strong social rights, protecting the rights of workers at the workplace, and enabling social dialogue.

Summary and Conclusion

The EU mobilised a high amount of public money through its multiannual budget and recovery funds to help the EU as a whole to become climate neutral by 2050 and to transform carbon-intensive regions, in particular to leapfrog fossil fuel use to healthy and clean energy systems and economies. In the allocation of the budgets, specific attention should be paid to the social dimension that ensures that no-one is left behind during the process. Up until now, the council recommendations on the social aspects merely offers soft law, nothing is concrete or binding. The different approaches that arise across various sectors in different countries thus depend on the existing national institutional characteristics, traditions, and economic structures, which risks increasing gaps between employees (high skilled, low skilled) and countries within the EU.

How will the twin transition affect employment across different countries? Forecasts of different scenario's need to be met with caution at this point because there are too many unknown variables. Although the future is uncertain, all sectors will undergo some transformation that is driven by the green and digital transition. In this transformation, we must not only focus on the net effect of job losses and gains, but also on the quality of employment and the ease of the transition or as said by a trade union officer: *"You have to remember the people who are doing these jobs"* (Trade union officer, Finland). There are many questions that we need to be concerned about: how can we manage the transition in a way that allow us to prepare workers in a timely manner, how can we provide (job or income) security for workers during the process? These are major strategic challenges that trade unions must face. The country cases presented in this report may be give more insight in the just transition approaches and outcomes, however, there is no single solution to adequately promote a Just Transition. Trade unions can find different solutions to deal with the 'jobs vs. environment'-dilemma by engaging in the discussion on different levels within their sectoral and national contexts.

Social dialogue has a pivotal role to play in managing labour market transitions and work reorganisations as it can create a level playing field and ensure that workers are not left behind in the transition. The situation is better when there is good social dialogue. This leads to regional differences. There are different collective bargaining systems. Sectoral agreements play a significant role in continental European countries, but also here are the actual degree of centralisation and decentralisation differs in terms of flexibility for firm-level agreements, e.g. Germany (decentralized) versus Belgium (centralized).

The report also shows that different national systems and starting points in economic, social, and environmental terms posit different challenges for trade unions and works councils to manage restructuring. It also shows the need for a coherent policy framework with public support to facilitate a transformation that is of public interest. Although involvement government is necessary, it must involve



trade unions in their plans. Additionally, specific sectoral challenges will require different trade union approaches and strategies.

Effective Just Transition policies need a social dialogue process between governments, employers, workers and their unions to develop plans and measures that will build trust and drive effective transformation. In order to advance towards a greater policy consistency and integration of ecological considerations, trade unions need to connect more strongly the different levels of trade union action and coordinate their actions across different countries.

“The challenges to ensure that such a transition can take place are formidable. Labour’s attention to just transition and green jobs, within an increasingly greater environmental and ecological sensitivity, has significant promise because unions have two centuries of experience in managing complex political economic situations and trying to produce more just alternatives to existing situations. The approach that seeks to integrate society, economy, and environment are most promising.” (Stavis & Ferri, 2015).

DIFFERENT STARTING POINTS HAVE DEEP IMPLICATIONS

	Central/Eastern	Southern	Central/Western	Northern
Status of green transition	Pending / not clear yet / isolated cases	Pending / not clear yet / isolated cases	Started, cases are increasingly numerous	Started, already with some advanced cases
Economic competitive advantage (implications)	Labour cost (+/-)	Labour cost (-)	Labour cost (-) Complexity (+)	Complexity (+)
Social security system	Already weak	Under pressure	Moderately effective	Adapted (functional flexicurity)
Ownership of capital	Foreign (-)	Foreign (-)	Domestic (+)	Domestic (+)
Collective bargaining / social dialogue	Decentralized	Transversal, decentralizing	Sectoral, co-determination	Comprehensive
Experience with reskilling	Formal	Experimenting	Sectoral	Comprehensive

RESPONSES TO OUR INTERPELLATION

POSITIVE

- ▶ **Piecemeal anticipation:**
 - Clearly circumscribed cases (at company or local level).
 - Future-oriented agreements with concrete objectives.
 - Renault Flins ("Re-factory").
- ▶ **Strategic anticipation:**
 - Long-standing effort on multiple fronts.
 - Awareness raising, independent impact assessment, sectoral approaches.
 - IG Metall.
- ▶ **Structural pre-adaptation:**
 - Structural change is habitual for all those involved, including employees and trade unions.
 - Synergies between collective bargaining and social security systems.
 - Denmark, Sweden.

