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BUILDING CAPACITIES AND STRATEGIES OF TRADE UNION INVOLVEMENT IN SHAPING A JUST TRANSITION TOWARDS A SUSTAINABLE AND DECARBONISED INDUSTRY

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LIST OF ABBREVIATIONS

CBAM	Carbon Board Adjustment Mechanism
EGD	European Green Deal
EIB	European Investment Bank
EII	Energy Intensive Industry
ETS	Emission Trade System
EU	European Union
GHG	Green House Gases
IAE	IndustriAll Europe
INDC	Intended Nationally Determined Contributions
JTF	Just Transition Fund
JTM	Just Transition Mechanism
JTP	Just Transition Plan
NEPC	National Energy and Climate Plans
SDG	Sustainable Development Goals
TJTP	Territorial Just Transition Plan
TU	Trade Union
UK	United Kingdom

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A INTRODUCTION

In the past thirty years, the European Union (EU) has always been a frontrunner in climate action. Recent initiatives, including the presentation of the European Green Deal (December 2019), the Just Transition Mechanism (January 2020), the Climate Law (March 2020), and the Fit for 55 Package (July 2021), have further stirred salience and urgency, and reinforced the EU's status of climate leader. While the term 'Just Transition' has its origins in the labour movement (Heyen et al., 2020), it has become one of the key concepts used by the European Commission to refer to its climate policies.

Academic and grey literature indicate that the impact of the transition to a low-carbon economy on the macro-level will be positive and boost employment (Barrington-Leigh, et al., 2015), as is shown in **Error! Reference source not found.**. However, literature also demonstrates that some industrial s ectors are likely to suffer from the transition to net-zero emissions, highlighting reductions in productivity and skills as the main impacts (Huang et al., 2019; Richardson et al., 2014). Moreover, the transition could induce skill shortages in a wide range of sectors, including energy, automobile, energy-intensive and extractive industries (Jagger et al., 2013).

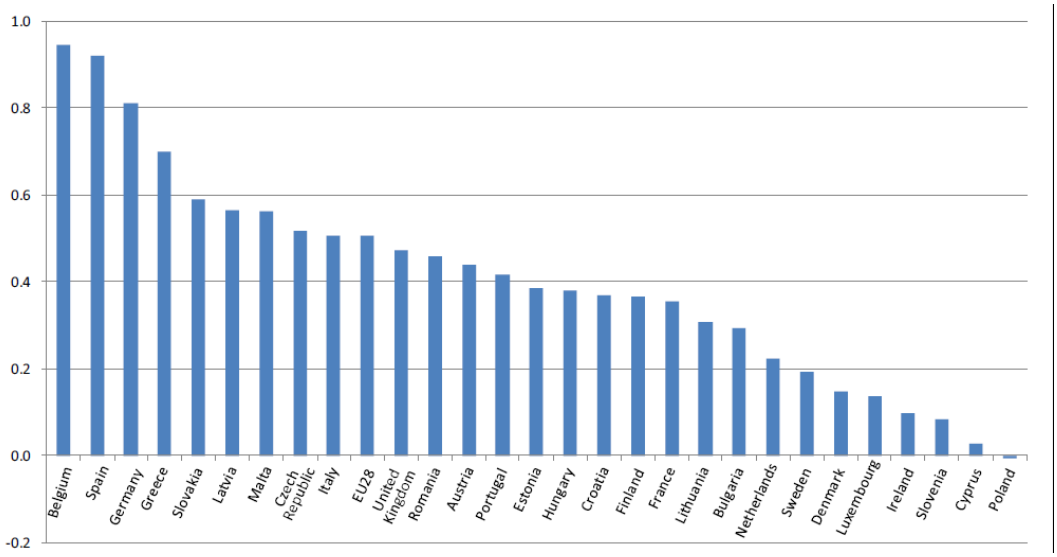

Figure 1 Impact of the climate transition on employment by country, 2030, percentage difference from baseline

Source: Eurofound (2019)

A study conducted for the construction sector, for instance, highlights the role of acknowledging the importance of labour as a key factor of the supply chain (as a stock), but also as a potential driver that can enhance the positive effects of the transition – providing additional opportunities (Clarke et al., 2017). In general, scientific and managerial literature focuses predominantly on the role of technology in the ongoing transformation of industrial production processes (see for example, Salkin et al., 2018). However, much less is known about the actual role and involvement of workers and their representatives in the transformation of industrial production.

The current study aims to better understand what the Just Transition could mean for European industrial sectors, with a particular focus on four (groups of) sectors: automotive, energy, energy-intensive and extractive industries. The study does this by analysing a large number of decarbonisation initiatives in which trade union (TU) actors have played, are playing, or will play a role. The scope of the study covers all levels of action, including plant level, company level, sector level, regional level, and national level.

The study uses a variety of research methods, including desktop research, a survey, interviews, and participatory observation. It ran from the Spring of 2020 to the Spring of 2022. The study design was slightly modified on several occasions, due to the COVID-19 pandemic, and new developments at the EU policy level. The final results of the study include a longlist of decarbonisation initiatives, an in-depth and cross-cutting analysis of five case studies of decarbonisation initiatives, and a list of recommendations for TUs aiming to ensure the decarbonisation transition will evolve as a Just Transition.

B METHODOLOGY

This study focuses on decarbonisation initiatives involving TUs in the following four industrial sectors in Europe: automotive, energy, extractive and energy-intensive[1]. Methodologically, this study relies on different approaches. First, an online non-probability survey questionnaire, aimed at gathering trade union initiatives, was distributed to the network of IndustriAll Europe, the project steering committee members, and to researchers, in order to reach a public as large as possible with a profile linked to a TU in the EU. The survey instrument yielded 29 decarbonisation initiatives with the involvement of a TU that were suitable for further analysis.

Second, online interviews were conducted with eleven members of the project steering committee, aimed at identifying more practices with a link to the climate transition.

Based on literature, the survey results and the interviews, the research team drew up a long list of 72 decarbonisation initiatives with TU involvement. And third, after discussion with the project steering committee, five initiatives were selected for an in-depth case study. For two cases (Czechia and Spain) a field trip was organised, which allowed the researchers to get into in-depth conversations with several stakeholders involved in the practice. For three other cases (UK, Germany, Finland), the analysis was based on desktop research and several online interviews with relevant stakeholders involved.

Fourth, based on the four data gathering phases described above, the research team performed a horizontal analysis allowing us to get a more general view of the role of TUs in decarbonisation initiatives. After an internal brainstorming session, the research team managed to derive points of impact, barriers, successes and fail factors, and conditions for TUs to increase their impact on such practices and processes in the future.

Finally, the researchers formulated a set of recommendations to TUs and their representatives to increase their impact in the acceleration phase of the climate transition, which the EU will be entering if and as soon as the "Fit for 55 package" will be fully adopted and entering the implementation phase.

[1] Energy intensive industries encompass the following five sectors: Aluminium, cement, steel, pulp and paper and glass.

C CURRENT AND PAST TRADE UNION'S INITIATIVES FOR THE JUST TRANSITION

C.1 CREATION OF A LONGLIST OF DECARBONISATION INITIATIVES

Based on academic and grey literatures, the researchers composed a first list of 32 decarbonisation initiatives in which a TU was involved. This list was expanded by adding the results of an online survey that was launched in ten languages[2] and in eleven countries[3]. The link to the questionnaire[4] and the request to report decarbonisation initiatives was distributed to the networks of the researchers, the IndustriAll Europe secretariat, and the project steering group (IndustriAll Europe members), with the request to further distribute it in their networks of TU stakeholders.

The questionnaire was accessed 259 times, but only 36 people added one or more initiatives, leading to a total of 131 reported initiatives. 29 of those had a direct TU involvement, concerned one of the targeted sectors, and were sufficiently complete, which made them directly useful for the study.

After the survey, the research team interviewed eleven members of the project steering committee, which allowed them to identify 11 additional decarbonisation initiatives for the longlist. In total, the longlist contains 72 decarbonisation initiatives (32 from the literature + 29 from the survey + 11 from the interviews). Some of the initiatives date back to 1989, but the majority of initiatives stem from 2013 or later, with the following sectoral spread:

- 13 in the energy sector
- 7 in the extractive sector
- 12 in the energy-intensive sector
- 14 in the automotive sector
- 26 cross-cutting or multiple sectors

The geographical and sectoral spreads of the decarbonisation initiatives of the long list are illustrated by the map in Figure 2. Most initiatives are located in Western and Central Europe (Germany, France, UK, Belgium, Spain), some in Eastern Europe (Poland, Bulgaria, Slovenia, Czechia) and Northern Europe (Denmark, Sweden, Finland). In northern Europe, initiatives are mostly taken at the national level, while in Southwestern Europe the initiatives are mostly taken at the sectoral level.

[2] Bulgarian, Czech, Dutch, English, French, German, Italian, Polish, Rumanian, and Spanish.

[3] The countries linked to the languages listed in the previous footnote, plus Belgium

[4] The English version of the questionnaire is added in appendix -1of this research report.

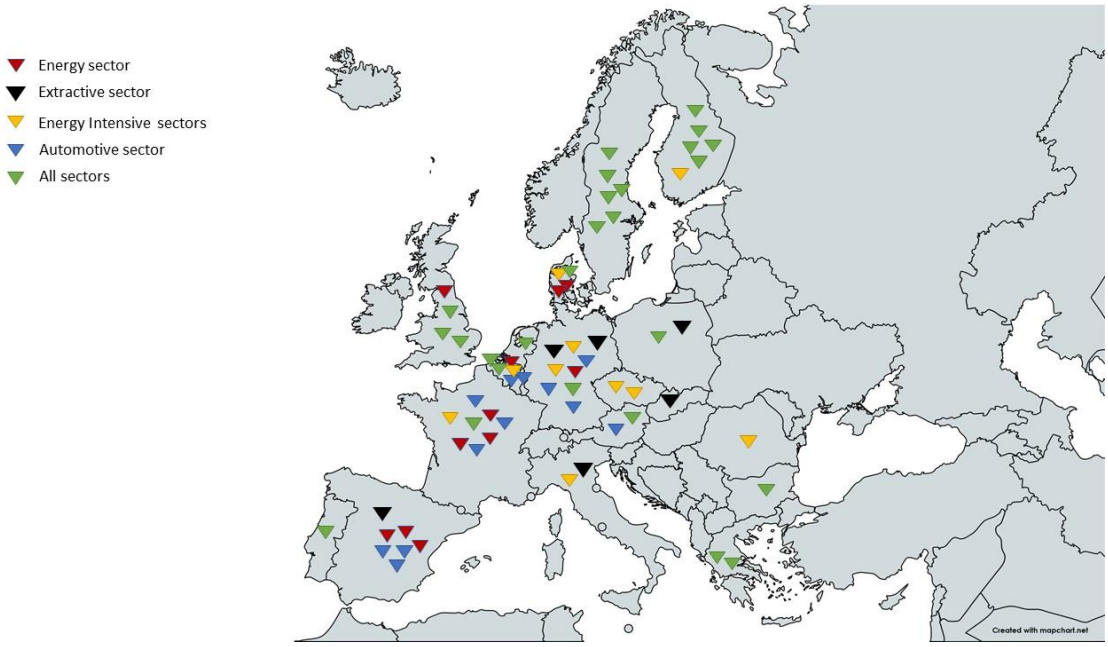

Figure 2 Initiatives taken by TU toward decarbonisation

Note: The pins' location on the map indicates in which country the initiative took place, but is not meant to illustrate the exact place where the initiative occurred.

The longlist of decarbonisation initiatives is presented in appendix -2.

C.2 SELECTION OF FIVE CASES FOR THE SHORTLIST

In order to maximise the output of qualitative research and learning from the decarbonisation initiatives gathered, five initiatives from the longlist were selected as case studies for a more in-depth analysis. Next to prototypical cases that confirm the starting point of the research (in this case: a 'textbook' example of the involvement of worker representatives in a transition strategy), this implies the identification of (1) critical cases that provide particularly strong examples, (2) falsifying cases that provide information not confirming the initial starting point and (3) 'extreme' cases, that permit to obtain information on unusual cases that can be especially informative, either as good or as problematic cases (Flyvbjerg, 2006).

The following criteria were used for the selection of the five cases:

1. Diversity in the **level of the TU impact**: company level, sector level, policy level (local, provincial, regional, national)
2. Diversity in terms of the four **focus sectors** of the study: the extractive industries, the automotive sector, energy-intensive industries, and the energy sector
3. Diversity in success in terms of the **magnitude of TU impact** on the initiative
4. Diversity in the **geographical spread** in the EU

Based on these criteria, the researchers proposed a shortlist of cases, and the final selection of the five case studies was made after concertation with IndustriAll Europe. The cases are listed and analysed in the next section.

D CASE STUDIES

This section presents the five case studies conducted to analyse more in-depth the initiatives taken by unions towards decarbonisation and their impacts on the involved parties. As already explained in the section above, the cases were selected to capture the most diverse panel of strategies. The cases are heterogeneous and capture different initiatives taken by different levels of unions, in different sectors of European industries and in different countries. Respectively the five cases are:

Name of the case	Level of involvement	Sector	Country
Electrification of the steel industry	Company	EII (Steel)	Czechia
Energy Service agreement	Sectoral	Energy	UK
Coal related industries agreements	Governmental	Extraction	Spain
Climate Policy Round Table	Governmental	All	Finland
Decarbonisation of the automotive sector and products	Company	Automotive	Germany

D.1 THE ENERGY SERVICE AGREEMENT IN THE UNITED KINGDOM

D.1.1 Context of the case

D.1.1.1 Settings of the case

The case study is from the United Kingdom, mainly in Scotland (where lots of oil and gas offshore production sites are located) and analyses the offshore oil and gas industry. The case was conducted online by doing desk research and online interviews with three trade unions representatives and one representative of the Offshore Energies trade association.

D.1.1.2 Climate plans in the UK

Two initiatives are worth mentioning regarding their impact on the British offshore oil and gas industry: the "Reaching Net Zero" plan and the Green Jobs Fund.

In 2019, the UK government and public departments adopted the "Reaching Net Zero" plan[5]. This plan has been recommended by the UK Climate Change Committee[6] and aims at reaching zero emissions of greenhouse gases by 2050. Steps and progress related to the achievement of this goal are monitored by the Climate Change Committee and implementation is organised through the different governmental departments.

The Scottish Government also committed to the net-zero goal. To reach this objective, different instruments have been developed. One of these initiatives is the green jobs fund that has been launched in 2020 following the start of the COVID pandemic. This financial investment aims at transitioning to a net-zero society by accompanying the "*demand for a wide range of jobs with new skills and*

[5] https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future ;
[6] https://www.theccc.org.uk/uk-action-on-climate-change/reaching-net-zero-in-the-uk/

long-term career prospects". To do so, the fund will allow *"to increase the number of opportunities for people to be a part of this green revolution, and access new opportunities for jobs, training, and skills development"*.[7]

This fund is relevant to mention in the case of the offshore energy industry whose transformations may be supported in this financial framework. Among these:

- Funding for employers to access flexible workforce development training opportunities and support inclusive economic growth through up-skilling or re-skilling of employees;
- Support for those affected by redundancy through our Partnership Action for Continuing Employment (PACE) initiative, including additional funding to reflect the current increase in people facing or experiencing redundancy.[8]

The Scottish Green Jobs Fund is in line with the UK Prime Minister Ten points plan for a green industrial revolution that will mobilize £12billion of government investment[9].

D.1.1.3 Climate plans in the British offshore oil and gas industry

The North Sea Transition Deal[10] has been adopted in March 2021. It was initiated by the UK and Scottish Governments, and it draws the guidelines for the future of the British offshore oil and gas industry. Important economic players from the industry, including trade unions (TUs) in some of the working groups, have been associated in the discussions around the North Sea Deal. This plan subscribes to the net-zero target by 2050 of the UK Government. More particularly, it sets up actions to organise the reduction of greenhouse gases emissions by the offshore oil and gas industry. The deal covers the whole UK and, where appropriate, the UK government will work with the governments of Scotland, Wales and Northern Ireland to take forward the aims of this deal (Ghaleigh et al., 2021).

The deal organizes progressive decarbonisation in order to reduce greenhouse gas emissions and develop prospects for the future of the sector: "to lead in new and emerging energy technologies such as Carbon Capture, Usage and Storage (CCUS) and the hydrogen economy as well as to support the growth of new sectors such as offshore wind" (p. 6). The deal organizes investments from the government and from the industry to tackle this sectoral (and energy) transition.

Regarding employment, the "People and skills" section represent one of the five outcomes of the deal. It entails commitment to act in favour of "the reskilling of existing parts of the oil and gas workforce" (p. 11). One of the major stakes faced by the workforce in the oil and gas sector is its transferability across the wider energy sector (offshore renewables, hydrogen industries, carbon capture, etc.). The deal aims to support job creation (40.000) through UK Continental Shelf (UKCS) decarbonisation and the development of CCUS and hydrogen sector. "The People & Skills commitment contains actions that will both facilitate the reskilling of existing parts of the oil and gas workforce and will ensure that everyone employed in the sector – whatever their background - can fulfil their potential" (p.11).

[7] https://www.gov.scot/publications/protecting-scotland-renewing-scotland-governments-programme-scotland-2020-2021/pages/5/

[8] To see the other actions related to the Green Jobs Funds: https://www.gov.scot/publications/protecting-scotland-renewing-scotland-governments-programme-scotland-2020-2021/pages/5/

[9] https://www.gov.uk/government/publications/the-ten-point-plan-for-a-green-industrial-revolution/title

[10] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/972520/north-sea-transition-deal_A_FINAL.pdf

D.1.1.4 The offshore oil and gas industry in the UK – brief presentation

- According to the North Sea Transition Authority (previously called the Oil and Gas Authority): "Domestically produced gas still met approximately 46 per cent of the country's supply of gas in 2019 and the Climate Change Committee forecasts our continued need for fossil fuels for years to come."[11] Much of the crude oil is exported abroad.
- Oil and gas are extracted from the UK Continental Shelf (UKCS) which is a mature hydrocarbon basin. In the future, the production within UKCS is expected to decline as well as its demand.
- Extracting oil and gas from the UKCS is directly responsible for around 3.5% of the UK's greenhouse gas emissions.[12]
- Around 147.000 (figures from 2018 reported in the North Sea Deal document) direct and indirect jobs in the offshore oil and gas industry + supply chain (in total 260.000 jobs according to Offshore Energies UK calculations).
- Most jobs are based in Scotland (e.g., 10% of workers in Aberdeen directly employed by the sector) as well as in the North of England and East Anglia.

D.1.2 Case study: the Energy Services Agreement

D.1.2.1 Introduction to the case

The Energy Services Agreement (ESA) is a collective agreement concluded in February 2021 between three trade unions and (as of September 2021) 14 offshore oil and gas contractors (representing approximately one third of the contractors). It complements the North Sea Transition Deal from an employment and industrial relations point of view. It wasn't directly mentioned in the final document, but the creation of the Energy Services Agreement was very much recognized as needed in order to support and to make sure the North Sea transition deal became a reality. The North Sea transition deal covers more the oil companies and senior executives' point of view. For the North Sea Transition Deal to work, it would need to get feedback and participation from the workforce. TUs involvement in the making of the ESA allows that. Therefore, the ESA is a vivid example of industrial relations revival and strengthening in a transitioning sector such as the offshore oil and gas industry.

The ESA is the result of an active involvement of the three main trade unions active in the offshore oil and gas sector (Unite, GMB, RMT), with the support of Offshore Energies UK, the trade association for the Oil and Gas industry in the UK.

D.1.2.2 Why a new collective agreement?

Before the ESA, the collective agreement in place in the offshore oil and gas sector was the offshore contractors' partnership agreement (OCPA). The OCPA was applied since 1995 and set minimum rates of pay and standards for employees. In the last years, the employers (the oil & gas contractors) progressively stepped out of the OCPA and, in February 2020, asked for its termination in June 2020. The collective bargaining system in the UK allows such move. Some of the reasons behind OCPA's termination by the contractors have been mentioned in the interviews:

- The oil and gas sector has been in turmoil these last years (including before COVID). The turbulent evolution of the oil and gas market in the last decade made industrial relations very tense and employment conditions precarious including pay cuts and redundancies.

[11] https://www.ogauthority.co.uk/the-move-to-net-zero/the-north-sea-transition-deal/

[12] Figures from the International Energy Agency: https://www.iea.org/policies/13407-north-sea-transition-deal-ccus

- While collective agreements are signed between the contractors' companies and the trade unions, the formers are dependent on their relationship with the oil and gas operators who are their clients. This third party complicates the application of collective agreements as it may happen that operators create competition between contractors (in and out OCPA) and/or refuse to act in line with the outcomes negotiated in the framework of a collective agreement (e.g., financial arrangements).
- The system of wages negotiation under OCPA was extremely time consuming and provided little satisfactions for both employers and workforce's representatives.

After the announcement of the contractors' decision to step out of OCPA, the TUs asked for an extension of the period of termination (until the end of 2020) before dismissing the OCPA. Then, they came to the employers asking to negotiate a new collective agreement[13], which both parties agreed to. Besides overcoming the reasons that led to the OCPA's termination, the purpose of this new collective agreement would be to secure and to cover employment relations and workforce protection (terms and conditions, training, etc.) in the context of the sector transition.

D.1.2.3 On the importance of concluding a new collective agreement from TUs' perspective

Even if the OCPA didn't guarantee peaceful industrial relations, its termination was a severe problem for TUs. On the one hand, the minimum standards regarding terms and conditions in employment weren't guarantee anymore. On the other hand, TU's recognition itself in the signatory companies disappeared with the end of the OCPA. TU's negotiation regarding the new collective agreement were therefore to secure their recognition within contractors' companies as well as setting new employment standards in the offshore oil and gas sector.

D.1.2.4 What's in the ESA?

ESA is a sort of sectoral collective agreement in the sense that it has been concluded by sectoral branches of trade unions with a group of companies active in the same sector. However, first, it is a voluntary agreement. Second, it covers only signatory companies and workers working with them, not other companies and workers active in the sector. It covers around 5.000 offshore workers (mainly occupied with engineering and mechanics jobs) in all the signatory companies.

In brief, the main points of the ESA include the following:[14]

- The recognition of the three TUs in all signatory companies;
- Minimum base rates and conditions of employment;
- A "rate adjustment mechanism" that is on an annual basis used to calculate automatically pay evolution in line with the inflation rate (consumer price index, CPI) and the price of oil and gas over the last 12 months. This mechanism is mentioned as a major achievement by all the interviewees. It will remove the need for annual tense and time-consuming pay negotiation, provide transparency in pay evolutions and allow social dialogue parties to free up time for "value-adding" activities, namely sectoral actions in the energy transition context.

[13] TUs joint statement calling for a new collective agreement to be consulted on: https://www.gmb.org.uk/news/offshore-trade-unions-condemn-industry-actions

[14] Additional points can be consulted in the full version of the Energy Services agreement.

In addition to these points, it must be mentioned that the ESA is seen by the signatories as an evolutive document. The door has been left open for flexible adaptations that would be necessary in light with the evolutions of the sector. This could include:

- The addition of new signatory companies among the oil and gas contractors companies;
- The addition of new signatory companies in the wider energy sector (onshore energy, offshore renewable energy, hydrogen, etc.);
- The extension of the workforce coverage to other offshore occupations (e.g., supervisory roles, offshore caterers).

Adaptations can be negotiated on a regulatory basis and adaptations with financial implications can be introduced every three years in the agreement.

D.1.2.5 Timeline of the negotiations

February 2020:

- Notice of termination by contractors' companies
- Start of a one-year negotiation process for a new collective agreement (ESA)

31 December 2020:

- Official dissolution of the OCPA

February 2021:

- Joint statement by the three unions on the new ESA to express the agreement at the union level, and the need to consult their own members before formally ratifying the agreement. Call from the ESA's signatories for the government's support of the ESA. In the end, the ESA has been widely supported by both UK and Scottish governments, the North Sea Transition Authority, as well as oil and gas operators.[15]

August 2021:

- Implementation of the new ESA and first calculation of the rate adjustment mechanism (to be applied in January 2022).

D.1.2.6 Actors

D.1.2.6.1 Trade unions

Three different TUs acted together in the ESA negotiation process: UNITE, GMB (National Union of General and Municipal Workers), RMT (National Union of Rail, Maritime and Transport Workers). UNITE took the lead of the TUs front.

UNITE and GMB worked already together for the creation of the OCPA, but RMT wasn't part of their cohesion16. TUs didn't use to work together on regular basis.

[15] https://www.rmt.org.uk/news/north-sea-collective-bargaining/

[16] https://www.rmt.org.uk/news/members-updates/energy-service-agreement--oil-and-gas-uk080221/

D.1.2.6.2 Employers

So far (September 2021) 14 companies signed the Energy Services Agreement[17]. This represents approximately one third of the oil and gas contracting companies. Both TUs and Offshore Energies UK (OEUK) hope to convince more companies to join the agreement in the future to reach a sectoral agreement including all companies. The current strategy is bottom-up. The TUs are trying to convince each firm to sign and ratify the agreement.

4.1.2.6.3 Other players

- **Offshore Energy UK** (OEUK): OEUK is the trade association for offshore energy in the UK. This organisation was initially called Oil and Gas UK (OGUK) and recently changed its name to OEUK. For the first time, OEUK plays a sectoral lead and intermediation role in the negotiation of the collective agreement between signatory companies and TUs. OEUK oversees the general administration of the ESA. According to TUs representatives, the involvement of OEUK in the negotiation process was key to reach the agreement and to get the support of operators.

- **Operators:** operators have been approached by OEUK and by the TUs in the negotiation process. The purpose was to secure their endorsement for the new collective agreement in order to get the support of the whole oil and gas supply chain.

- **Governments:** both UK and Scottish governments pushed for a new collective agreement in the oil and gas sector. Conflictual industrial relations and industrial actions can indeed jeopardize the energy supply of the country, which governments want to avoid.

D.1.2.7 TUs' involvement

D.1.2.7.1 Diagnosis of the sector's current situation

TUs are aware of the changing nature of the offshore oil and gas industry. They accept and acknowledge that there is a climate crisis and that it will be necessary to stop the exploitation and the burning of fossil fuels in the future. There are between the two states, at the moment and need a transition period where a diverse energy mix can be organised. They aim at participating at the sector transition rather than suffering it. Transition plans for the sector come with investments from the industry and from governments, that can be seen as opportunities for the workforce in terms of job prospects. From a health and safety point of view, TUs assume that every action intended to clean up the work environment of oil refineries, gas stations, power stations, etc is also beneficial to the workforce.

D.1.2.7.2 TUs'objectives

- To stabilise industrial relations in the sector by 'tightening' the different economic players influencing the supply chain: that meant that operators needed to be approached in addition to the contractors. The aim would be to extend the collective bargaining at the whole sectoral level (rather than just the contractors), for all work occupations.
- To be recognized and to access negotiations with the employers.

17 Aker Solutions, Altera, Brand, KAEFER, Muehlhan, Navitas, ODE, Oleochem, Petrofac, Ponticelli, Semco Maritime, Stork, Wood and Worley.

- To ensure transparency in the payments.
- To identify barriers regarding terms and conditions of employment in case of workers mobility across the sector. Transferable skills have already been identified beforehand; it is therefore needed that they are officially recognised and valued if workers change their occupation.
- To organise workers' mobility across sectors: with the gradual shift from fossil fuel to renewable energy, TUs want to avoid some areas to become jobs deserts. Oil and gas contractors employ local workers. TUs need to protect these people and to facilitate their jobs transitions towards other occupations in the wider energy sectors where their skills and previous work experiences will be valued.
- To push the debate on public ownership of the industrial activity (at the Scottish level) and of a sovereign wealth fund that would be used to offer social protection to workers in the industry (only RMT representative mentioned it).

D.1.2.7.3 TUs' types of actions

- Alliance between the three TUs: the negotiation work begins with an alliance between UNITE, RMT and GMB. Such alliance was supported by the Trade Union Confederation. Together the three unions developed common positions and strategies rather than acting individually and in competition with one another. Amongst other things, this strategy avoids workers to compete amongst each other's for jobs.
- Regular consultations with workers at different stages of the negotiation process in order to be sure that important stakes were correctly addressed and that workers would approve the agreement concluded by the TUs. Ensuring a good quality dialogue with offshore workers who work from remote locations is not an easy task. TUs organised exchanges through hall meetings, webinars, etc. TUs had to be sure that the agreement would also address workers' direct concerns in addition to organising the future of the sector. TUs members had to approve the ESA that was negotiated by their representatives on their behalf.
- Strengthening international collaboration and sharing good practices between TUs active in the offshore energy sector (Industrial Offshore Task Force Group, 1-2 meetings/year). Some key elements of the ESA are based on exchange with TUs from other countries. Namely, the adjustment rate mechanism is inspired by what is done in the Norwegian offshore oil and gas industry.
- Collaborative work with the employers (contractors), with the intermediation of OEUK: this was a new way to build up a collective agreement. According to one of the interviewees, the context of climate change and of the COVID pandemic provided incentives for social partners to be more inventive, to push aside their differences in order to work together in a constructive way by gathering several TUs and companies around the negotiation table.
- Getting the support of the different key players of the oil and gas supply chain. That meant that TUs also had to convince the operators to endorse the ESA.
- Politicization of the process: TUs approached the governments and that in order to achieve their goals of field work and Just Transition, they needed governmental support to the principle of a new agreement.
- TUs are involved in different (governmental) working groups alongside players of the energy sector that aims at discussing the sector's transition. This provides them access to primary information, governments' plans, and points of view of the industry's representatives.

D.1.2.7.4 Impacts of the TU's actions

- The ESA sets up a new way to bargain collectively for TUs and employers. As such, it strengthens social dialogue and collective bargaining. All the interviewees call it a shift in the sector industrial relations. John Boland, regional officer at Unite, declared in a press release: "*The Energy Services Agreement is a new way of working that brings all parties together to resolve the challenges facing the industry and our members and ensures that through their trade unions they are treated fairly and rewarded for their efforts*".[29]
- The ESA ensures the recognition right of TUs to represent the workers in the signatory companies.
- With the framework of the ESA, TUs can negotiate at the 'sectoral' level (= with all the signatory companies at the same time) rather than with every contractor individually.
- Spill over effect: having secured about 15 companies to sign the agreement provide TUs additional leverage to convince more companies to join the agreement. The more companies join the ESA, the more it will facilitate business relations in the sector. Regarding the willingness to extend the coverage of the ESA: it is necessary to have an overview of the collective agreements in other areas of the wider energy sector to be sure only one is applied at the same time.
- The ESA is more than a level playing field for TUs to bargain for pay increases (like the OCPA was). Thanks to the adjustment rate mechanism, it provides financial clarity and anticipation on pay evolutions.
- Getting the support of most of the operators is mentioned by the TUs' representatives as a big step forward since these actors are not traditionally receptive to trade unions.
- The ESA is a success in terms of strengthening a good and constructive relationship between employers' and workers' representatives who decided to join their forces to face the future of the sector in the context of climate change. According to OEUK's representative and lead intermediation person in the ESA negotiation: *I would say the relationship has never been stronger and it's something that we really can be quite proud of what we've achieved. We've done it together. So it's been: let's find the solution of making this work and both sides have to give. But both sides have said to me independently that this is the best deal we could have got for energy services agreement.*
- Having created a stable environment for collective bargaining with the ESA, TUs consider that it will be easier to be involved in the organisation of the energy transition. In this regard, it is mentioned in the ESA that mechanisms such as the pay adjustment rate will allow TUs and employers to free up time for "value-adding activities" such as preparing the transition and decarbonisation of the sector.

D.1.2.7.5 Uncertainties

- Part of the future of the sector and its consequences on the workforce depends on governmental projects and orientations (including public investments). The institutional structure of the country and the relationship between its different governing and administrative bodies may have an impact on the constraints and the opportunities faced by the workforce and their representatives. Interviewees mentioned that the Westminster and the Scottish governments were not always on the same page regarding the management of the oil and gas sector, the current Scottish government being more open to public intervention than the Westminster government. TUs' lobbying activities have to adjust to these various political tendencies.
- Collective agreements like ESA are purely voluntary, meaning that the signatories are free to opt in and to opt out. TUs assume that companies have incentives to join since peaceful industrial relations provide the advantages of providing stability and hence of facilitating business. Because of their voluntary nature, collective agreements like ESA may be very

fragile. Signatories can decide to opt out and to terminate the agreement. Some of the interviewees mentioned that it would be necessary that government agencies set and oversee the implementation of high environmental and employment standards so that they don't depend only on the sustainability of collective agreement.

- Securing TUs membership: the oil and gas industry is going to be progressively reduced in the years/decades to come. TUs have to build up strategies to retain their members occupied in this sector. The ESA is part of these strategies. The current context can be seen as an opportunity for trade unions to revitalize in terms of membership. Collective agreements are a major selling point to workers because it offers them protection in a declining industry and job prospects in the wider sector.
- Securing investments in the sector during the transition period: that's a dimension regarding which the partnership with OEUK and the other industry players is necessary. This is a complex issue that is influenced by international competition (some oil and gas producing countries being less subjected to norms and standards). Oil and gas won't be switched off tomorrow and the sector has to make sure that investment continues and to demonstrate how investment would be utilised to improve the contribution that the industry makes to address climate change today.
- The future of the sector and its consequences on the workforce depends on governmental projects and orientations (including public investments). The institutional structure of the country and the relationship between its different governing and administrative bodies may have an impact on the constraints and the opportunities faced by the workforce and their representatives. Interviewees mentioned that the Westminster and the Scottish governments were not always on the same page regarding the management of the oil and gas sector, the current Scottish government being more open to public intervention than the Westminster government. TUs' lobbying activities have to adjust to these various political tendencies.
- Collective agreements like ESA are purely voluntary, meaning that the signatories are free to opt in and to opt out. TUs assume that companies have incentives to join since peaceful industrial relations provide the advantages of providing stability and hence of facilitating business. Because of their voluntary nature, collective agreements like ESA may be very fragile. Signatories can decide to opt out and to terminate the agreement. Some of the interviewees mentioned that it would be necessary that government agencies set and oversee the implementation of high environmental and employment standards so that they don't depend only on the sustainability of collective agreement.
- Securing TUs membership: the oil and gas industry is going to be progressively reduced in the years/decades to come. TUs have to build up strategies to retain their members occupied in this sector. The ESA is part of these strategies. The current context can be seen as an opportunity for trade unions to revitalize in terms of membership. Collective agreements are a major selling point to workers because it offers them protection in a declining industry and job prospects in the wider sector.
- Securing investments in the sector during the transition period: that's a dimension regarding which the partnership with OEUK and the other industry players is necessary. This is a complex issue that is influenced by international competition (some oil and gas producing countries being less subjected to norms and standards). Oil and gas won't be switched off tomorrow and the sector has to make sure that investment continues and to demonstrate how investment would be utilised to improve the contribution that the industry makes to address climate change today. In that regard, the recent Scotwind auction of Crown Estate Scotland North Sea plots for wind projects saw Shell, BP and TotalEnergies securing significant acreage, all of these operators (in oil and gas) have been supportive of the ESA.

D.1.3 Future needs to strengthen TUs involvement in shaping a Just Transition of the sector

- Extension of the agreement coverage: Convincing more contracting companies to join the agreement. That will truly allow to begin with the standardisation work at the benefit of all workers. Targeted companies are not only active in the offshore oil and gas industry, but include other occupations, onshore energy sector, offshore renewable energy. TUs are in favour of standardization (of skills certification, equipment, conversion of rates, etc.) between all these areas in the interest of workers. Such common standardization would allow a greater workers mobility across the sector's different areas.
- Organising workers' mobility across the wider energy sector. The ESA provides the flexibility for these kinds of arrangements to be included. But they still have to be negotiated between TUs and concerned employers in the offshore oil & gas industry (some of which are not currently part of the ESA) and the wider energy sector. Among others, building up the relationship between the oil and gas sector and the renewable energy sectors is necessary. Such relationship is still at its early stages, yet it is necessary to develop partnerships in order to organise workers' mobility.

D.1.4 Conclusion

The ESA is described as a success from the TUs' perspective (as well as from other actors: trade association, contractors, governments).

With the ESA, a shift has been made in collective bargaining in the offshore oil and gas sector. Yet, internal (possibility to opt out) and external (evolution of the sector, also at the international level) factors can fragilize it.

The ratification of the agreement at sector level is still ongoing, through a bottom-up approach. Such strategy might be one of the reasons why the process is quite slow to reach a sectoral agreement.

The fact that the agreement is voluntary might be a barrier to reach a sectoral agreement. At any time, any firm can exit the agreement. However, the context of the Green Deal and the Just Transition brings a new current of thought among companies which see the agreement as a way to work together towards the future of work in that sector. The new challenges of decarbonisation are an important incentive for companies to ratify the agreement.

D.2 ELECTRIFICATION OF THE STEEL INDUSTRY IN CZECHIA

D.2.1 Context of the case

D.2.1.1 Settings of the case

The case was conducted in Czechia, and more precisely in the Silesian-Moravian region. The case covers the steel sector and plant level, and gathered information from both onsite interviews and online documents.

D.2.1.2 Climate plans in Czechia

Czechia presents an interesting case with regards to climate performance. While the country has witnessed a strong decline in total emissions since the 1990s, in 2019 its emissions per capita were nevertheless the third highest in the European Union[18]. The Czech government is currently pursuing moderately ambitious climate plans, with firms in its important industrial sector also taking individual action.

As a direct result of the post-socialist transition and the associated decline of incumbent industries, Czech emissions have dropped by around 36% (compared to 19% EU-wide) since 1990[19]. This decline, however, has been far from linear. A sharp contraction in the early-1990s, caused by a sudden contraction in industrial activity, was followed by a rebound after 1998. Since 2008, Czech emissions have once again started to decline as the result of targeted government action. Per capita emissions, however, remain among the highest in Europe. The Czech government has committed itself to further reductions in line with EU goals. While the Czech governments had previously been skeptical of common net-zero targets in the EU, in 2019 it nevertheless agreed to reach carbon-neutrality on EU level by mid-century in line with the European Green Deal. Concretely, this entails a commitment to cut 55% of its emissions compared to 1990 by 2030[20] and to achieve net-zero by 2050.

To reach these targets, the government has outlined several policy initiatives. The centerpiece of these plans is the `Climate Protection Policy', which was prepared by the Ministry of Environment in cooperation with an inter-ministerial working group on climate issues, and adopted on the 22nd of March 2017[21]. This climate strategy follows legislative steps from the 2015 `Strategy on Adaptation to Climate Change'[22], demonstrating that climate policies were on the Czech agenda even if a net-zero target was not always widely supported. Concrete efforts include mandatory energy audits by firms, a novel waste management plan, and notably a focus on nuclear energy to decarbonize the electricity production[23]. In 2021, the government renewed its commitments towards existing plants for the coming 30 years while it is also planning further investment in a new nuclear power plant: Elektrárna Dukovany II[24].

[18] https://ec.europa.eu/eurostat/databrowser/view/t2020_rd300/default/table?lang=en

[19] https://unfccc.int/files/na/application/pdf/cze_climate_protection_policy_summary.pdf; https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/689329/EPRS_BRI(2021)689329_EN.pdf

[20] https://unfccc.int/files/na/application/pdf/cze_climate_protection_policy_summary.pdf

[21] https://unfccc.int/files/na/application/pdf/cze_climate_protection_policy_summary.pdf

[22] https://www.mzp.cz/C125750E003B698B/en/strategy_adaptation_climate_change/$FILE/OEOK_Adaptation_strategy_20171003.pdf

[23] https://www.mzp.cz/C125750E003B698B/en/state_environmental_policy/$FILE/OPZPUR-SEP_2030-210615.pdf

[24] https://www.world-nuclear-news.org/Articles/CEZ-begins-security-assessment-of-Dukovany-bidders

One significant hurdle to effective climate policy in Czechia remains funding. In 2012, Czechia only spent around 0.042% of its GDP (or around 1/10th of other developed countries) on climate plans/projects/policies. While the 2017 `Climate Protection Policy' outlined the ambition to achieve parity with other countries, the government is only aiming to do so by 2030.[25]

D.2.1.3 Czech steel sector and climate

Industry represents around 18,7% of all greenhouses gasses emitted in Czechia[26]. This is slightly more than the 18% EU average[27], making industry an important sector for the climate transition in Czechia. Within that broad category, iron and steel production plays a central role in the Czech industry. A now more than 200-year-old sector in the country, the steel industry accounts for some 12% of all value-added in Czech manufacturing and it employs around 16% of all workers in that sector.[28] Most of this production is concentrated in the Moravian-Silesian regions around the industrial centres of Trinec and Ostrava.