NEGATIVE

- ▶ **Ongoing concerns with no solutions yet:**
 - Awareness of impending threat of restructuring (significant job losses, closure, delocalization).
 - Few instruments to force the hand of employers, who are delaying dialogue.
- ▶ **Pessimism:**
 - Weak trade union position.
 - Alternatives available (e.g., aging workforce).
 - SMEs risk being left behind.
- ▶ **Legacy strategic orientations:**
 - Focus on "bread & butter" issues.
 - Lack of visibility/capabilities to address complex technological/structural change.

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Template for interview summaries

- What are the most important developments in the sector/companies with regard to employment that are linked to decarbonisation or digitalization (e.g. job losses in the context of restructuring, job growth, re/upskilling workforce, etc.)?
How have these changes affected quality of employment specifically (i.e. wages, employment security, workplace representation, working conditions, training and investment in skills)?
- How do trade unions seek to manage these transitions (on sector/local level through social dialogue, collective agreements on strategies of firms in relation to digitalization and decarbonization, work with government on investment plans, recovery plan)?
- In light of the changes/restructurings, are there local, sectoral or national agreements dealing with restructuring? If yes, why and how was the agreement negotiated? Could you give some details on the use of the agreement?
How is the quality of collective agreements (bad/good agreements leading to successful/less successful transitions? how have trade unions been involved as regards to information, consultation and participation)?
- Which main challenges do unions currently face in the sector/companies? How do trade union representatives see this development progress/ how will they tackle the challenge?

Preliminary interview guideline trade union representative

- Introduction
- Digital/green transitions in sector/company
 - Could you give some details on the transitions in your sector/company
 - Are new (digital) technologies important for the company? Why (not)?
 - What is the impact of these technologies in the company? (e.g. reconfiguration of production organization and work as a result of the implementation of new technologies?)
 - How has this development affected employment in recent years (e.g. job losses, job growth, skills/training, etc.)? How has it specifically affected quality of employment

(i.e. wages, employment security, workplace representation, working conditions, training and investment in skills)?

- What are the biggest challenges the sector/company currently faces? What causes this challenge (where does the pressure come from)? How do you seek to tackle it?
- Are local unions actively involved in the process of implementing new technologies? Why (not)?
- Industrial relations
 - Which employee representation bodies exist at the local level?
 - What is the union density on site?
 - How would you describe your relation/collaboration with management in general (e.g. trustful, conflictual)?
 - How would you describe your role in the decision-making process (linked to digital and green transition)? To what degree are you involved?
 - At which level are these digital and green transitions usually negotiated (degree of local discretion/autonomy)? Can you give examples?
- Collective bargaining
 - Did you recently negotiate any agreements with regards to green/digital transition? If yes, why and how was the agreement negotiated? Could you give some details on the use of the agreement?
 - What are the strengths and weaknesses of the agreement?
 - Have there been any major conflicts involving industrial action/strikes in recent years? Why (not)? If yes, could you provide details?
- Final question
 - Which main challenges do local unions currently face in sector/company? What is your personal opinion on how this development will progress/how you will tackle the challenge?

IndustriAll workshops

- 23 November CEE, Prague
- 19 December Southern Europe, online
- 19 January Central Europe (Germany, Austria, Benelux), online
- 25 January Nordics + Baltics + Poland, online
- South-East Europe in Bucharest moved to 22-23 March (1 day for Romania + Bulgaria + Croatia and 1 day separately for the Balkans non-EU countries)
- Roundtable in Dublin 31.03 – 1.04

Table 2: Overview of different parameters

	Sweden	Norway	Denmark	Germany	Belgium	France	Italy	Spain	Hungary	Czechia	Poland	Romania
Population (x1000), 2019	10,200	5,300	5,800	83,000	11,456	67,178	59,817	46,937	9,773	10,650	37,973	19,415
Real GDP aggregates per capita €, 2019	43,840	69,890	49,190	35,980	36,090	33,320	27,210	25,200	13,270	18,460	13,020	9,120
GHG emissions CO₂ e per capita (excl. LULUCF), 2017	5.3 t	10 t	8.6 t	11 t	10,3 t	7,3 t	7,1 t	7,3 t	6,7 t	12,3 t	10,9 t	n/a
Difference (excl. LULUCF) from 1990 to 2017	-26%	3%	-30%	-28%	-19%	-14%	-17%	17%	-32%	-34%	-13%	-54%
Share of renewable energy in final energy consumption %, 2018	55	73	36	16	9	16	18	17	13	15	11	24
Employment rate (aged 20-64) %, 2020	80,8	78,8	77,8	80,0	70	72,1	62,6	65,7	75,0	79,7	73,6	70,8
Unemployment %, 2021	8,3	3,2	4,8	3,2	5,7	7,5	8,9	12,9	4,1	2,4	3,0	5,8
Collective bargaining coverage %, 2016	90	73	82	56	96	98*	100	81	28	33	17*	n/a
Union density %, 2018	66	49	67	17	52	11*	33	13	8	11	13*	n/a