One of the key sources of harmful emissions in this sector is the heavy reliance on cokes and gas in the traditional blast furnace melting process. These inputs emit high levels of CO_2 (carbon dioxide) and CH_4 (methane)[29], both through their final consumption and in the carbon-intensive extraction and transportation leading up to it. While sectoral CO_2-emissions have already dropped by an estimated 24% between 1990 and 2017[30], much work remains to be done. In 2018, the Czech Ministry of the environment estimated that only 5% of all iron and steel production relied on modern electric furnaces[31].

Given the size of the industry and its relatively carbon-intensive production methods, metalworking is a significant contributor to both the aggregate emissions in Czechia and the degradation of the local environment. Recent estimates suggest that iron and steel production account for between 5 and 7% of all emissions in the country[32]. What is more, this significant source of pollution has also contributed to comparatively bad air quality in the Moravian-Silesian region[33], since the metal industry comes with significant levels of harmful emissions, such as dust and polycyclic aromatic hydrocarbon.

To limit these externalities and stay in line with EU emission targets, two of Czechia's main steel producers are modernising their production processes. UK-owned Liberty Steel in Ostrava has plans to replace its four existing furnaces with two hybrid furnaces to become a major player in `green steel'. Třinecké železárny Třinec, meanwhile, has renovated one of its most important blast furnaces by installing modern hot blast stoves and air preheating assemblies, which will drastically reduce the

[25] https://unfccc.int/files/na/application/pdf/cze_climate_protection_policy_summary.pdf

[26] https://www.eea.europa.eu/publications/trends-and-drivers-of-eu-ghg

[27] https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/689329/EPRS_BRI(2021)689329_EN.pdf

[28] OECD STAN DATABASE

[29] https://unfccc.int/sites/default/files/resource/cze-2020-nir-7may20.pdf

[30] https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/Sustainability/Our%20Insights/Pathways%20to%20decarbonize%20the%20Czech%20Republic/Pathways%20to%20decarbonize%20the%20Czech%20Republic-vF2.pdf

[31] https://unfccc.int/sites/default/files/resource/cze-2020-nir-7may20.pdf

[32] https://unfccc.int/sites/default/files/resource/cze-2020-nir-7may20.pdf; https://www.eea.europa.eu/themes/industry/industrial-pollution/industrial-pollution-country-profiles-2020/czech-republic

[33] https://www.eea.europa.eu/soer/2015/countries/czech-republic; https://arnika.org/en/hotspots/czech-republic/ostrava-city-with-most-polluted-air-in-the-czech-republic

consumption of blast furnace gas. At the same time, the firm is modernising its Velký Mannesmann production line of seamless pipes through the use of digitisation and automation.

D.2.2 Case study: Firm-level decarbonisation initiatives at Liberty Steel and Třinecké železárny Třinec

D.2.2.1 Introduction to the case

Metalworking is an integral part of the Czech economy. In many ways, it is the backbone of the eastern part of the country. Liberty Steel and Třinecké železárny Třinec (henceforward LS and TZ) are two of the main players in this sector, providing a high number of jobs to the regional economy. Liberty Steel, for example, employs around 6,000 people on its Ostrava site. Many of these employees earn an income around the Czech median salary (€1500 a month gross), which tends to be above average in the Moravia-Silesian region.

However, the Czech steel industry suffers from an ageing capital stock. This reliance on largely outdated machinery has left important firms like LS and TZ with two key problems. First, the rise of Chinese exports means they are experiencing difficulties competing internationally – both in terms of quality and prices. Secondly, these relatively inefficient and polluting production processes are at risk of running afoul of increasingly strict national and European environmental regulations.

To tackle this twin challenge, both TZ and LS have decided to modernise and decarbonise their production processes. TZ has decided to make its existing blast furnaces more efficient by installing modern blast stoves and air preheating assemblies. At the same time, the firm has opted to make changes further down the value-chain by modernising its so-called small and big Mannesmann rolling mills, used for the production of seamless tubes, by introducing automation and digitisation. LS, meanwhile, has opted to invest in new hybrid furnaces, replacing existing tandem furnaces.

D.2.2.2 Why invest in modern blast furnaces or hybrid steel production?

There are several key advantages to the investments that are being realised by TZ and LS.

Let us begin with TZ and its decision to modernise existing blast furnaces and seamless tube production. The key element of TZ's €26 million investment into its furnaces is to reduce its energy consumption, while also limiting the pollution of harmful blast furnace gasses. Blast furnaces are based on the principle of heating iron using hot air. In this process, hot air reacts with coke to extract oxygen from iron. This both liquifies the metal and produces blast furnace gasses that contain high levels of CO_2. TZ's renovation of its blast furnaces aims to reduce the input of hot air as well as the emissions of these harmful gasses by installing modern blast stoves and air preheating assemblies, which will make this process more efficient and less harmful to the environment. While the modernisation of steel production equipment has mostly been completed, TZ equally plans to further modernise its seamless tube production in Ostrava. The so-called "little" and "big" Mannesmann production lines are set to be slowly modernised over the coming four years. The idea here is that investments into modern equipment as well as the automation and digitisation of the production line will help to reduce the plant's consumption of raw materials (steel and gas) while making production safer for workers and more flexible.

While TZ has mostly opted for the renovation of its existing capital stock, LS has decided to invest in new hybrid steel furnaces to replace four existing tandem furnaces. This technology allows producers to flexibly switch between producing steel using a traditional blast furnace and electric arc

furnaces. Electric arc furnaces directly expose iron and scrap to electric currents to melt metal[34]. As such, these hybrid furnaces reduce carbon emissions by around 50% and dust emissions by 60%. Another key advantage of these new furnaces is that they mostly rely on scrap metal, as opposed to raw iron, to produce steel - making the whole production process more sustainable.

D.2.2.3 The importance of new production methods for the TU

There are three key reasons why the introduction of these new technologies are important topics for the Czech metalworker's union, OS KOVO, and employees at TZ and LS at large. First, investments play a crucial role in the future of steel production, and hence employment in the sector. As pointed out, the twin challenge of climate regulation and increased international competition means investment into more efficient production is not a luxury, but a necessity if jobs are to remain in the region in the long run.

Secondly, the precise modalities of that modernisation have had and will continue to have a profound impact on jobs and working conditions in the sector. Indeed, the introduction of new production processes in both TZ and LS means both firms are moving towards a leaner production system that requires higher-skilled workers. At the same time, the replacement of the old capital stock with new machinery is likely to improve the working conditions of workers in terms of safety and the physical demands put on workers.

Finally, since the incumbent production systems have a profoundly negative effect on the local environment and living conditions in the areas of Trinec and Ostrava, the introduction of more environment-friendly production techniques is likely to have a profound impact on the quality of workers' lives and those of their families and neighbours, even beyond the workplace.

Given these stakes, investments in both LS and TZ have been subject to negotiations between management and TUs.

D.2.2.3.1 Negotiation about decarbonisation initiatives in Liberty Ostrava

As indicated previously, Liberty Steel employs around 6,000 workers in Ostrava. Of that group, about 400 are temporary agency workers while the remaining 5,600 are on regular employment contracts, most of whom are represented by OS KOVO.

D.2.2.3.1.1 Timing:

2018

- OS KOVO first picked up rumours about investments in 2018 when the Ostrava site was being sold by its previous owner ArcelorMittal. At the time, ArcelorMittal was forced by European competition authorities to divest a part of its holdings to push through its acquisition of Italian steel plant Ilva.
- The Liberty group quickly emerged as a potential buyer and was thought to be keen to replace the old tandem furnaces for a greener installation as part of its broader GreenSteel initiative – a corporate strategy aimed at becoming the world leader in green steel production.

Early 2019

[34] https://www.blaschakanthracite.com/wp-content/uploads/Carbon-Footprint-Archival-Report-v-4-September-20151.pdf

- Once the sale of the Ostrava site to the Liberty Group was agreed upon, the rumours about a potential investment were quickly confirmed by the new management. In fact, investment into the site was explicitly agreed between OS KOVO and Liberty as part of the transition and also enshrined into a memorandum of understanding between Liberty and the Czech Ministry of Industry and Trade leading up to the acquisition. This memorandum was based on a commitment of the government and LS to strategically and sustainably develop the steelworks in Ostrava. Part of this commitment included membership of government representatives on the board of representatives of Liberty Steel Ostrava (highlighting the political importance of the site for economic development and employment in the region).

End of 2019

- The Liberty Group transferred 5 million tonnes of ETS emission allowances (worth €40 apiece at the time) from the Ostrava branch to its sister Galati in Romania, which was struggling to meet emission targets, as part of a resale deal that was later unwound. This transfer triggered a major upset in the relationship between management and workers in Czechia. The TU were promised that the sale of those allowances would be used to reinvest into the modernisation of the Ostrava site. Transfer of these emission allowances to Galati therefore represented a transfer of important capital meant to develop the Liberty site, in line with the memorandum of understanding signed with the government.

2020-2021

- As a result of the union pushback regarding the emissions allowances at the end of 2019, relations between the union and management froze. At the same time, Liberty's main lender, Greensill Capital, also started to experience serious solvency problems[35]. For the Liberty site, the combination of tense industrial relations and uncertainty over future financing meant communication about investments was scarce, and uncertainty among workers was high.
- This situation came to a head when OS KOVO announced strike readiness in early 2021 and solicited support from the government to put pressure on the Liberty Group to re-enter the market to buy new permits and return Ostrava's permits.

Second half 2021

- Relations between Liberty Group and the union normalised again and monthly updates about the investment plans have been informally agreed upon.
- In November 2021 the group closed the public tender for the hybrid furnaces and entered the final evaluation stage aiming to finish implementation 2023, though it looks likely this could be postponed to 2026. Possible delays are predicted in part because of the uncertain situation surrounding LS' financing after the demise of its main capital provider, Greensill, but also due to technical complications regarding the supply of large quantities of power to the site.

D.2.2.3.2 Negotiation of the decarbonisation initiatives in Třinecké železárny

In contrast to the complex foreign ownership structures of the Ostrava site, which can be traced back to post-socialist privatisation, Třinecké železárny is a domestically held firm whose major shareholder is Moravian Steel. The company employs 6,828 workers across Czechia. Most of these employees are located in Trinec, but at least 600 work in Ostrava.

[35] https://www.nytimes.com/2021/03/28/business/greensill-capital-collapse.html

D.2.2.3.2.1.1 Timing:

2019

- Communication of renovation of production lines.
- Ongoing talks between management and TU in monthly meetings. The main interests of the TU regarding these investments was (like in LS) the importance of decarbonisation for future employment in the sector, as well as improvements in the quality of working conditions with modernised capital.

2020

- Renovation of production lines starts. This includes, among others, robotisation and a new screwing machine.
- Communication of renovation of the blast furnace.
- Ongoing talks between management and TU in monthly meetings.

19 October 2021

- The blast furnace is decommissioned and renovations start.

17 December 2021

- Blast furnace renovations are completed and production restarts.
- Production lines' renovation is planned to be finalised for 2022.

2022

- Investment in the Mannesmann production line for seamless tubes is planned to be finalised this year.

D.2.2.4 Actors

D.2.2.4.1 Trade unions

The Czech metalworker's union OS KOVO coordinated the workers' interests. This was done mostly through the local branches and the union representation on the boards of Liberty Ostrava and Třinecké železárny, but also partly in coordination with the central Prague branch of the union and the broader ČMKOS union federation.

D.2.2.4.2 Employers

As previously mentioned, the employers studied in this case study are Liberty Steel Ostrava and Třinecké železárny.

D.2.2.4.3 Government

The Czech government, and particularly the Ministry of Industry and Trade has played a substantial role. Regarding the Liberty case, Minister Karel Havlicek was brought into the debate after it became clear that Liberty transferred emission allowances to Galati. At the same time, OS KOVO set up a working group with the Ministry of Industry and Trade in 2020 to discuss ongoing concerns regarding the climate transition with the government.

D.2.2.5 TUs' involvement

D.2.2.5.1 Diagnosis of the sector's current situation

While workers and their representatives at TZ and LS are presented with different forms of workplace innovation and have diverging relationships with their respective management, the diagnosis they make of the changes is very similar: in both cases, the union is highly supportive of initiatives to invest in more modern and greener production. Most employees of both firms realise these changes are essential to ensure the long-term competitiveness of their firms in the face of increased global competition as well as tightening regulatory scrutiny over emissions. In fact, appetite for investment is so high that OS KOVO representatives of LS were willing to turn the sale of emission allowances, that could be used to invest in such modernisations, into an issue on the national political agenda.

In both cases, therefore, unions think that the danger of underinvestment and industrial decay looms larger than the short-term risks greener production will likely entail for some of their workers. For the representatives at TZ that support is built on the realisation that investment has already led to dismissals, over the last two years the firm's workforce has shrunk by at least 300 employees. They also recognise that future automation of the Mannesmann rolling mills can continue this process, but according to preliminary negotiations with the representatives of the management of the tube rolling mill in Ostrava, the reduction of employees will not occur through redundancies, but through natural retirement. At Liberty, the situation, to date, is much less clear. This owes in large part to the difficulties they have experienced in their relations with management over the past year which has led to limited communication about future plans and their implications by the employer. Yet, representatives of both firms are convinced there is little alternative to these changes and they fully realise they have little formal power to weigh in on the final decision. For OS KOVO the question therefore is one of how they can ensure investments which do not harm the short-term interests of their members. Educational programs and retraining on modern technologies are possible in the game. In this regard, they largely rely on a collective agreement in which these options are embedded, furthermore the company collective agreement allows employees who lose their medical ability to terminate their employment with severance pay from 4.5 to 10 months (average wages) depending on the length of time before reaching old-age pensions.

In terms of working conditions, the trade union is relatively optimistic across the board. The existing sites are based on old production methods that were introduced in the 1950s and 60s and were only slightly renovated in the 1990s. The last changes to TZ's blast furnace processes, for example, date back to 1999. As work in the sector is often highly intensive, strenuous, and even hazardous, there is a shared optimism this can only improve if more modern techniques are implemented.

The union has adopted a relatively progressive stance, being fully aware of both the long-term structural constraints the sector faces and the limited powers it holds in the realm of co-determination.

D.2.2.5.2 TU's objectives

- **Good quality jobs** for the long term.
- To ensure **investment** into old sites.
- **Clarity** about changes and how they will impact workers' lives.
- To ensure **reskilling** programmes for workers who want to/can stay.

- To provide a **soft landing** for workers who might be made redundant, particularly for older workers through the mechanism of the collective agreement. This also means they aim to internally coordinate so that older workers bear the brunt of the adjustment and take early retirement.

- Provision of **public support for changing infrastructure** needs, because of increased electricity demand from modern furnaces.

D.2.2.5.3 Types of actions

- Regular **consultation** over changes and their impact on work between TU and employers. In most cases, OS KOVO was reacting to proposals as opposed to taking a proactive stance.

- **Industrial action** to return emission allowances that were transferred from Ostrava to Galati, and which are needed to finance the investment into hybrid furnaces.

- **Lobbying the national government** to put pressure on the Liberty Group to refund transferred emission allowances.

- **Coordinating a working group** with the Ministry of Industry to address key concerns regarding the climate transition and to access information about EU initiatives and funding. One key issue that emerged here is the need for public support to strengthen the electricity grid. While new furnaces will be more efficient and less polluting, they equally require a greater and more consistent electricity supply.

- Attempts to reinvigorate **sectoral bargaining.** Sectoral bargaining in the Czech metal industry has been limited for several years now after employers withdrew from sectoral cooperation.

- While OS KOVO is keen to rekindle bargaining, employers have little interest to work with the union at the sectoral level.

D.2.2.5.4 Impacts of the actions

In TZ good industrial relations mean a good throughflow of information and a good level of trust in management. OS KOVO coordinates with the employer to get workers into retraining programmes at the local firm-sponsored technical school. In LS, attempts to establish consultation have long been unsuccessful leading to high levels of uncertainty. This has improved in recent months.

In LS, the combination of local industrial action and government lobbying put pressure on the Liberty Group to re-enter the market to buy new emission permits for Galati and transfer the Ostrava permits back. Strike readiness and actual protests conveyed the demands for workers regarding new investments. Uploading the issue to the national political arena resulted in public statements by the Minister for Industry and Trade (Havlicek) and the Prime Minister (Babiš) reminding LS of the promised investments that were enshrined in the memorandum of understanding they signed with the government. They also warned Liberty Steel that the government could start to scrutinise its financial dealings.

The inter-ministerial working group set up for OS KOVO to discuss firm-level and sectoral concerns with the government has had mixed success to date. On the one hand, it has been a good way for the TU to upload some of its concerns to the national political arena as well as a good mechanism to keep a finger on the pulse regarding national and EU regulations, and funds that come available.

Attempts to revive sectoral bargaining have fallen flat so far. Employers are only willing to talk to the TU at the sectoral level regarding issues they believe are in their interest. This opportunistic stance is hampering further cooperation.

D.2.2.5.5 Uncertainties

As pointed out previously, piecemeal communication and delays of investments have meant **substantial uncertainty for workers in LS**. Since for a long time it is not clear if and when new hybrid furnaces will come, the TU has a hard time estimating their precise impact. They also indicated that precise estimations are hard, because they do not have the in-house capabilities necessary to do in-depth economic predictions at the national level.

Job security is of course also an issue that concerns TUs, even when communication is good. New production methods almost necessarily render some existing skills redundant and tend to lower the demand for (certain types of) labour. OS KOVO is, therefore, keen to ensure workers get the ability to reskill or take an early retirement. However, on the whole, the TU remains broadly optimistic. Collective agreements provide a decent floor and the relatively tight Czech labour market means employers will likely think twice before laying off workers. This situation seems to be better in TZ, since the firm funds a local technical college to ensure that workers can reskill.

Another key source of **uncertainty lies with the government**. In both the cases of LS and TZ, coordinating with the national government was a key part of the TUs' strategy. However, local TU representatives of both firms indicated that the changing ideological profile of the cabinet is a source of risk. The current government, for example, is seen as being much less receptive to their concerns, with the Minister for Industry Josef Sikela being seen as a free marketeer who does not necessarily take unions' concerns to heart.[36] While upcoming meetings are planned with the established working group, the union is afraid that a Sikela-led Ministry will not take their concerns sufficiently into consideration.

Both **TZ and LS** representatives indicated concerns over **the infrastructural viability** of decarbonisation plans. Since both the TZ and LS sites in Ostrava are planning to modernise and move towards increasingly electrified production, the strain that these production systems put on the electricity grid will increase. Two problems emerge here. First, there is some uncertainty about whether the grid will be able to deal with the demands put in it by simultaneous transitions of big industrial firms in the region. Secondly, LS representatives have specifically raised questions over the technical viability of the electricity lines that will be needed to supply the hybrid furnaces. This will require government intervention since a reliable source of electricity is paramount for the successful transition – particularly for Liberty's hybrid furnaces.

D.2.3 Future needs to strengthen TUs involvement in shaping a Just Transition of the sector

- Sectoral collective bargaining

[36] The new government was sworn in on the 17th of December 2021 following the general election in October of that year. As such this new government entered office in the middle of the ongoing negotiations at LS.

- More deeply institutionalised (less contingent) government support

- Institutional reforms to strengthen co-determination rights

D.2.4 Conclusion

Firm-level decarbonisation initiatives are seen as a necessity from the TUs' perspective. International competition and tightening environmental regulations mean the trade unions fully recognise that new production methods are a necessity for the long-term survival of the industry in the Moravia-Silesian region.

With investments in Liberty Steel and Třinecké železárny still underway, it is of course hard to gauge what the final impact of this transition will mean for workers. However, unions in both firms are broadly optimistic about the prospects. The scope of the necessary investments, after all, signals a long-term commitment to steelworks in the region on behalf of the employers.

Yet, there should also be no illusion that this means the Czech case is necessarily an example of good industrial relations. Unions in both firms are stuck in a difficult spot. On the one hand, they have few institutional resources to shape the transition process and are therefore often dependent on the goodwill of employers. At the same time, unions are fully aware that investment into modern and green production is the only road to survival for the sector.

However, OS KOVO has used this relatively weak position strategically by using active and passive strategies. First and foremost, as a baseline, the union relies on 2003 legislation, when the government's accompanying program of Government Decree No. 181/2002 Coll., on the contribution related to the restructuring of the steel industry, was established, which ensures employees 10 months of severance when they are made redundant and provides for early retirement possibilities. However, to go beyond that baseline and to ensure good conditions for workers who will stay employed, the TU has adopted a cooperative stance by showing a willingness to engage with the employers on any proposals they put forward. OS KOVO has also firmly kept the option for industrial action on the table, while at the same time pursuing a coalition with the government. Doing so has allowed the union to achieve its objectives within the firm-level negotiations where possible and outside of that venue where necessary.

Unfortunately, for employees at Liberty Steel, problems do not yet seem be finished as the UK Treasury has recently sought to shut down parts of owner Gupta's UK operations due to outstanding tax-bills of over £26 million. How this will influence operations, and particularly financing of investments in Ostrava of course remains unclear. However, what is clear is that maintaining a strong relationship with employers through continued social dialogue will be important and that the TU should not shy away from using its strategic political position in the region to bring the government into its camp. This has proved an effective strategy in both Liberty Steel and Třinecké železárny.

D.3 COAL RELATED-INDUSTRIES' AGREEMENTS IN SPAIN

D.3.1 Context of the case

D.3.1.1 Settings of the case

The case focuses on the coal mining and coal-fired power plants (electricity generation) and was conducted in Spain, more precisely in the regions of Castilla y León (León) and Madrid. The analysis was a mixed analysis and was conducted both online (desk research and analysis of secondary material) and on site, with in-person interviews with representatives from trade unions (CCOO), companies (coal power plant and biomass), government agencies (national, regional and local), training and research centres (Cuiden and Santa Barbara Foundation) and ex-workers of the coal mines and power plants.

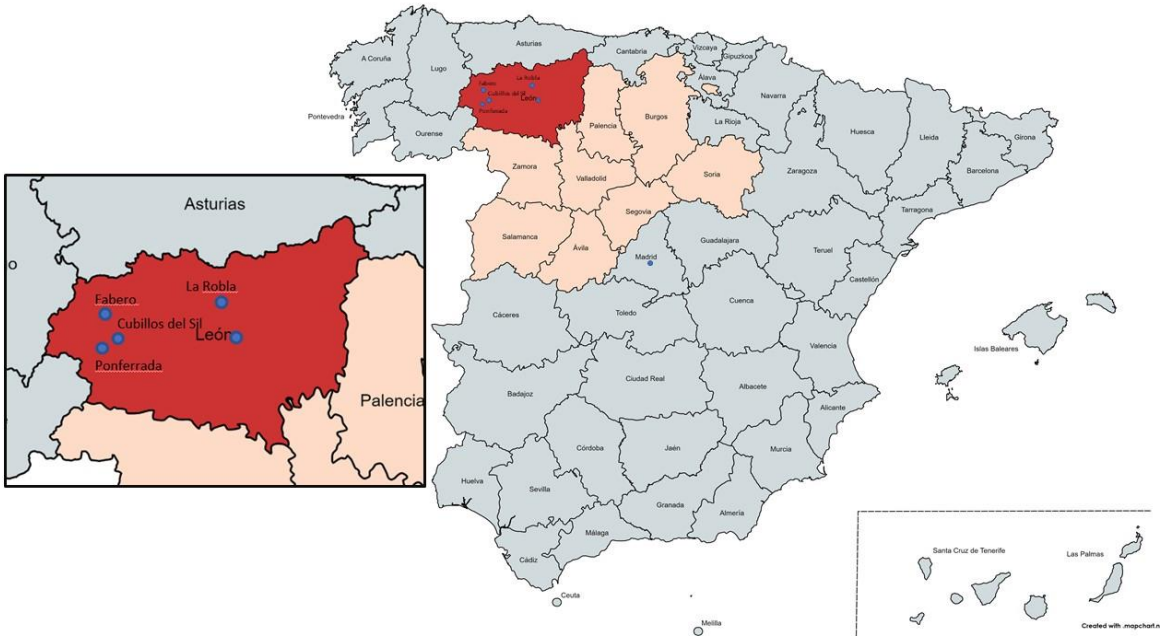

Figure 3 Region focus for the case study

D.3.1.2 Geographic, economic and cultural context: Mines' employment and potential in Castilla y Leon

Most of the coal-related activities studied in this case were located in the sub-province Leon in the Castilla y Leon region, specifically in the northwest of the province of Leon in the comarcas Bierzo and Tierra de Campos. Direct employment in coal-related activities was evaluated in 2016 at 800-1600k employees in the coal-related mining sector (electricity produced from coal included) in the region of Castilla y Leon (Ionescu et al., n.d.). In the areas where coal mines are the main industry, mines opened in the 19th century and population increased in those areas as a result. The coal mines were seen as the pride of the areas, bringing prosperity and wealth.

In the past, coal-related companies[37] used to take care of employees from a paternalist perspective: companies built entire districts reserved to, and maintained for, the workforce. Such districts used to benefit from basic facilities (housing but also hospital, school, shops etc.) owned and financed by coal-related industries.

Figure 4 Community housing for the workers in Leon

Workers were strongly connected to their job, their worksite and the local communities. Today, people are still very connected to their local *comarcas* and towns[38]. More recently, the context changed, as coal companies had to cease activities in 2018. The closure of the coal-related industries not only impacted workers in the coal industries but also the whole population as indirect and supporting job also sharply declined. For example, in the town of Fabero in the Bierzo, where the coal mine was closed in November 2018, the population dropped from 6000+ inhabitants in 2017 to 4000+ in 2022. The mayor of Fabero expects a further drop of about 100 inhabitants per year in the coming years. Following the closure of the mines, all coal-run electricity thermal power plants were closed – the last one in 2021.

There are only few alternative industries in the area and no major leading industry in the area next to the now-closed mining-related activities. While there are some vineyards in the south and east of the province, the northwest of the province of Leon does not benefit from the known tempered Spanish weather due to its location: on a plateau, surrounded by mountains. This climate leaves little room for renewable energy. It was estimated that a potential for renewable energy[39] of a maximum 314GW could be installed. This could possibly induce 20+k jobs (but mainly for the installation and thus short term). However, such installation would require a high need for investment (+3.5 billion Euros) (Ionescu et al., n.d.). Furthermore, the population seems reluctant to renewable energy installations. While the arguments are various, the main claims are the use of agricultural land and the disturbance of the landscape[40]. The main opponent to the installation of renewables in the region is the local

[37] The authors refer to coal mines and coal fired power plants under the umbrella term: coal related companies

[38] There are different layers of governmental institutions in Spain: national (with institutions located in Madrid); regional (Castilla y Leon); provincial (Leon); comarcas (sort of geographical areas. There are eight comarcas in the province of Leon e.g. Bierzo, etc.), municipal/local (e.g. Fabero).

[39] Wind and solar electricity generation.

[40] Agriculture and tourism are two of the main industries in the region.

federation of wineries. They lead several actions and created an association and a report against the installation of wind turbines in the Bierzo (ILEÓN.COM, 2021).

The coal mining companies exited the market in 2018, and most filed for bankruptcy. Only one small mining company is currently restoring[41] their mines in the area, as this was conceded in the agreement discussed below. The federation of coal mines, Carbonunion, is currently only represented by a single person – and has no more company to represent nor employees.

There are three main companies owning coal-fired power plants. Those are mainstream electricity companies well instituted in the European (world) market. They compete in the local market; thus, communication about future plans is opaque. However, concerning the transition and the development of future plans post-closure of the plants, they seem to all go in the same direction: investing in training, developing renewables and attracting new investors in the areas.

In the province, the last coal-fired power plant stopped its activities in 2021. Within the region, differences can be observed between the areas where the mines were located and the ones where the coal-fired power plants were. First, regarding people's (citizens, ex-workers) mindset: in mining areas, people depict a very hard and pessimistic vision of their future, whereas for people located near closed power plants future is uncertain but not pessimistic. There is also a clear strategic difference between mines' and power plant companies' management. The following report draws some possible underlying reasons for the contrast of people's mindsets and companies' strategies between the two sites.

D.3.1.3 Political context

While the national government sees the Just Transition as bringing net positive environmental, social and economic impacts for Spain, in the region investigated (Castilla y Leon) and further in the province of Leon, it will bring net negative effects – especially if business as usual procedures are followed. This inequality between the province and the country creates tensions and mistrust both among policymakers and between policymakers and the population.

Regarding the administration of the region of Castilla y Leon itself – there are many political conflicts. There is no official capital of the region, but most administrative entities are located in Valladolid. Within the region, which is the largest, the nine provinces are very heterogeneous in size and wealth, Leon being the largest province but very poor with a quarter living in the homonym capital of the province: Leon.

From the insights of the case study, it seems that there exists a strong lack of trust between the different levels of the government. Furthermore, communication does not seem to be suave and stable among the governmental national, regional, provincial and local institutions. Locally, while the mayors seem highly supported by the population, there is a strong mistrust in the higher governments (from provincial to national). The feeling of injustice is very present in all areas affected by the closure of coal-related activities.

D.3.1.4 Role of Trade Unions in this context

The communication on plans from government and industrial players regarding the future of the province Leon is very opaque and shows a lack of trust among and between parties (both political and companies). However, the trade unions seem to be used as messengers by these players – even though they also lack information from the different parties. It seems that provincial (Leon), city (mayor of Fabero) and company (electricity power plant) representatives rely on and trust trade union

[41] The restoration of the mine area tends to remove all machinery and potential chemicals from the land as well as assuring the growing of endemic species (both flora and fauna).

representatives to communicate and get information from government (all levels) and companies, and to disseminate it to the different parties involved[42].

The two leading trade unions in Spain are CCOO and UGT. There are three other Tus: USO, CGT and CNT.[43] CCOO, UGT and USO signed the Just Transition agreement for coal.

TUs in Spain access their legitimacy mainly through electoral representativeness. The unionisation rate is rather low (about 14% are affiliated with a TU[44]). Nevertheless, collective bargaining coverage is high in Spain, covering about 80% of the workforce. While national agreements provide strong frameworks for workers' rights, agreements are also discussed at sectoral and company levels. Thus, each TU is structured with dedicated sections per industry, but affiliates see themselves as part of one main trade union confederation rather than different sub-confederations. However, the regional representatives of the TUs have and play important roles at political and sectoral levels.

In the mining sector, TUs hardly work together and rather see each other as competitors. With the closures of the coal-related activities, their membership dropped, creating competition to get members. Nevertheless, and when needed, some cooperation is possible, especially when negotiating agreements at the national level. At the moment, the cooperation seems at its best (in relative terms) between CCOO and UGT. However, tensions remain between and with other trade unions (USO, CGT and CNT). As a result of these tensions, collaboration between TUs is not automatic – also at the national level.

The TUs are already aware and active in preparing the Just Transition for decarbonisation of the Spanish industry. In 2018, CCOO presented at the Ministry for Ecological Transition and the Demographic Challenge a proposal for a Fair Energy Transition[45]. Furthermore, in 2020, CCOO published a *Trade Union Guide to Intervention in Just Transition Agreements*[46].

D.3.1.5 Political plans toward Just Transition and Decarbonisation in Spain

Despite few laws targeting decarbonisation as per se, Spain is doing relatively well in decarbonisation. While Spain accounts for only 9% of greenhouse gases (GHG) in the EU-27, it managed to reduce GHG by 27% in 2019 compared to 2005 levels[47]. Furthermore, seeing the number of strategies, roadmaps and plans (see below) and in general, efforts put by the different parties involved in the Spanish energy transition, there are promising results to be expected.

In April 2020, the government of Spain created a dedicated department within the Ministry for Ecological Transition and the Demographic Challenge, hereafter *MITECO (Ministerio para la Transición Ecológica y el Reto Demográfico MITECO)* for the Just Transition: *El Instituto Para La Transición Justa*[48]. The institute has worked on 'Just Transition Conventions' (JTCs), which are incorporated in the Climate Change Act, and on the 'Just Transition Agreements' (JTAs) incorporated into the Climate Change and Energy Transition Act. The institute is in charge of the EU territorial Just Transition plans (TJTP) for Spain.

[42] Parties involved are government (all levels), companies, affiliates and general public.

[43] https://www.eurofound.europa.eu/publications/article/2016/spain-in-depth-study-of-trade-union-representation

[44] https://www.worker-participation.eu/National-Industrial-Relations/Countries/Spain/Trade-Unions

[45] https://www.ccoo.es/ebc1375a411344ded377311728ebb201000001.pdf

[46] https://www.ccoo.es/0c689724c1ed0a6a8306a139b3d15cea000001.pdf

[47] https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/690579/EPRS_BRI(2021)690579_EN.pdf

[48] https://www.miteco.gob.es/gl/prensa/220317ndpelinstitutoparalatransicionjustaconstituyesuconsejoasesor_tcm37-538257.pdf

The Spanish plans for decarbonisation can be summarised by three main documents, which all put a strong emphasis on worker rights, re-advertisements in areas suffering from losses from the decarbonisation and redistribution:

- Spain's integrated National Energy and Climate Plan for 2021-2030 (LTS[49]) was published in 2020.
- The Strategic Energy and Climate Framework in 2019 submitted 30 points of attention in its "declaration for climate emergency" in 2020[50].
- The Climate Change and Energy Transition Act (LCCTE) was drafted in 2019 and accepted in 2021[51]

Additionally, the Spanish Just Transition institute worked and published several plans, strategies and roadmaps[52]:

Four plans:

- Gender equality
- Green Public Procurement Plan
- Strategic Subsidy Plan 2022-2024
- Administrative Simplification and Burden Reduction Plan

Four main strategies:

- Just Transition Strategy
- Spanish Strategy for Sustainable Development
- National Strategy against Energy Poverty
- The Energy Storage Strategy

Four roadmaps:

- Hydrogen Roadmap
- Self-consumption Roadmap
- The framework of Priority Actions to recover the Mar Menor
- Roadmap for the development of Offshore Wind and Sea Energies

The Green Hydrogen Roadmap and the Energy Storage Strategy, key pieces of the transition towards a neutral economy in emissions, incorporate the prioritization of projects that support Just Transition zones.

Next to the above-mentioned documents, there exists also the Recovery, Transformation and Resilience Plan (Plan de Recuperación, Transformación y Resiliencia[53]) which was created in response to the COVID-19 crisis in 2021. This Plan also included the regions affected by the closures of coal-related industries.

In other existing Spanish plans for decarbonisation, climate change and recovery, coal areas are always mentioned. The fact that these regions are mentioned in all the above-mentioned plans - published

[49] https://unfccc.int/sites/default/files/resource/LTS1_Spain_0.pdf
[50] https://www.miteco.gob.es/es/prensa/declaracionemergenciaclimatica_tcm30-506551.pdf
[51] https://www.miteco.gob.es/es/ministerio/proyectodeleydecambioclimaticoytransicionenergetica_tcm30-509256.pdf
[52] https://www.miteco.gob.es/en/ministerio/planes-estrategias/
[53] https://planderecuperacion.gob.es/

after the publication of the agreements dedicated to the coal-related industries - shows the government's positive perception[54] of the agreements.

D.3.2 Agreements in the Spanish coal-related industries

There are two agreements that concern specifically the coal-related industries (mines and plants). The agreements gain popularity in Spain. These two agreements are frequently taken as examples and highlighted as key involvement of the TUs in Just Transition initiatives at the National level in Spain. This explains why there are already investigated in current research on areas in transition (Krawchenko & Gordon, 2021) and have been several times mentioned in newspapers (La Comarca, 2020).

These two agreements are:

- Framework Agreement for a Just Transition of Coal Mining and the Sustainable Development of the Coal Mining Sustainable Development of the Coal Mining Regions for the Period 2019-2027 (*Acuerdo Marco para una Transición Justa de la Minería del Carbón y el desarrollo Sostenible de las Comarcas Mineras para el Periodo 2019-2027*);
- Agreement on a just energy transition for thermal power plants in closure: jobs, industry and employment, industry, and territories. (*Acuerdo por una transición energética justa para centrales térmicas en cierre: el empleo, la industria y los territorios*).

Furthermore, in the region of Castilla y Leon, there were two plans to dynamise the region affected by the closure of these industries[55].

1. Castilla y León Mineral Resources Strategy 2017-2021 (Estrategia de los Recursos Minerales de Castilla y León 2017-2021)[56];
2. Revitalisation Plan for Mining Municipalities 2016-2020 (*Plan de Dinamización de los municipios mineros 2016-2020*)[57].

The two later plans are not further investigated here but provide evidence on the importance of the industries – and thus the need to re-dynamise the region since the closure of the workplaces.

D.3.2.1 Just Transition of Coal Mining and the Sustainable Development of the Coal Mining Sustainable Development of the Coal Mining Regions for the Period 2019-2027[58]

The agreement follows five previous agreements in the mining industry – the first one in 1990, showing a strong culture of agreements in the mining sector.

This agreement responds to the European Council Decision 2010/787/EU, which obliges the closure of coal mines. This agreement covers all of Spain's privately-owned pits until 2027. To follow

[54] According to the government, the two agreements had positive impacts and outputs, and were highly relevant both in term of scale and scope.

[55] These plans were to develop sustainable wealth and work related to the mining sector and specially in the region of Castilla y Leon. In particular, the government established plans, measures and investments to further develop industries, infrastructures and training.

[56] https://energia.jcyl.es/web/es/mineria/estrategia-recursos-minerales.html

[57] https://energia.jcyl.es/web/es/mineria/plan-dinamizacion-economica-municipios.html

[58] 'Acuerdo Marco para una Transición Justa de la Minería del Carbón y el desarrollo Sostenible de las Comarcas Mineras para el Periodo 2019-2027, 'https://www.transicionjusta.gob.es/reactivacion_comarcas/Plan2019-2027-ides-idweb.asp

the governmental recommendations and plans, the mines in the Leon region are now all closed – the last one ceased in 2018.

To ensure good transition following the closure of the mines, the Just Transition of Coal Mining and the Sustainable Development of the Coal Mining Regions for the Period 2019-2027 agreement was made in 2018, shortly after the closure of the last mine in Leon, between:

- The Spanish government: Ministry of Ecological Transition, Ministry of Labour, Ministry of Industry, Ministry of Finance, etc.,
- The trade unions: CCOO, UGT-FICA and USO
- The National Federation of Coal Mining Businesses (Carbunion)

The agreement was not directly negotiated with the companies but with their federation, which currently has only one representative. The agreement strongly relies on national and EU regional development funds (250 million euros over five years to support business initiatives and the development of mining regions). The funds were supposed to support investments in business and clean energy initiatives (2019–2023). The main noticeable social characteristic of the agreement is the creation of a registry of workers of auxiliary companies (*Bolsea de empleo*[59]). This registry theoretically allows the workers from contractors to have priority on training and reskilling programmes and to have priority access to the job market for the dismantlement and revitalisation of the area. However, in fact, less than a hundred people are using (have used) this registry. The other social components are:

- Early retirement
- Job exchange for workers
- Participation of the contractors in the dismantling work
- Training planning for green, entrepreneurial and restoration jobs for the workers and the contractors
- Facilitation and support for labour insertion through employment agencies for the workers and the contractors
- Surplus relocations

One noticeable characteristic of the plan was the environmental restoration of the affected areas, as it is rare that land restoration is included in transition plans. However, this restoration should have been done by the mining companies which exited the market and filed for bankruptcy. Only one small mining company is currently restoring their mines in the area.

The little success of this agreement regarding both the registry and the restoration of the land left the population behind with a very negative attitude towards the government. Pessimism, injustice and mistrust are the main reactions among the local population.

Nevertheless, several key features can be held from this agreement. First, the registry was initially seen as a success for most of the stakeholders and is taken as an example by the different governmental institutions. Even workers mentioned the registry as a strength of the agreement. Second, and highly linked with the registry, the requirement to provide training to people in the registry had great success. The main institution in charge of mining-related training in the region was the regional owned Foundation Santa Barbara[60]. All courses were highly appreciated, and the programmes gained recognition among the population but also the local companies which saw some potential to leverage the skills of the workforce through training. Last but not least, the initial idea to

[59] https://www.transicionjusta.gob.es/Bolsa_Trabajo/mineria_carbon-ides-idweb.asp

[60] http://www.fsbarbara.com/presentacion.html

restore the land was noticeable as few Just Transition agreements encompass the importance of land restoration.

The agreement created a precedent allowing for snowball effects. In fact, the agreement served as an example for the public sector mining operations but also, as developed in the next section, for other industries such as electricity production. The negative outcomes also served as an example for the redaction and timing of the next agreements. Especially, the direct signature of companies – and not federation – and the involvement of the companies themselves in reinvesting in the use of land to re-dynamize the economy.

D.3.2.2 The Agreement for a just energy transition for thermal power plants in closure [61]

This agreement followed and was built on the agreement on the closure of the coal mines. While coal mines were closing, coal power plants started to announce to the government their wish to cease activities[62]. When observing the mixed results from the coal mining agreement – the trade unions and the government jointly decided to hold on to the closure of the power plants until an agreement would be signed. In April 2020, the agreement was eventually signed by:

- The Spanish government: Ministry for the Ecological Transition and Demographic Challenge, Ministry of Labour and Social Economy, Ministry of Industry, Commerce and Tourism (only in the Monitoring Commission)
- The trade unions: CCOO and UGT-FICA
- The companies in charge of the coal power plants in Spain: Endesa, Iberdrola, Naturgy

The agreement, contrary to the one made on the closure of the mines, was signed by the companies closing the power plants. It covers all coal power plants (12) in Spain – with half of them in the region focused on this case study – accounting for 2300 workers of which about 45% were contractors. Next to all key features of the agreement on the mines' closure mentioned in the previous section (workers registry for auxiliary companies[63], early retirement, restoration of the land, etc.), the agreement imposes significantly more stringent rules for the companies to maintain the socio-economic dynamism in the area.

First, for the government to grant a cessation agreement, transition measures for dismantlement and reinvestment in the land should be provided by the company. This enables the parties involved to plan the socio-economic development of the region accordingly. In the measures for reinvestment in the area, companies had to present both the new investment made internally and the one they were expecting from third parties. Indeed, the agreement clearly stipulates that companies ceasing the power plant should provide proactive support to attract investment and employment locally. To further foster the investments, next to the companies' own investments two mechanisms were set

[61] '*Acuerdo para una transición energética justa para centrales térmicas en cierre*', https://www.transicionjusta.gob.es/Convenios_transicion_justa/Acuerdo_Cierre_C_Termicas%20ides-idweb.asp

[62] The power plants are contractually linked with the government to provide electricity to the grid, thus, they cannot cease activities without prior agreement from the government.

[63] Creation of a registry of workers of auxiliary companies affected by the closures by the Institute for Just Transition, an organism belonging to MITECO. The objective of the registry is to accompany these workers through an employment exchange to facilitate their reintegration into work through the opportunities that arise, among others, in the dismantling of the facilities as in new business initiatives. In addition, this registry gives workers access to specific training actions and other complementary initiatives that improve their employability through public certification of training by the Public Employment Service. At present, more than 40% of the affected people have registered, exceeding the expectations generated, most of them in the age range between 50 and 60 years https://www.transicionjusta.gob.es/Bolsa_Trabajo/centrales_termicas-ides-idweb.asp

with the hiring of external reindustrialisation consultants and the creation of collaborations between companies, universities (Leon, Valladolid) and the regions.

Second, the dismantlement and redevelopment of the land should involve at least 60% of local workers with priority given to the employees of the power plants and of the workers in the registry. Both categories of workers could benefit from training for both the dismantlement and for future needs for the dynamization of the areas. The training could be designed according to the needs expressed in the transition measure presented by the company to the government while requesting the cessation of the power plants.

Third, the companies are engaged to provide training to all people impacted by the cessation of the power plants. Thus, not only workers but also young professionals, people with a distance from the labour market and others not previously working in the plant can benefit from the training. The training can either be provided by collaborating with existing training facilities or by developing their own programmes. Both methods are developed in the region of Leon. In the area being the focus of this case, next to the University of Leon and the University of Valladolid, there is the Foundation Santa Barbara[64], which historically provides training for underground works (see section D.3.2.1). The Foundation is developing its existing curriculum to offer a new set of training on dismantlement works, and construction works but also on renewable energy systems, and land rehabilitation. The training involves previous workers also as trainers, providing also there, opportunities for workers to alternative jobs. Companies are also developing their own curriculum either via facilities they build up or within their foundation. Furthermore, additional training to foster the development of new entrepreneurs is provided by both by government and companies.

Lastly, to be able to supervise the compliance with the agreement, a monitoring committee[65] was established – currently, they meet up to four times per year. The committee is formed of the signatories and monitors mainly the investments for the new projects, the dismantlement and the training. The committee evaluates the dynamism (economic and in terms of workers) that the new project will create and if the local workforce will have sufficient training to be hired in these local projects.

D.3.3 TUs' involvement in the agreements

The TUs were involved in all the phases of the two agreements and played a significant and positive role in the negotiations of both agreements. Not only they did bargain for social rights, but they emphasised the strong importance of local investments both in the restoration of the lands, the dismantlement of the facilities and the re-dynamisation of the areas. In both cases, the TUs were aware of the necessity of the closure of the industry. The TU's role was thus to facilitate the transition in favour of the workers but not to stop, slow or block the agreements. This favourable position of the TUs towards the agreement and their previous knowledge in both Just Transition and energy transition definitely played a positive part in the success of the (second) agreement.

The agreement on the mine closure was a continuity of the six existing agreements between the trade unions and the government. The trade unions were thus leaders in the discussion and in the key features of the agreement. The TUs suggested adding as a signatory the federation *Carbonunion*, to include the restoration of the land and the different social components for both workers and contractors. The inclusion of the social protection measures for contractors, the involvement of companies in the restoration and the training programmes were a novelty for the mining agreement.

[64] http://www.fsbarbara.com/presentacion.html

[65] https://www.transicionjusta.gob.es/reactivacion_comarcas/Plan2019-2027-ides-idweb.asp

However, due to the economic circumstances, the results of the agreement are not as positive as expected.

In the process of the agreement on the closure of coal power plants, the TUs were active from the very early stages. The TUs were aware of the fallacies of the mine closure agreement and put lots of effort to conceive this second agreement. The TUs were firstly informing and asking the government to hold the deliverance of the permit of cessation. They emphasised that cessation permits should be delivered upon the signature of an agreement allowing for a Just Transition of the areas. Thus, prior to the agreement, the TUs exhibited to the government the importance to include the companies – and not the federation – as signatories of the agreement.

The TUs also had an important role in the shaping of the agreement. Next to asking for the same and key social features of the mining agreement (registry for the contractors, early retirement, training programmes etc), the TUs inquired about companies to play a significant role in 1) the funding and design of the training programmes, 2) the dismantlement of the plants and 3) the re-dynamisation of the area. For this latter point, the TUs strongly insisted that the companies should invest both their own money and effort to attract external investors. In counterpart, the TUs join efforts with the companies and negotiated with the Spanish government 1) to provide (better and more transparent) information to companies to obtain access to European funding, 2) to allow companies to keep their right on the land concession of all or part of the evacuation access capacity and exclusive authorisation of industrial water and 3) to develop new governmental policy tools for renewables.

Lastly, the TUs requested the inclusion of the monitoring committee. While the TUs would have preferred to involve external parties (e.g., an external consultancy agency) in the committee, it was decided to limit the committee to the signatories. Next to the monitoring committee meetings, where all parties are invited – and to monitor even more closely the progress, the trade unions have formed working groups with the companies. The signatory unions and companies are meeting several times per year, to address points of the agreement with the companies that signed the agreement. These meetings create space to further build trust between companies and TUs. These are also opportunities for TUs to inspect companies' projects on future investments, training programmes and other activities to dynamize the region. Companies also use these working groups to report bottlenecks to be carried to the government such as limitations of permit rights, and needs for further infrastructure.

Next to monitoring the companies' progress, the TUs also support and facilitate the training programmes held by semi and public institutions. TUs also have frequent discussions with the different levels and institutions of the Spanish government, not only about the above-mentioned agreements. Through their efforts, the TUs managed to obtain (locally-) recognised certifications for the training developed by companies, foundations or semi-public institutions in the framework of the agreement.

The TUs are continuing to provide a strong follow-up of the agreements going further than the working group and the design of the training. On the one hand, TUs are working together with companies to obtain access to funding and to permits for the re-dynamisation of the area. On the other hand, TUs are supporting the government to advertise the different calls for projects among companies and citizens. Lastly, TUs used their position of trust among the different parties involved to encourage dialogue and solve potential conflicts and bottlenecks. One example is the support of the TUs in installing a dialogue between a town mayor and an electricity company willing to develop wind turbines in the municipality. Another example is the TUs reporting to the national government urgent matters with respect to future industrial development in need of approval from some municipalities affected by the closure.

D.3.4 Future needs and points of attention[66]

While the registries are mostly seen as a positive feature of the agreements, they have little impact on employment with less than a hundred people currently registered.

Furthermore, there is a clear mismatch between the need in terms of workers for the projects to come and the current figures for unemployment. This inertia was due to several factors. First, is the different rhythm between the genuine functioning of the different parties. For example, while a year seems short for a governmental process, for a family it can have a tremendous impact on the financial organisation. Second, is the opacity of the investment plans. While plans for future investments were provided by the companies, it was difficult for the TUs and other parties involved to be able to estimate the needs in terms of workers. Third, administrative and financing burdens. In Spain, there still exists a gap between plans to be executed and the different steps of the process to obtain certification, administrative rights and financing bodies to provide and be provided sufficient information, documents and rights. All this is to the detriment of the local communities.

There is also to note the strong friction between the different TUs. The third TU, included in the agreement on the closure of the mines, was not involved in the power plant agreement, as a choice from the government to ease and smooth the discussion with the other TUs.

Overall, there are still several uncertainties, and the long-term effects of the agreement are yet not clear. Nevertheless, it is clear that the agreement provided positive effects and it is to note that the involvement of the TUs played a significant and positive role. However, it is not impossible that some bottlenecks could have been avoided, especially with respect to the inertia and mismatch if TUs would have collaborated further together.

D.3.5 Conclusions

While the coal-related industries are closed (or closing) in the region of the case study, there is nonetheless a positive impact of the TUs' actions. The two agreements – and especially the agreement on the closure of the power plants – were clearly the result of joint efforts greatly involving the TUs. The differences between the agreement concerning the mines and the agreement on the power plants can be explained by the involvement of the electricity companies, which by nature have more money and more power than the mining companies, but also by the further involvement and follow-up by the trade unions. The strong and continuous involvement of the TUs results in positive regional impacts.

One additional setting playing in favour of the agreement was the simultaneous launches of the Just Transition Agreements[67] and the previous launch of the Investments in business and clean energy initiatives[68] (2019–2023) by the Spanish government.

The differences in people's mindsets between mine and power plants areas are striking. In the mine areas, people are generally more pessimistic and transpire a feeling of anger and injustice. The trust in government and companies seems also weaker. On the contrary, in the area of the power plants, there is a dynamic atmosphere and mindset. While the future is somehow uncertain for the workers, they have hope that the companies or the government will provide them with new working

[66] It has to be noted that the coal-related mining sectors are closed (or in the process of being closed) in the region of this study-case, thus the needs are focused on the general level and not on this specific sector.

[67] The Just Transition Agreements allows the fundings of 1447 projects in Spain, with the highest share being 839 projects in Castilla y Leon.

[68] This is a call for aid worth 7 million euros for municipalities affected by the closure of coal power plants, managed by the Ciudad de la Energía Foundation (CIUDEN), attached to the Institute for Just Transition – this is call is linked to the call for 286 million euros in aid for renewable projects from the Institute for Energy Diversification and Saving (IDEA) that enable the Just Transition as one of the determining criteria of the concession.

opportunities nearby. The same difference of mindset can be observed in the area where a coal power plant was closed but before – and thus not included in – the agreement. In that area, the dismantlement is very slow and there is no plan for employment of the local workforce nor for investment in the region.

The difference in mindset can also be explained as in the area of power plants, all companies have clear plans for future projects. It is already estimated that with the current secured plans, more people than those previously employed in the operation of the power plants will be needed for the construction of the new facilities and that about 80% of the previous employment numbers will be needed in the long term for the maintenance and operation of the facilities. It is to be noted that further plans are also in discussion to extend these numbers. The investments in the development of new industrial facilities encouraged other industries to establish in the area (e.g., Forestalia developed a biomass power plant[69]).

In both areas, people, but also governmental representatives (all levels – including at the city level) companies and workers have a strong trust in the TUs. Thus, TUs are used at all levels as a relay and a platform for communication. This trust, which is present in all the affected areas, allows for a good social dialogue.

In terms of social and workers transition, the power plant agreement shows very good results. For the workers employed within the operating power plants, the transition was mostly very easy as they were either guaranteed employment (in the dismantlement and in the construction of future plants) or negotiated non-traumatic exits (e.g., retirement, help to start a new job, support for starting their own company). The TUs also offered good support in the negotiations. A similar situation can be observed for the contractors, with almost 90% of those previously employed now being involved in the dismantlement. This also shows that the second registry was successful in that regard.

The results regarding the training programmes are above expectations. Next to the favourable responses and enrolment in the training, several collaboration agreements were signed with educational and vocational institutions. Some programmes were granted a certification at least at the local level. This allowed the training to gain visibility and thus reach communities outside the directly impacted workers. The courses could start despite COVID-19, and they were beneficial for the workers but also had impacts beyond – with the participation of local people. Training programmes were sometimes even taken to the level of the whole company as a requirement for employees.

While the monitoring committee could only meet twice due to COVID-19, in total the working groups held more than 10 meetings. However, the frequencies and outputs of these groups were heterogeneous depending on companies' and regions' involvements (some companies being opaquer, while others were more collaborative).

Overall, the agreements were seen as successful by the parties involved and served as a basis for future agreements on the decarbonisation of other industries. The links established between the TUs and the Spanish government (all levels) would potentially enhance the role of the TUs in the establishment of the Spanish territorial Just Transition plans[70] (TJTPs).

[69] ('Forestalia – El Bayo Biomass Plant 49.9 MW – León', 2018)

[70] These plans are the responsibility of the Just Transition institute (*El Instituto Para La Transición Just)* , which whom the TUs are in close contact following the coal-related agreements.

D.4 THE CLIMATE POLICY ROUND TABLE IN FINLAND

D.4.1 Context of the case

D.4.1.1 Settings of the case

This case was conducted in Finland, at the level of national government and covers all sectors of the industries.

For this case study, online sources were studied, and five (online) interviews were conducted. Four out of the five interviewees are trade union representatives, working for the trade union TEK and the trade union confederations SAK, Akava and STTK. The fifth interviewee is a civil servant working as a senior specialist for the Finnish Ministry of Environment. Due to the limited scope of this study, this work should not be seen as a comprehensive evaluation of the impact of the Climate Policy Round Table. The findings are mainly based on the views of the trade union representatives interviewed.

D.4.1.2 Climate plans in Finland

The Finnish government has set an ambitious goal of reaching climate neutrality by 2035 and aims to be carbon negative soon after. To attain this goal, the government wants to establish new climate policy objectives and decide on additional actions needed to bring Finland's emissions reduction path in line with its goal. The Climate Change Act is a guiding instrument in doing so: this Act will be amended in a way that will enable the government to achieve the target of carbon neutrality by 2035. Moreover, the target for 2050[71] will be updated and emission reduction targets for 2030 and 2040 will be added in the Climate Change Act.

The goal to be climate neutral by 2035 is part of a larger body of climate and environmental objectives outlined in Prime Minister Marin's government program. In the chapter 'Carbon neutral Finland that protects biodiversity', it is stated that the government strives to make Finland the world's first fossil-free welfare society. It also aims to strengthen carbon sinks and stockpiles in the short and long term. Moreover, the government wants to reduce the carbon footprint of housing and construction. The fifth objective is to halt the loss of biodiversity in Finland. Furthermore, it aims to strengthen Finland's role as a pioneer in the circular economy. The government also wants to develop a climate friendly food policy. The eighth objective is to improve the environmental protection of mines. Lastly, it wants to improve animal welfare.

The Finnish government emphasizes the need for a Just Transition: the Government aims to carry out this mission in a way 'that is fair from a social and regional perspective and that involves all sectors of society'[72]. That is why it has not only established a ministerial working group on climate and energy issues, but also established a round table on climate policy in early 2020. This Climate Policy Round Table brings together numerous stakeholders aiming to ensure that the climate actions are in the best interests of society and have broad approval from the public. Furthermore, the government will assist local and regional authorities in preparing their own carbon neutrality plans and implementing climate actions.

[71] The current target for 2050 is to reduce GHG emissions by at least 80% compared to levels in 1990.

[72] 3.1. Carbon neutral Finland that protects biodiversity (valtioneuvosto.fi)

D.4.2 The case: The Climate Policy Round Table

D.4.2.1 Introduction

This case study investigates the involvement of Finnish trade unions in shaping climate policies at the national level by studying their engagement at the Climate Policy Round Table. This case study investigates how their participation was valued by different trade union confederations' representatives to see what lessons can be drawn from this. Moreover, the capacities and needs of the confederations in shaping the Just Transition are evaluated.

D.4.2.2 Why a Climate Policy Round Table?

The purpose of the Climate Policy Round Table is to create a common understanding of how Finland can make a Just Transition to a carbon neutral society within an accelerated timeframe[73]. The aim is to increase the acceptability of climate policy and to make it possible for stakeholders to participate more closely in the national preparation of climate action. The purpose of the round table is not to make decisions, but to support the preparation and implementation of climate policy by the Finnish government at the national level. The main motive of the government to organize the round table is to present their ideas and to see how different stakeholders respond to these ideas in order to create a common understanding.

D.4.2.3 The working and composition of the Climate Policy Round Table

Prime Minister Marin is the chair of the round table. In total, twenty different stakeholders have a reserved seat at the table representing various sectors and organisations[74]. This includes the three Finnish trade union confederations (STTK, SAK & Akava). The main takeaways of its meetings are reported to the Ministerial Working Group on Climate and Energy Policy. The Sustainable Development Commission is also kept informed of the round table's work. A wide variety of topics have already been discussed at the round table: the timing and specificities of the topics often depend on the timing of other decisions that need to be made by the government or discussed by the Ministerial Working Group. It is the government that decides the topics, the members cannot suggest topics themselves. The discussions have a specific focus on how the transition towards a carbon-neutral society can socially and regionally be fair and just.

The round table meets about every two months. The meetings do not take very long (about 1.5 hours). Usually, a gathering starts with a talk or lecture by one expert who introduce the specific topic to be discussed that day. Afterwards, there is time for stakeholders to respond to the plans and ideas presented, but the time is very limited. Those who do not have the time to speak can hand in a short-written comment to the secretariat.

D.4.2.4 Low-carbon roadmaps for individual sectors

In addition to establishing a Climate Policy Round Table, the Finnish government also wanted to produce sector-specific roadmaps to a low-carbon society in cooperation with 13 sectors[75] by the summer of 2020. These were completed a few months after the members of the round table were appointed in February 2020. The work on the roadmaps was coordinated by the Ministry of Economic Affairs and Employment. The production of the roadmaps was based on the idea that each sector knows their field best: the roadmaps give a more detailed picture of the scale and cost of

[73] Climate Policy Round Table - Ministry of the Environment (ym.fi)

[74] More detailed information on the other stakeholders follows under the chapter 'Actors'.

[75] Energy, chemical, forest, technology, food, logistics and transport, agriculture, hospitality, commerce, textile, sawmill, construction and built environment, and property owners and developers.

the measures required according to the sectors. The sector-driven roadmaps[76] are used by the government in the preparation of the government's climate and energy policy. The low-carbon roadmaps for individual sectors have also been discussed during one of the meetings of the Climate Policy Round Table[77].

D.4.2.5 Timeline of the Climate Policy Round Table

Date	Event
December 2019	The objective of a carbon-neutral Finland by 2035 was restated in the Marin government programme.
February 2020	The government appointed the members of the Climate Policy Round Table.
May 2020	First meeting of the round table on recovery after the coronavirus crisis and climate-sustainable recovery measures.[78]
August 2020	Second meeting of the round table on emission reductions and the role of energy taxation in terms of achieving carbon neutrality.
September 2020	Third meeting of the round table (together with the Commission for Sustainable Development and the Economic Council) on a fair transition to a climate-neutral society.
October 2020	Fourth meeting of the round table on fair transition to fossil-free transport.
December 2020	Fifth meeting of the round table on the reform of the Climate Change Act.
February 2021	Sixth meeting of the round table on the low-carbon roadmaps for individual sectors.
March 2021	Seventh meeting of the round table on the reduction of emissions in the land use sector and the maintenance and strengthening of the carbon sinks.
April 2021	Eighth meeting of the round table on the medium-term climate policy plan that corresponds to the government's goal of a climate-neutral Finland by 2035.
June 2021	Ninth meeting of the round table on climate and energy strategy.
August 2021	Tenth meeting of the round table on the EU's Fit for 55 package.
October 2021	Eleventh meeting of the round table on the low-carbon circular economy agreement.
December 2021	Twelfth meeting of the round table on low-carbon construction.
February 2022	Thirteenth meeting of the round table on the medium-term climate change policy plan.

[76] https://tem.fi/en/low-carbon-roadmaps-2035

[77] https://ym.fi/en/-/climate-policy-roundtable-meets-to-discuss-sectoral-low-carbon-roadmaps

[78] More information on the meetings of the round table can be found on the website of the Ministry of Environment: https://ym.fi/en/news

March 2022	Fourteenth meeting of the round table on the climate plan for the land use sector.

D.4.2.6 Actors

D.4.2.6.1 Government:

The Prime Minister Marin is the chair of the table. Two of the four vice chairs are ministers: the Minister of the Environment and Climate Change and the Minister of Economic Affairs. The other two vice chairs are a youth representative from the Finnish National Youth Council Allianssi and the CEO of the Climate Leadership Coalition, a non-profit climate business network.

D.4.2.6.2 Representatives of Expert Bodies:

Moreover, three experts were invited to the round table. The first expert works for the Finnish Climate Panel, an independent advisory council that provides scientific advice for policy-making. The second expert represents the Expert Panel for Sustainable Development. The third expert works for the Finnish Innovation Fund Sitra.

D.4.2.6.3 Trade unions:

Three of the twenty seats for stakeholders at the round table are reserved for the Finnish trade union confederations: SAK, STTK and Akava. The SAK, also known as the Central Organisation of Finnish Trade Unions, is the largest confederation. The 18 member organisations of SAK have more than a million members - making up about twenty per cent of Finland's population. SAK is a blue-collar trade union confederation. The Finnish Confederation of Professionals, STTK, represents about 650,000 (mostly white-collar) employees in both the public and private sectors. Akava is the Confederation of Unions for Professional and Managerial Staff in Finland. It represents in total about 600,000 members in 36 different member unions. Akava is the confederation for rather higher educated employees. Generally, the confederations work quite independently from the member unions: there is not a very tight steering from the unions to the confederations.

D.4.2.6.4 Employer organizations:

While three seats are reserved for trade union representatives, employer organizations have six seats at the table. Among them are, for example, the largest employers' association in Finland named EK, the lobby organization that promotes Finnish commerce, the Finnish Forest Industries Federation and the Central Union of Agricultural Producers and Forest Owners.

D.4.2.6.5 Other actors:

Other stakeholders at the table are NGOs, youth representatives, local and regional authorities, the indigenous Sámi Parliament and an authority that maintains the public transportation network.

D.4.2.7 Trade union involvement

D.4.2.7.1 The TUs' objectives

All three trade union confederations - SAK, STTK and Akava – emphasize the need for the inclusion of the Just Transition principles in the climate plans and laws of Finland. There are no significant differences in their general positions: they agree on the importance of including these principles in the climate plans of the government. Broadly, their objectives are as follows:

- Integrating employment and training policy into climate policy.

- Introducing new measures to ease the path to new positions, jobs or professions via re-skilling, upskilling, training and education.
- Giving support to a welfare society with strong social security schemes.
- Incorporating the principles of Just Transition into Climate Change Law.
- Strengthening the participation of TU organisations in preparation, monitoring and implementation of energy and climate strategies.

With these objectives, they hope that social justice and workers' rights are guaranteed in the transition towards carbon-neutrality, and the future of workers and their communities is secured. This includes creating a strong model of change security and supporting workers in finding new jobs and in reskilling. Enlarging the duty of employers to provide training, enabling equitable access to lifelong learning for all and improving financial conditions for workers undergoing reskilling are examples of policy measures that could achieve this[79]. For the TUs, it is important to get Just Transition measures included in every plan, programme, legislation, and their implementations. Moreover, the confederations emphasize the importance of conducting studies on the impact of the proposed measures on employment and on regions. For example, Finland has quite some (isolated) regions that depend on a few factories only: when these have to close down due to climate policies, a regional investment plan will be needed on how to attract new investments and create new jobs in these areas. The production of peat is an example of an industry that will be heavily affected by climate policy: the government wants the energy use of peat to be at least halved by 2030[80]. A proposed idea is to set up a tripartite working group which could consider the impact of climate policy on employment, identification of threats and opportunities, and the need for skills[81].

D.4.2.7.2 Subtle differences between SAK, STTK and Akava

There are some small attitude differences between the confederations. While SAK and STTK have worked closely on these issues, Akava is slightly more distant from these efforts: the members of this confederation are highly educated and therefore, have less fears to lose their jobs due to climate policy. In fact, Akava's trade unions even feel that measures that prevent global warming will create more jobs and opportunities for highly educated people.

D.4.2.7.3 Assessment of TU capacities to develop positions on climate matters

SAK and STTK both have internal groups on climate policies at the confederation level and their own climate- and energy objectives are prepared together with the member unions. Akava's standpoints are formulated within Akava's office. In some specific cases, Akava asks for opinions of trade union specialists, but this is always informal and there is no specific mechanism for this. The chairs of the confederations that seat at the round table are often advised by climate experts from the confederations. As the topics discussed at the round table are broad, there has been little room for actual conflict among and within the TUs. The fact that confederations work quite independently from member unions has also not yet led to any specific tensions.

D.4.2.7.4 Possibilities for TUs to contribute

To date, the possibilities for the TUs to provide valuable contributions at the round table have been very limited. This is mainly because of the round table's set-up. TUs' representatives do not regard the round table as a space to engage and have an impact, but they did agree that the round table was successful in informing the stakeholders on the upcoming climate plans. The round table also

[79] FES_A4_Finland_07.indd
[80] https://yle.fi/news/3-11864714
[81] FES_A4_Finland_07.indd

provided an opportunity to get familiar with the perspectives of other represented stakeholders, according to the TUs.

D.4.2.7.4.1.1 Roadmaps

It was even harder for the confederations to contribute to the sectoral roadmaps, as they were initially not invited to participate in their production. Only employer organisations were asked to work on it by the Minister of Economic Affairs. After several complaints from the confederations about this, they were eventually invited to a meeting where they could share their perspective on the Just Transition principles. At this stage, however, the roadmaps were nearly finished, which is why the meeting had hardly had any impact. The sectoral roadmaps mainly focus on technical means to reduce emissions, and touch upon innovation, research and development, but the perspective on (the future of) work is, according to TUs, lacking in most roadmaps.

D.4.2.7.4.1.2 Actions conducted by the TUs with respect to the Climate Policy Round Table

Building on the sections above, it is not a surprise that the actions related to the round table, undertaken by TUs confederations, have been limited. It was only possible to respond to the plans presented at the Climate Policy Round Table shortly and superficially. While the topics and contributions remained rather general, the confederations did try to stress the importance of Just Transition measures when possible. Furthermore, they also expressed their concerns about the lack of workers' perspective in the sectoral roadmaps.

D.4.2.7.4.1.3 Other spaces of influence

Most interviewees questioned the added value of the round table in the light of other mechanisms that already exist: the representatives mentioned that they have more effective options to impact climate policies and shape the Just Transition than their participation at the Climate Policy Round Table. These spaces of influence are further described in the following paragraphs.

D.4.2.7.4.1.3.1 Direct contact points at ministries

A TU representative mentioned that they have had direct contact points with the ministries long before the round table was set up: these allowed them to share their perspectives on measures and to request information when needed more effectively. Although it is informal, he considers these contacts to be more helpful than the round table.

D.4.2.7.4.1.3.2 Economic Council

The confederations also have a seat at the Economic Council of Finland - chaired by the Prime Minister too. While the agenda is wider than the Climate Policy Round Table, climate matters are also discussed in this forum. According to some TU representatives, the council is a more influential place to discuss climate issues: the forum is smaller, there is more time, and the discussions are more focused. However, climate issues are not the main focus of the forum.

D.4.2.7.4.1.3.3 Own seminars

Moreover, some TUs representatives regard the organization of their own seminars also as a useful manner to spread their ideas: two times per year a seminar is organized by STTK for their own member unions. Once a year this is in collaboration with other union confederations. These seminars allow the confederations to teach their affiliated members what a Just Transition entails. Spreading this knowledge is important, according to the TUs, as the members must know the issues to introduce them in the collective bargaining processes.

D.4.2.7.4.1.4 Other projects on Just Transition

As part of a four-year project called 'Time of Opportunities', SAK published a study examining the impact of climate change on work and the status of employees in Finland and other countries. Moreover, SAK and STTK are part of a Nordic-German Trade Union Cooperation on Just

Transition together with eleven other TU confederations (from Denmark, Germany, Iceland, Norway, and Sweden)[82]. For each participating country, a Just Transition path was formulated.

D.4.2.7.5 Socio-economic impacts of the actions

The participation of trade union confederations at the round table has not been successful in terms of tangible results: no measures have been established that are clearly focused on Just Transition in either the national, sectoral or regional climate strategies. None of the interviewees indicated to have seen any concrete or direct impacts from the round table as of now. According to most TUs representatives, trade unions were not effective in influencing Finland's climate policy through the round table.

D.4.2.7.6 Roadmaps

The trade unions have continuously stressed the importance of including the just transition perspective in the roadmaps. While the new sectoral roadmaps still have to be updated, it seems likely that - due to the TUs' efforts – they will include the Just Transition perspective better than before. In fact, some sectors have already expressed to plan to take skills issues on board in the second phase of the project.

D.4.2.7.7 Normative impact

Furthermore, the TUs have possibly had an important role in creating a better understanding of what the term 'Just Transition' means, what it entails and why it is important. The government programme mentions the term frequently, but it seems to primarily concern socially fair actions (e.g. a fair distributional impact of climate policies) rather than specifically securing the future of workers and their communities with concrete measures. Changing ideas and norms usually takes time and does not necessarily result in something concrete immediately. While the opportunities to speak at the round table were limited, the confederations were still able to share their thoughts at a very high-level forum with many powerful people: the 'normative' impact of this may only be fully understood in a few years' time.

D.4.3 Future needs to strengthen TUs involvement in shaping a Just Transition

A more in-depth dialogue table between trade unions, civil servants, researchers, industries, and other experts on climate policy could help to improve participation of TUs. Officially including trade unions in the production of the updated sectoral roadmaps could be one way to help trade unions share their ideas on a Just Transition more thoroughly. Changing the set-up of the round table could also be an option: both the (limited) time and the size of the group seem to constrain effective participation. Organizing a preparatory meeting would allow for more depth in the discussions. Inviting the climate experts of all stakeholders' organisations instead of the chairs could be effective too, as they generally have more expertise on the topics and less time constraints.

D.4.3.1 Involvement of member trade unions

There seems to be a need to engage the affiliated members of the confederations more in discussions about climate issues. Presently, climate change remains an issue mostly discussed at the confederations level. While the confederations and their members unions have joint statements and joint papers, further involvement of the branch organizations[83] would help to ensure everyone is well informed and well represented in the climate transition. Time constraints among the member unions

[82] FES_A4_Finland_07.indd

[83] The member unions of the confederations

are an obstacle: they have many other issues to focus on, such as discussing current working conditions and collective bargaining. Some TUs representatives think that it is the duty of the confederations to organize the work on climate change and engage the workers more. However, there seems to be a lack of human and financial resources to do this better: preparing events to engage the affiliated organisations and incentivise them to develop their own policies cost time and money.

D.4.3.2 Media coverage

Secondly, public awareness about the issues discussed at the round table and the perspective of the trade unions could be raised. The TUs representatives highlight the potential role that confederations could play in promoting the workers' perspective on the climate transition in the media.

D.4.3.3 Lacking knowledge

All TUs representatives believe that it is important to collect more information on how the transition will affect workers and what could be done to avoid unemployment. More in-depth knowledge could help the TUs in demanding more specific measures and to develop a more effective lobby strategy. Research could focus on identifying the type of jobs that are going to be lost due to climate policy and the skills that will be needed in the transition. While trade unions may lack the knowledge and resources to assess the effects of climate policy on workers, possibly, the EU's Just Transition Fund could offer some resources.

D.4.4 Conclusion

This case study has discussed the extent to which trade unions in Finland were able to influence climate policy at the national level through the Climate Policy Round Table. The round table brings together different key stakeholders in the country 'to support the national processes to prepare and implement climate policy in Finland', as is stated on the government's website. The round table has been useful in informing participants about the plans and processes of the government, and in providing insights into the views of other represented stakeholders. Moreover, the round table has some symbolic value being a high-level event chaired by the Prime Minister.

However, none of the interviewed TUs representatives regards the round table as an effective forum to push their own agenda forward at the national level: while continuously stressing their importance, the climate policies and laws of Finland are still missing concrete Just Transition measures. It has not been perceived as a space which allows for deep discussions and getting a message through to decision makers. The way the meetings of the round table are organized possibly played a large role in this: they are organized a couple of times a year, the gatherings are relatively large, the topics remain fairly general and the time to contribute is rather short. Involving the trade unions in the production of the updated sectoral roadmaps could be an important first step for the trade unions to share their thoughts on a Just Transition more thoroughly and successfully. Reconsidering the set-up of the round table could possibly stimulates participation and increases its effectiveness in truly 'supporting the national processes'.

In order to strengthen the involvement of the confederations in shaping a Just Transition, some needs were identified: first of all, they could improve the involvement of their member unions in discussions about climate policies. Secondly, they can push harder to inform the larger public about the need for Just Transition measures, i.e. through media coverage. Finally, more research and knowledge on how climate change and climate policies will affect work could help them in focusing their lobby strategies on more specific issues.

D.5 ELECTRIFICATION OF THE AUTOMOTIVE SECTOR AND PRODUCTS IN GERMANY

D.5.1 Context of the case

The challenge of decarbonisation of the automotive industry is twofold. First, direct emissions by industry processes of production must be decreased. Second, and this is the main challenge, the vehicles this sector produces need to become more emission neutral. This latest challenge is at the heart of the efforts imposed on the sector by European and national climate plans. As a result, the electrification of the automotive industry means the replacement of combustion engine vehicles by electric vehicles.

This transition brings plenty of transformations to be implemented in the sector. The approach of sectoral trade unions and employers' federations is usually to join their efforts regarding the introduction of strict emissions standards for cars: together, they team up to support the need for decarbonisation while advocating to minimise compliance costs and to favour incremental approaches" (Thomas & Pulignano, 2021, p. 256). They also call for decision-makers to have a pragmatic approach while establishing emission limits for cars and insist on being consulted during such processes (IG Metall, 2014).

This case presents the context of the transition towards electrification in the car industry and then the main steps taken towards it by one of the main German car manufacturers, Mercedes-Benz, and the representative trade union in the automotive sector, IG Metall (IGM).

D.5.1.1 Settings of the case

The case was conducted online with desk research (based on IG Metall and Mercedes-Benz publicly available documents and media sources) and online interviews with one representative of IG Metall's 'Transformation Team' in Baden-Württemberg, one IG Metall representative in Gaggenau and 2 IG Metall shop stewards at Mercedes-Benz Untertürkheim plant.

D.5.1.2 Climate plans in Germany

In line with European regulations, the German government adopted national climate plans. The "Climate Action Plan 2050" was adopted in March 2016. The purpose of the plan is to decrease greenhouse gas emissions up to 80 to 95% in 2050 (compared to 1990). To do so, seven areas of action were identified, including transport. This area of action focuses mainly on road transport. A climate strategy addresses emissions "from cars, light and heavy commercial vehicles and issues related to GHG-free energy supply, the requisite infrastructure and the interlinking of sectors (through electric mobility)" (Federal Ministry for Environment, Nature Conservation, Nuclear Safety and Consumer Protection 2016, p. 8). Electric mobility is clearly identified in the plan as a leverage to achieve energy transition in "private motor traffic" (Federal Ministry for Environment, Nature Conservation, Nuclear Safety and Consumer Protection 2016, p. 19). The Climate Action Plan also emphasizes the necessity for the government and the industry to cooperate in the energy transition path. In this regard, consultations with social partners were organised prior to the plan to discuss its main orientations. During these consultations, it was also agreed that actions to be taken and foreseen results were to be discussed with social partners before being included in the Climate plan. Moreover, intermediary impact assessments were carried out in 2018 to adjust sectoral targets in concertation with sectoral social partners. Afterwards the measures of the Climate Action Plan have been translated in a legislative document adopted on 18 December 2019, the Climate Protection Act[84].

[84] https://www.gesetze-im-internet.de/ksg/BJNR251310019.html

More recently, in 2021, the German government revised this Act in a more ambitious way, upon request of a ruling from the Constitutional Court (Bundesverfassungsgericht, 2021). The ruling was introduced by environmentalist groups (amongst whom the German branch of the youth movement "Friday for Future"). The ruling said that measures included in the Climate Protection Act are insufficient in scope and timing to protect future generations. Consequently, the German government reformed the Climate Change Act[85] and brought the aim for climate neutrality forward in 2045, with milestones in 2030 (65% of emissions reduction) and 2040 (88% of emissions reductions). To do so, stricter targets on CO_2-emissions by 2030 were established in the transport sector, alongside the energy and the construction sector.

D.5.1.3 Climate plans and the electrification of the German automotive sector

Transition towards electrification in the automotive sector finds its root in the transition of the whole mobility sector. In line with European guidelines (namely the 'Fit for 55' climate package), the German automotive sector will gradually shift its way of producing from combustion engines towards electric engines. More specifically, German major cars manufacturers (such as Volkswagen, BMW, Daimler) focus their transition on battery-electric vehicles.

The National Electromobility Development Plan[86] (NEMDP) was launched by several German ministries in 2009 to execute the Integrated Energy and Climate Programme set up in 2007 by the German Government. According to the NEMDP, 1 million electric vehicles should be deployed by 2020. To push for the NEMDP as well as to suggest measures to frame the electrification of the automotive sector, a National Platform for Electric Mobility has been set up in 2010. This platform acts as an advisory council allowing societal actors involvement to support the German government (IG Metall 2014). It gathers high ranking members from the private sector, academia, civil society, and public administration. IGM has one of the 23 seats in this platform.

To match the ambitions of the amended Climate Change Act and accelerated reduction of emissions, more important targets regarding the production of electric vehicles are discussed. On the basis of these documents, Jörg Hofmann (IGM's president) expects 14 to 16 million electric vehicles to be deployed by 2030, (CleanEnergyWire, 2021a). These figures are in line with the coalition treaty of the new German government that took office in December 2021 (Koalitionsvertrag 2021-2025, pp. 38-42). These new targets are a concern for workers, because it will speed up electrification in the automotive industry, and by doing so, increases the risk of job losses according to IGM's leader.

German public authorities are setting up policy instruments to achieve this ambition. The NEDP started to be implemented from 2011 onwards and includes incentives encouraging the development, production, and purchase of electric vehicles. For example, one of the measures involves a double expenditure for Plug-In Hybrid Vehicles (PHEV) and Battery-powered Electric Vehicles (BEV) research and development. Besides, in 2016, buyers' premium for BEV (€4,000) and PHEV (€3,000) has been launched as an environmental bonus to encourage the use of electric vehicles. This 'environmental bonus' can be combined with other subsidies. A tax exemption of 10 years for all electric vehicles has also been implemented.

[85] The amended Climate change act entered into force on 31 August 2021.
[86] https://www.bmvi.de/blaetterkatalog/catalogs/219118/pdf/complete.pdf

D.5.1.4 Employment in the automotive industry and the impact of electrification thereon

The automotive industry is a key sector for employment in Germany: providing jobs for more than 800,000 workers[87]. Numerous studies attempt to estimate the impact of the electrification of the German automotive sector on job losses and job transitions (CleanEnergyWire, 2021b). Despite the absence of convergence on the figures provided, it seems to be a consensual view that the impact of electrification on jobs will be real but limited. From a technical point of view, the main cause of job losses would be the electrification of powertrains. The powertrain traditionally is the most labour-intensive component of a car, while its electric counterpart requires less labour input. Among others, a discussion paper by the Research Institute of the Federal Employment Agency estimates that the number of "employed persons resulting from the electrification of powertrains in passenger cars will therefore be almost 150,000 by 2035" (IAB, 2019). A report on the Future of the EU Automotive Sector requested by the European Parliament emphasises the territorial impact on employment that the shift to electrification of vehicles will have. Key regions for the sector in Germany, like Bavaria (estimation of around 40.000 job losses), Baden-Württemberg (35.000) and Niedersachsen (25.000) are specifically at risk (European Parliament, 2021).

Given the temporality of the transition, which is taking place over several years, part of these job losses will be covered by retirements and natural turnover. But that will not be enough to solve employment-related issues. Social partners in the automotive industry (trade union IGM and employers' national association VDA) warn about the potentially negative impact that this shift can have on employment (Reuters, 2021). A study commissioned by VDA and conducted by IFO (German Institute for Economic Research) in 2021 estimates that the shift to electric cars will affect 215,000 employees depending on combustion engines by 2030. Among these workers, 147,000 will retire by then (Clean Energy Wire, 2021c). Measures are, therefore, required for the remaining workers. Such measures like retraining and upskilling are included in the EU Pact for Skills (2020) and are an important part of the debate in the German automotive sector.

D.5.2 Case Study: Mercedes-Benz and the shift towards electrification

Daimler AG is a company originating from Stuttgart, where the main offices as well as many of the production sites are located still today. In December 2021, the company split into two parts: Daimler trucks, producing commercial vehicles, and Mercedes-Benz, producing passenger cars. The shift towards electrification being more advanced in passenger cars than in commercial vehicles, this case study focuses on the latter.

An overarching programmatic strategy sets the main milestones of Mercedes-Benz's shift towards the production of electric vehicles: Ambition 2039. The Ambition 2039 strategy was elaborated by Mercedes-Benz's management bodies and exposes the purpose of the company to be CO2 neutral no later than 2039 (and sooner if possible) regarding the whole value chain: "from technical development to the extraction of raw materials, to production, service life and recycling" (Mercedes-Benz Group, Ambition 2039: our path to CO2 neutrality).

Of course, this global strategy brings many consequences for work organisation. It is not only the shift from combustion engines to electric engines that matters, but also the whole way of producing cars that changes drastically. In the existing plants and factories of the company, changes in production and assembly lines must be organised and implemented. A "People plan" section is included in the strategy and focuses on employees' skills development. However, a gap between the strategic vision conveyed by the Ambition 2039 plan and the concrete implications it entails at plants

[87] on basis of narrowly defined sector with NACE29 (Drahokoupil, 2019). This number is in line with the one provided by the European Car Manufacturers Association (ACEA 2020-2021)

level is mentioned as problematic for trade unionists active at this latter level. This case focuses more in particular on the work conducted by IGM in the plants of the land of Baden-Württemberg.

D.5.2.1 The land of Baden-Württemberg: a key area for the Mercedes-Benz group

The Stuttgart region located in the *land* of Baden-Württemberg is alongside the region of Mannheim, the historical birthplace of the German automotive industry. Among others, the Mercedes-Benz group has several major plants in this area. This argument motivated the decision to base this case study on this specific *land*.

The desk research and interviews conducted in the framework of this case study gathered data on the following two plants in Baden-Württemberg:

- Untertürkheim: there are approximately 20,000 employees in the plant of Untertürkheim, distributed between three sites. The plant is already part of the transition towards electrification with the production of electric batteries as well as electric powertrain.
- Rastatt: Rastatt plant is a pure assembly plant of 6,500 workers. Pure assembly plants risk facing more of a tough time because this type of work requires a lower level of skills than work in R&D facilities for example.

Untertürkheim and Rastatt are not the only Mercedes-Benz plants in the *land* of Baden-Württemberg. Amongst the other plants, the plant of Sindelfingen is worth mentioning since it is the biggest plant in the area with approximately 40,000 people working there. The plant of Sindelfingen hosts on its site the "Factory 56", which aims to be a zero-emission factory working with the latest technological equipment and employing 1,500 people (Mercedes-Benz Group, 2020).

Untertürkheim, Rastatt and Sindelfingen are Mercedes-Benz main plants in Baden-Württemberg and the largest employers in the area. They play therefore a key role in the economy of the region. Each of these huge sites are made of several sub-plants. It is already clear and certain that these plants are and will continue to be involved in the manufacturing of electric cars.

Besides having representatives in works councils and in the supervisory board of Mercedes-Benz, IGM has numerous offices in Baden-Württemberg. There is one office for district management located in Stuttgart as well as 27 local offices distributed in the *land*[88]. This thick network allows IGM to support its representatives active at company and plant level.

D.5.2.2 Timeline

Currently Mercedes-Benz is producing both combustion and electric vehicles. While the production of electric vehicles is expected to increase, the production of combustion vehicles is expected to gradually decrease**.**

In 2016, Mercedes-Benz started organising its shift to electric vehicles (Clean Energy Wire, 2021d). Before this period, Mercedes-Benz management expressed reluctancy on communicating on the electric future of the company. There was still hope in the company management's mind that combustion engines could still be part of the future. However, from 2018 onwards, there was a change in management and communication, and a clear movement towards electric vehicles has been endorsed. This decision affects every part of the company, all plants, all business units.

[88] The list and map of the local offices are available on the website of IGM in Bande-Württemberg: https://www.bw.igm.de/wir/regional.html

The transition phase towards the complete electrification of the vehicles production is planned to last approximately a decade. The All-electric Strategy that supplemented the Ambition 2039 Strategy organises the shift of production towards 100% electric (Mercedes-Benz Group, 2021). In 2022, one of the company's objectives is to produce battery electric vehicles (BEV) in all its market segments. In 2025, "all newly launched vehicle architectures will be electric-only, and customers will be able to choose an all-electric alternative for every model the company makes". By the end of the decade, their intention is to shift the production completely to all electric "if market conditions allow it" (Mercedes-Benz Group, *Ambition 2039: our path to CO2 neutrality*).

D.5.2.3 Actors

At the company level, the main institutional players are the Mercedes-Benz management (at company and plant level), on the one hand, and the sectoral trade union IGM, on the other hand. IGM is the trade union that represents workers in the automotive sector, in addition to other sectors such as metals and electricals, iron and steel, textiles and clothing, wood and plastics, crafts and services and information and communication technology. IGM is represented by elected representatives in each of the local works councils of Mercedes-Benz Group plants in Germany.

Works councils play an active role in representing employees' interests in the different plants and have a front-row seat regarding the consequences of electrification for the workforce and for the work organization within each plant. Works councils are not trade union bodies but trade unions' members are strongly represented within them. Works councils ensure employees representation and can be established in every workplace with at least 5 employees. At plant level, works councils are one of the main venues of trade unions representatives to represent workers' interests towards the employer.

The Mercedes-Benz plants are well established in the *land* territory and are part of an active network of economic and political actors. Under the initiative of IGM, Baden-Württemberg public authorities also set up a "Transformation council for the automotive industry"[89]. Participants represented in this Council represent the main players in the sector at the level of the *land*. The council gathers personnel directors and managing directors of vehicle manufacturers and suppliers from Baden-Württemberg as well as representatives of IGM, Südwestmetall (the sectoral employers' association in Baden-Württemberg), the German Engineering Federation (VDMA), the Stuttgart Economic Region (WRS) and the state agency "e-mobil BW" (innovation agency dedicated to electric mobility) for an industry meeting on the transformation process of the automotive industry. Given the massive presence of the automotive industry in the *land*, this council is an influential discussion body. In its aftermath, a "Strategic dialogue for the automotive sector in Baden-Württemberg" was created in 2017. Bringing together representatives of the industry, trade unions, the public authorities, the civil society and the universities, the strategic dialogue implements a 7-years programme "with the intention of opening innovation potential across industries" as well as to concretely assess the employment potential of these innovations (Strategiedialog Autowirschaft Baden-Württemberg, 2018).

D.5.2.4 Trade union's involvement

D.5.2.4.1 Diagnosis of the sector's current situation

Given EU regulations and orientations, and the ambitions of the German Climate plan, the automotive industry has no choice for the future but to make a shift towards electrification. This shift is acknowledged and accepted by trade unions (IG Metall, 2014). As it seems that the production of

[89] https://www.baden-wuerttemberg.de/de/service/presse/pressemitteilung/pid/branchentreffen-zum-transformationsprozess-der-automobilindustrie/

electric powertrains and the assembly of electric cars are less labour intensive, there is a fear that the global shift towards electrification would lead to fewer jobs in the sector.

In the framework of this shift, IGM therefore calls for securing employment through policy interventions at political as well as company level. The discussion appears to be less emotional today than in the past.

IGM has been dealing with the shift toward electrification in the automotive industry for many years at Mercedes-Benz as well as in other car manufacturing companies. Following job protection, the union's main goal is to accompany the workforce in this shift and to develop in-depth internal expertise to protect workers' interests in every step of the transition.

IGM closely looks at the evolution of employment in the plants, as well as at management practices to deal with it. A slowdown in hiring is already observed in the plants. There is also a managerial policy of not replacing workers who decide to leave the company, and even encouraging them to do so by giving them financial bonuses.

D.5.2.4.2 TUs' objectives

IGM objective is to be involved in transitions plans as much as possible without using a conflictual approach. The point is to accompany every step of the transition while protecting workers' interests and to find good solutions for the future of the company and for the employees. The main purpose is to secure the survival of industrial activity and employment in Baden Württemberg.

Once employment security is guaranteed, IGM works on the improvement of actual and future working conditions. Crucial questions involve upskilling, production, and placement of new products in targeted production sites, etc. IGM also wishes to guarantee the best conditions for workers' mobility within the plant due to the development of new products and the end of older ones.

This phase-out will be organised in phases: the stop of development of new engines, followed by the stop of production and sales. Whereas the goal of stopping the production of combustion vehicles is mentioned in the company's strategy, an assessment of market conditions will be made to enforce (or not) this decision. As a result, uncertainties remain in the eyes of IGM regarding the stop of combustion vehicles production after 2030. At plant level, IGM negotiates to keep the production of combustion cars open as long as there is a (small) market segment to fill. At this level, the goal is to secure the production of current and/or new products. The question of which products are going to be produced in the plant is an important part of the discussions between the works councils and the plant management.

At company level, strategic programmes such as Ambition 2039 and the All-electric strategy do not provide, according to IGM, information on how the workforce will be concretely affected. Even though strategic plans and communications are useful in providing a vision for the future of the company, according to IGM representatives, the further the future is envisioned, the vaguer the strategies become. One of IGM's main endeavour is therefore to seek for more precise information to anticipate the impact of these plans on the workforce.

Finally, IGM attempt to raise awareness amongst workers to accept this major technological change in the automotive industry while ensuring that the trade union want to influence this process in workers' interests. IGM's intention is not to stop this transition and it needs a good communication strategy to get this message accepted and endorsed by workers.

D.5.2.4.3 Assessment of TU capacities

In Germany, collective bargaining in the automotive industry mostly happens at the sectoral level. Works councils' agreements at company level and at plant level can also be negotiated in the framework of sectoral agreements. IGM is represented at every level of negotiation and has a strong capacity as well as resources to defend workers interests in collective bargaining.

Regarding transition towards electrification, many discussions and negotiations unfold at the sectoral and the regional level (for instance in the consultative council and strategic dialogue body). However, IGM representatives at plant level emphasize that most of the concrete and immediate impacts of transition on the workforce have to be discussed at company and plant level. Topics discussed within company and plants works councils concern the organisation of workers mobility within the plant, workers participation in the dismantling of production halls and the rebuilding of new ones, etc.

There seems to be a consensus around the fact that IGM is well represented at Mercedes-Benz as well as in the German automotive sector (especially car companies and tier one suppliers) through their seats in the works councils at plant level and general work council and supervisory board at company level. Representative bodies are functioning well, IGM is strongly represented. It is more difficult for IGM to get information on smaller suppliers' companies in which social dialogue is weaker. It is difficult to demand and then also implement a concrete co-determination or expansion of co-determination of the work council in these smaller plants. In Mercedes-Benz, the amount of workers and their strong support to IGM provide leverage for the trade union in the negotiation with the plants management.

Regarding the impact of the company strategy on workers at plant level, IGM reactions are constraint by the lack of concrete detailed programmes. Transformations affecting the workforce are not always clear and well anticipated within the company. The issue is, therefore, not access to information, but that information stays blurred. The company provides access to its global strategy approach for the future (most important projects for the companies, on which products and market they will focus, etc.). However, the concrete impacts on each plant and production sites have to be deduced, since they are not communicated directly. So IGM has to ask questions on the future of production sites that may be impacted to anticipate the consequences on employment in each of the plants. IGM representatives would like to get more detailed plans from HR management while the employer wishes to remain flexible and to avoid making binding promises.

D.5.2.4.4 Actions conducted by the TU

IGM takes various actions in order to be at the forefront of the electrification transition at plant and company level. The actions listed below include: the involvement in representative bodies at plant and company levels; the negotiations for jobs security; pushing for workers' rights to training and qualification: accompanying workers' mobility; communication to workers on the current transformations.

IGM is also active in supporting workers beyond plant and company level. Within the trade union, IGM seeks to strengthen its expertise on the shift towards electrification. Externally, IGM also continue to set up its involvement in the regional (and national) economic network. Holding seats at various level of discussion, IGM is in a strong position and can launch actions at these different levels. The challenge is to ensure good coordination across these different levels of representation.

D.5.2.4.4.1 Involvement in representative bodies at company and plant level

At company and plant levels, one of the main leverages for action of IGM is its representation in works councils. IGM representatives use their voices to influence work councils work and decisions as well as to strengthen the work councils influence towards the plant management.

Work councils hold different participation rights: the right to be informed, the right to be consulted, a veto right, a co-determination right. Topics being covered by each type of right are determined by law. Regarding the electrification transition and transformations it entails, interviewees report that work council participation relies mainly on information rights. IGM calls for more participation of the work councils in these transformations. In Untertürkheim, IGM pushes for the work council to be involved in negotiation on product management. The employees noticed that products were being withdrawn while new products were being introduced and were concerned about this. In 2015 the work council declared that it should be involved in these discussions and from then on the issue is discussed once a year between the plant management and the work council. On the one hand, it asks to be informed when a product is no longer to be produced, in order to negotiate compensation if it affects employment and working conditions. On the other hand, it can ask for new products to be manufactured and demand investments and commitment from the company to the future of the plan. In 2017, it asks for a battery assembly unit to be created in the plant.

Through their representatives within works councils, IGM is also involved in the transformation of the internal architecture of the plant to set up new production lines and assembly plants.

IGM also aims at investing in capacity building of the work councils. Regarding the electrification transition, it entails the sensibilisation of works councils to start looking at the mid- and long-term future of every plant and workplace. To do so, IGM provides works councils with tools (for ex. questionnaires, expertise) to develop a strategy and to try to find out the future of the product and thus the future of the plant. In this way, works councils can develop an own strategy how to cope with the mid- and long-term plans.

D.5.2.4.4.2 Negotiations for job security plans and solutions for job losses

There is a collective agreement negotiated between Mercedes-Benz management and the central work council (whose members are almost all members of IG Metall) that prevents workers dismissals. It has been signed at company-level for the first time in 2004 and has already been renewed two times. The current agreement ensures that there will not be any redundancies before 2030. However, the company still tries to reduce the workforce, for instance by offering early retirement schemes, support for workers who whish to find a new job by facilitating their transfer from one workplace to another (same system as an employment agency, but between companies). IG Metall looks after these actions to be sure that compensation offered by the company are fair to workers.

D.5.2.4.4.3 Securing the development of new products at plant level

In general, IG Metall is aware that the shift towards electrification will ultimately lead to fewer jobs in the automotive industry. At plant level, one strategy to guarantee employment is to fight for the manufacturing of new products and components needed to manufacture electric vehicles (battery cells, electric powertrains, etc.). In Untertürkheim, the work council asked for a battery assembly to come to the plant. The issue back then was that the management was thinking about creating a legally distinct company (GmbH in German law) with its own working conditions that would be operated outside the already negotiated company collective agreements. IGM fought against that proposal and claim for battery production to take placee in the Untertürkheim plant in the framework of existing collective agreements. This claim led to conflictual actions by IG Metall involving workforce mobilisation (workers but also employees), work stoppages, plenty of information meetings and negotiations with the management. In the end the battery production unit was included in the plant of Untertürkheim.

The work council additionally negotiated that in the case of job mobility within the plant due to the development of new products related to the production of electric vehicles, workers should keep the same level of position (rank, salary scale, etc.) as well as to work in a similar kind of function.

D.5.2.4.4.4 Defending workers' rights to qualifications and training

IGM pushes for qualifications and training initiatives. Workers' training to improve their qualifications in drive technologies, sustainability of technology and production, is a crucial lever to keep workforce within the company and to make workers ready for whatever future they might face. IGM wishes for a more proactive approach concerning qualification and training. One of its initiatives is the launch of a qualification series for trade unions shop stewards and representatives at works councils. This is part of a large training offer by IGM that goes from technical qualifications (on powertrains, different types of drives, etc.) to participation skills to strengthen influence through the work councils. At plant level in Rastatt, the work council asked to the management to Improve measures for workers to get retrained/reskilled. Some provisions were included in collective agreements allowing works councils to demand for skills planning for an individual worker and retraining to be at least partially paid by the company.

D.5.2.4.4.5 Provision of information to workers on the whole transition process

The challenge is to accompany change so that it is not perceived negatively. IGM tries to seize the current transition as an opportunity to create openness to change and lifelong learning among workers. IGM also invests a lot in internal communication within the company and the plants to trigger a positive attitude from workers towards the change process. It seems that some workers fear or are sceptical towards the transformations brought by the electrification shift. The first step of IGM communication is based on information provision. The goal is to explain why the shift towards electrification is happening and what are the foreseen changes at company and plant level. The second step is to present IGM actions facing these transformations: employment protection as a priority, as well as guarantees on qualifications and positions.

D.5.2.4.4.6 Fostering IGM internal expertise

IG Metall hired experts on decarbonisation and digitalisation at national level in order to support these transitions in the industry from a trade union perspective. However, given the federal nature of the German state, there are disparities across regions and a regional approach to the transition is needed as well. At the level of the regional office of Baden-Württemberg, a "transformation team" was created in 2018. This team of 5 people is entirely dedicated to support companies (via the works councils) and local offices in shaping a Just Transition (regarding the shift to electric vehicles but also other factors such as digitalization, relocation, etc.). The transformation team is working on a hands-on approach in developing strategies (such as communication plans to inform workers about the transition) that have an impact on the work floor. IGM shop stewards in the different plants are, indeed, not experts in transition related issues. The transformation team can provide guidance and expert knowledge upon request of works councils for example. However, there seems to be no consensus on whether it is necessary to set up such transformation teams in every region of Germany. Another opinion on this is that every trade unionist with a representative role should become expert on these issues.

In this perspective, IG Metall also offers qualification programmes, workshops and seminars for its members or to works councils. The purpose of these trainings is to clarify the stakes, as well as the terminology of what the transition entails at a technical level. That allows people to understand the dynamics of the transformations happening at plant level.

D.5.2.4.4.7 Involvement in the regional economic network

Finally, IGM is involved at all levels of negotiations within the company but also at the level of public authorities (local, regional, national). In the region of Stuttgart, there is a tradition to involve political and scientific stakeholders in discussions with industrial players and trade unions. Car companies like Mercedes-Benz are important economic players for the development of the region. A big part of these talks is therefore about building convergent views on the future of these industrial players in line with the future of the land. How can the region remain attractive for the company? And how

can the company still play a key role in the future in the region? And what do both sides need from each other?

Besides institutional bodies such as the "Transformation council for the automotive industry" at the land level, the trade union is involved in the creation and management of Agentur Q which is an agency dedicated to support training initiatives (in the framework of a collective agreement) within the sector.

In Rastatt, a local transformation advisory board was established. It gathers the local actors involved in the automotive cluster in Rastatt: representatives of Original Equipment Manufacturers (OEM, representing automotive manufacturers and big suppliers companies), supplier companies group and SMEs, works councils chairmen, Employment Agency, Lord Mayor, District Administrator, Regional Council, Chamber of Industry and Commerce, Südwestmetall and IGM representatives. As a recognized trade union, IGM wants to be involved in such institutional bodies and usually have no problem to secure its representation. This established institutional position and relations with economic and political stakeholders can help IGM to secure employment in the area as well as to coordinate the stimulation of innovation, R&D and training with these actors (Hancké and Mathei 2020).

D.5.2.5 Impacts of the actions

Overall IGM is confident that its involvement and initiatives efficiently help the workforce to face the transition. The support of the workforce provide legitimacy to IGM actions and positions. Thanks to its strong position and resources, IGM achieves to protect workers at plant level: securing employment or providing solutions in case of job losses; providing or pushing for the company to provide training; organizing the conditions of workers mobility within the plant, etc.

IGM combined presence in works councils and regional bodies allows the trade union to gather information and to influence the future of the industry. There are also possibilities to enhance work councils' participation rights (for example in the negotiations on products in Untertürkheim). IGM supports works councils by providing information, training, expertise.

Actions can be based on a conflictual attitude as well, even if it is not the most favoured approach in the transition. When workers in Untertürkheim mobilized in favour of the implementation of a battery production unit within the plant, IGM provided an effective support to its representatives and workers in conducting their actions and winning the negotiation.

However, there are some elements that keep actions to be fully efficient.

The size of the company is a challenge and top-level discussions not always easy to translate at (sub)plant level. Although IGM is quite strongly organised within Mercedes-Benz, it is not so easy to find out on which level which decision is made and how to get access to the real decision makers. The fact that decisions are taken both at group (company) level and plant level is quite challenging and often takes a lot of time to union representatives to coordinate their work. This multi-level structure challenges IGM's attempts to be 'on the ball' regarding transition-related issues.

There are also coordination challenges in the trade union strategies between the many levels of action and representation. Even though IGM is a powerful and well-established organisation with many layers for its representatives to meet, it seems sometimes difficult to elaborate a coordinated strategy about the future of companies and plants involved in automotive sector at the level of the land or of the country. As a result, there is a risk of competition between plants, for instance about which sites are going to develop and to produce the necessary components for electric vehicles. The placement of new products in the future amongst the different production sites allows to secure a strategic role for the selected production sites within the company.

D.5.2.6 Uncertainties

D.5.2.6.1 Negative spill-over effect on other segments of the automotive industry

The future is at risk for other segments of the automotive industry. Car manufacturers such as Mercedes-Benz may handle the shift to electrification more smoothly than smaller companies, making parts for combustion engines that will no longer be needed. These OEM companies are mainly located in Central and Eastern Europe but some of them can also be found in Germany, namely in Baden-Württemberg. Amongst them, smaller supplier companies which are dependent on the automotive industry usually do not have the financial resources to change to alternatives.

Even though works councils and IGM representatives at plant level fight to secure the production of new products, some IGM representatives fear that the shift to electrification would supply an incentive to such companies to move their production abroad where manufacturing is cheaper. Components for combustion cars produced in Germany would be replaced by components for electric cars produced abroad.

Production sites in Baden-Württemberg might be negatively affected by Mercedes-Benz global strategy. It looks like they are now focusing on developing other products than those that use to be produced there. IGM might better ask what the future of these production sites in the future strategy is.

D.5.2.6.2 Changes in the structure of the sector

The automotive sector used to be organised in a stable manner with the OEM, and some sub-contracting companies. It can be observed that the shift towards electrification entails structural changes in the sector organisation. On the one hand, some car manufacturers position themselves to organise the replacement of products (from combustion to electric components) and sometimes to produce it themselves. Some of them, like Tesla, produce every component themselves. On the other hand, some components suppliers decide to go for the whole electric car manufacturing. These changes impact the sectoral organisation and the interests of the different stakeholders. These changes in the structure of the sector will have impact on the distribution of workers amongst the sector and IGM may have to adapt its representation strategies to this new sectoral reality in the future.

D.5.2.6.3 Projections on production

IGM representatives report that projection figures in the automotive sector have always been uncertain and difficult to estimate. The transition towards electrification being organised on a time span of more than a decade makes it even more difficult to produce reliable figures. This projection exercise is more complicated because some segments of the shift towards electrification are not as advanced as others. For example, Mercedes-Benz is positioning itself in new business areas related to electrification such as the production and the recycling of batteries. It is not yet foreseeable what quantity and nature of employment will be needed. There are also uncertainties on the shift of commercial vehicles (such as trucks) towards electrification. Interviewees estimates that there is a 5-year lag in the transition compared to passenger cars. As a result, even if the transformation is in full swing, it is not certain whether there will be enough production to secure existing employment. Currently, products are manufactured for combustion vehicles as well as for electric vehicles. But when combustion vehicles will stop being produced, this is projected to lead to fewer jobs in the plants.

D.5.2.6.4 Changes in workforce profile

The kind of workforce that is needed to produce a high-tech, electric, digital car is different from the workforce that is needed to produce a combustion car. The production of powertrains for electric car are less labour intensive as the one of combustion cars. However, manufacturing electric cars requires more R&D and engineering competences. One of the fundamental issues is the reskilling of the workforce: can the employees who used to work to combustion cars be requalified to work in the transformed electric car industry? There are plenty of initiatives that have been undertaken to tackle the qualification issue. Knowing that there is already a shortage in qualified and skilled workers in certain segments of the industry (for example digitalisation), training was already an essential part of the sector employment policy. A pending question concerns the extent to which the current workforce can be retrained and what additional kind of workers are needed (for example software engineers).

D.5.2.7 Future needs to strengthen TUs involvement in shaping a Just Transition of the sector

D.5.2.7.1 To strengthen social dialogue in new and smaller companies

Despite risks of relocation, Germany remains an attractive location for automotive industries, including electric cars producers such as NIO (GTAI, 2021) or Tesla. However, these foreign companies challenge the German industrial relations system. At first, Tesla wanted to avoid the codetermination system – as well as the establishment of a work council – in its new "gigafactory" near Berlin thanks to a legal loophole. IGM mobilisation finally led to the organisation of work council elections in February 2022. This incident illustrates the necessity of for trade unionists to remain attentive to the functioning of the collective bargaining in these times of transformation (IndustriAll Europe, 2021).

There is also concern about social dialogue in smaller suppliers' companies. IGM could strengthen resources to build support networks between the big car manufacturers and medium-sized or small companies in the same surrounding areas.

D.5.2.7.2 To document the actions undertaken in the framework of the transition

IGM initiatives at plant level could be useful to be documented so that they can inspire and support initiatives in other plants or companies.

D.5.2.7.3 To make the transition a reality on the ground

So far, the shift towards the production of electric vehicles has been widely discussed at political levels (national, regional, etc.) from a theoretical and rather abstract perspective. Now that the transition is happening in practice, in the plant, it would be interesting to create working groups within work councils to tackle the transition from a practical perspective. It is already partially happening, with IGM supporting work councils capacity in being involved in the transition but it could be strengthened.

E COMPARATIVE ANALYSIS OF THE CASE STUDY

The five case studies presented provide rich examples of how TUs in Europe approach the challenges of the Just Transition in decarbonisation, at the national, regional, sectoral and company levels. Despite the seemingly wide variety of (national) contexts, approaches and outcomes, the cases also show overarching commonalities in the way TUs think of, act upon, and what challenges they face in the upcoming transformation processes. This section presents a comparative analysis in which we link the case findings to the existing literature, discuss the findings and identify valuable lessons and conclusions. We discuss, in the following order, TU strategies, objectives, instruments, and outcomes.

E.1 TRADE UNION STRATEGIES

TU strategies can range from a reactive to a more proactive approach toward decarbonisation (Cressey, 1992). In the five case studies at hand, TUs purposeful engage with management and government in an attempt to influence the consequences of decarbonisation and climate change-related measures on workers and work organizations. This inclination to act before irreversible consequences can materialise, combined with their willingness to collaborate on the topic of decarbonisation rather than trying to oppose the coming transformation, points to a proactive attitude of TUs towards decarbonisation. The objective of the German IG Metall trade union, for example, is to be involved as much as possible in the transformation process. Similar objectives were observed in all cases.

Interestingly, the general proactivity of TUs hides differences in the degree to which they evaluate and operationalize decarbonisation in their strategic thinking (Creten et al., 2014). All TUs seem to recognise that decarbonisation is inevitable, implying that a reactive or conflictual attitude is of little use. They do differ, however, in the degree to which they see new opportunities in the forthcoming changes. First of all, a defensive interpretation can be observed, for example in Germany. Fear of declining employment and even relocation of production plants due to decarbonisation translates into a more defensive attitude focused on protecting current workers' rights and benefits. A comparable situation was observed in Spain, where the scope of action was limited because of the forced closing of the mines. Secondly, a neutral/instrumental interpretation towards decarbonisation can be observed, for example in Czechia, where the ageing capital stock combined with severe international competition threatens future employment. Consequently, the Czech TUs welcome every investment, be it in the context of decarbonisation or not, even if it costs some jobs. Finally, a third possible way for TUs to interpret decarbonisation is to see it as an opportunity to improve the current situation. Both in Finland and the UK, TUs depict decarbonisation as a way to improve workers' working conditions. In the UK, the challenges of decarbonisation are even used to revitalise collective bargaining in the offshore oil and gas sector. Comparably, in Spain, the decarbonisation of electricity production[90] created opportunities to engage with other and diverse industries, reactivating and developing new skills for the region's workforce.

The underpinnings of TUs' proactive strategies range from more defensive, neutral/instrumental to opportunistic interpretations of the possible impact of decarbonisation. In practice, trade union strategies are a mix of all three interpretations, for example in Germany and Czechia, reflecting the still uncertain and multifaceted nature of decarbonisation as well as the various interests of the different stakeholders within trade unions.

[90] Even though this transition led to the closure of an industry (i.e., coal-related industries) thanks to the involvement of the TUs, the transition could benefit (the emergence of) other industries.

E.2 TRADE UNION OBJECTIVES

The five cases illustrate TUs' willingness to be involved in and influence the decarbonisation transition. In this section, we discuss trade unions' objectives regarding decarbonisation. As Table 1 summarises, trade unions pursue overall similar objectives, although the particular (institutional) context of each case generates more specific objectives as well. Common objectives revolve around the provision of employment guarantees or economic security for those workers whose jobs are or will be impacted by decarbonisation processes (see also ETUC, 2018). As a baseline, most TUs want a fair and just compensation for workers losing their job because of decarbonisation, for example through (early) retirement or compensation schemes. For those still able and willing to work, trade unions advocate for reskilling and job coaching programmes. Those programmes should enable workers to learn new competencies that will enable them to find new jobs in the green economy or to adapt to new ways of working in their decarbonised industry. In addition, most trade unions develop tools to facilitate job mobility within and between sectors. In Spain, for example, workers who used to work in the power plants, are now being trained to dismantle the existing infrastructure. Similarly in the UK, TUs advocate that workers of offshore gas and oil platforms should be retrained and receive coaching to find jobs in the offshore green energy sector. Finally, most TUs pursue an improvement of existing working conditions. In Czechia, for example, renovating existing blast furnaces should automate the more arduous tasks and improve the overall safety of the process.

In addition, TUs develop more specific objectives depending on the institutional and case context. TU recognition in the UK, for example, is not guaranteed and is therefore included as an objective by the UK trade unions. In Finland, the nature of the case, at the national level, enables TUs to pursue more general objectives such as regional fairness or the inclusion of Just Transition principles in high-level policy documents. The objectives of TUs are also more or less related to their overall attitude towards decarbonisation. The more opportunities TUs see in decarbonisation, the more likely they seem to be to pursue objectives outside the traditional areas of TU action, such as regional fairness or value chain integration. Despite these differences, TUs' objectives across the five cases differ remarkably little.

Table 1 Overview of trade unions' main objectives in the five case studies.

Czechia	Finland	Germany	Spain	UK
Reskilling programmes	Reskilling programmes	Reskilling programmes	Reskilling programmes	Reskilling programmes
Social protection	Social protection	Social protection	Social protection	Social protection
Improving working conditions	Worker mobility	Improving sectoral working conditions	Worker mobility	Worker mobility
Securing future employment	Including Just Transition principles	Securing future regional employment	Securing future regional employment	Recognition of trade unions
	Regional fairness	Rights to training & qualifications	Rights to training & qualifications	Transparency in wage negotiations
				Involving all value chain actors

At a more aggregate level, TUs' objectives can be categorised according to topic, level, and strategic purpose (see Table 2). First of all, the different objectives of TUs target diverse topics. A first category of objectives aims at impacting industrial policies that set the direction for decarbonisation at different levels. Influencing those plans, programmes or roadmaps is a way to directly shape the decarbonisation process itself. Secondly, the bulk of the objectives is focused on shaping the consequences of decarbonisation for workers (e.g.the reskilling programmes discussed in each of the five case studies). Thirdly, some TU objectives focus on shaping (favourable) conditions for decarbonisation initiatives (e.g., the Czech attempts to lobby for modifications of the power grid required for the renovations of the blast furnaces). In the UK, TUs lobby for similar investments in renewable energy. Finally, all TUs are trying to shape and strengthen the grip of social dialogue on decarbonisation processes. In Finland, for example, TUs are lobbying for a tripartite working group to assess the impact of decarbonisation. In the case of the Spanish coal industry, trade unions set up a special monitoring committee to evaluate the implementation of the collective agreements. This is in line with the recommendation from European institutions (European Commission, 2019) and international organizations (ILO, 2018) to strengthen social dialogue as a solution for overcoming the Just Transition challenges of decarbonisation (OECD, 2020).

The five cases illustrate TU action at different levels (national, sectoral/regional, and company levels). Moreover, each of these levels can serve different strategic purposes. At the highest political level, TUs can target the overall goals of the decarbonisation process, try to set its agenda and obtain necessary investments. The Finnish case is a good example of this, but also the Spanish and German cases mention the national level for goal- and agenda-setting. At the sectoral and regional levels, TUs can impact the scope, coverage, and content of decarbonisation programmes. The UK case, for example, clearly illustrates how TUs try to bring the whole value chain under the coverage of the Energy Services Agreement. Similarly, the Spanish example shows how trade unions put effort into a worker registration system at the regional level to cover all workers involved. By negotiating collective agreements, trade unions in Germany, Czechia and the UK codetermine the consequences of decarbonisation for workers at the sectoral level. To a similar end, in Finland, trade union confederations effectively advocated for a revision of the sectoral roadmaps to include Just Transition principles. At the company level, finally, trade unions focus on the actual implementation of decarbonisation plans. In Czechia, for example, trade unions had regular meetings with management to evaluate and monitor the ongoing changes, while in Germany the trade unions are putting much effort into deciphering the impact of company-level programmes on individual plants in the hope to be better able to steer the actual outcomes. This overview suggests that trade unions (should) actively consider at what level they pursue what kind of objective while articulating them in an overarching vertical strategy.

Table 2 Categorisation of trade union objectives based on topic and level.

Topic		Level and strategic aim	
Plans, programmes, roadmaps Ex. Finland	Goal & agenda setting, Just Transition principles… .	National Ex. Finland	Goal & agenda setting, investments.
Consequences Ex. Germany	Reskilling programmes, social security, working conditions,…	Sectoral/Regional Ex. UK	Scope, coverage, content.
Conditions Ex. Spain	Modifications of infrastructure,	Company Ex. Czechia	Implementation.

	investment schemes and obligations… .	
Social dialogue Ex. UK	Collective agreements, monitoring & evaluation committees, having a seat at the table,… .	

In sum, TUs' objectives regarding decarbonisation are diverse, layered and relate to different aspects of the decarbonisation process in their country. Above all, TUs want to be able to influence the coming changes. In the next section, we focus on the instruments TUs are using when trying to exert such influence.

E.3 TRADE UNION RESOURCES AND INSTRUMENTS

The five case studies offer ample examples of the diverse resources TUs can muster and of the actions, they can undertake to achieve their objectives. We distinguish those actions and resources that trade unions can develop internally from those with external orientation, e.g. that trade unions can use vis-à-vis employers, governments, and the broader society (see Table 3).

Several TU actions in the five cases are focused on internal capacity building on the topic of decarbonisation. Firstly, TUs invest time and (human and financial) resources in internal expertise building. Negotiations on decarbonisation-related topics are new to TUs, and the nature of these topics differs significantly from the more traditional topics such as wages or working times (Eurofound, 2018). Hence, social dialogue on decarbonisation requires TUs to gather information and gain internal expertise on the topic. Especially in the cases of Finland and Germany, TUs strongly invest in research on (the impact of) decarbonisation.

Such expertise building can take several forms. In Germany, a regional, specialised so-called transformation team was established to centralise the available knowledge and to support local TU branches and companies' work councils with the necessary information. Similarly, the Finnish TU confederations established internal working groups on climate policies and conducted several studies focused on the impact of climate change and the proposed decarbonisation plans on work. The Czech TUs, finally, emphasized that their continuous lack of information on management plans seriously hampered their scope of action. Secondly, such information should be disseminated throughout member unions (in the case of confederations) and among the union members themselves.

TUs in almost all cases examined spent considerable time and resources in informing and mobilising their stakeholders on the topic of decarbonisation. In the UK, for example, TUs informed and consulted their members regularly while negotiating the Energy Services Agreement. The Finnish TU confederation STTK used seminars to provide member unions with the necessary information. Thirdly, because decision processes on decarbonisation are situated at several levels, TUs are coordinating their actions at different levels. Although all cases bare examples of this (difficult) coordination of action, the German case probably is most insightful in this regard. Within the context of multinational cooperation, it is challenging to gain access to decision-making. The German trade union, therefore, has to centralise information and coordinate its actions to gain actual influence, which requires organisational efforts and resources.

A similar issue was noted in the Spanish case. Moreover, social dialogue on decarbonisation is unlikely to fit into the traditional pattern of periodic negotiations, requiring a more continuous and thus

challenging collaboration at multiple levels (Deery, 1992). Finally, most cases underline the importance of collaboration between TUs and their confederations when facing the challenges of decarbonisation. The British, German, Finnish and Spanish cases even illustrate the potential of international collaboration, by sharing information (for example in the UK case, the rate adjustment system was inspired by Norwegian pay schemes negotiated by TUs) and through better coordination of their actions (for example, by establishing the Nordic-German Trade Union Cooperation on Just Transition projects). In sum, TUs willing to engage with the decarbonisation processes have to invest in both relevant organisational expertise and organisational coordination and collaboration between levels.

Besides actions with a focus on internal capacity building, TUs simultaneously engage with external partners, such as employers, government at different levels, and the broader society. In those interactions, TUs in the cases presented have used specific resources to achieve their objectives. A first potential resource is their political power, referring to both the formal and informal networks TUs can tap into in order to gather information and influence decisions. All cases offer examples of how TUs use their political power to achieve specific targets. The most obvious is the Czech case, where TUs used their connections within the government to pressure the steel company to comply with previous promises. The UK case shows how the TUs successfully involved the Trade Association of Oil & Gas to convince companies to sign their collective agreement. Likewise in Spain, where the unions convinced both employers federations and companies to ratify binding agreements and established training programmes together with companies and public institutions. Spanish TUs also engaged with the local community and negotiated with municipalities for the implementation of new renewable-electricity producers. A second possible resource that TUs possess is their discursive power, referring to their ability to spread ideas, launch (media)campaigns and, by doing so, influence how certain topics are being discussed and thought off. The participation of Finnish TU confederations in the Roundtable on Climate Policy exemplifies this discursive power: because of their participation, despite it being limited, the Finnish TU confederations were able to influence the context in which decarbonisation was being discussed. A third possible resource is situated in the possibility of TUs using (traditional) collective actions such as strikes, demonstrations or campaigns to pursue their objectives. The Czech case offers a good example where collective actions were an important factor influencing employers' actions. Although TUs in the cases presented seem to prefer collaborative means, the mere possibility of collective action can always be used to pressure employers or governments.

Finally, each TU is embedded within a country-specific institutional setting. Those institutional frameworks define the way social dialogue at different levels is organized, delineate the roles of social partners, and assign them specific rights, responsibilities, and limitations. Consequently, the resources and instruments TUs dispose of, are related to the country-specific institutional setting. For example, the Finnish confederations note that their seat in the Finnish Economic Council guarantees access to relevant information, but also gives them a say in decision-making. The German case, another example of a country where social dialogue is highly institutionalised, illustrates how TUs are well represented within the company (through work councils with codetermination rights), but also in the regional and national councils and other institutionalised bodies (Argentur Q, e-mobil BMW), as well as ad hoc working groups. Such institutional set-up clearly facilitates TUs that are willing to be involved in the decarbonisation process, both through better access to information, by offering them enforceable rights and by providing them with a foothold in decision-making processes. In countries such as Czechia or the UK, where the level of institutionalisation of social dialogue is lower, TUs face more difficulties in their attempt to influence decision-making on decarbonisation processes. This is the most obvious in Czechia, where TUs had to heavily rely on their political power to influence decisions in one case and were more or less dependent on the good social climate for their involvement in the second case. As sectoral social dialogue was almost not existent, and company-level social dialogue offered few enforceable rights, Czech TUs had few institutional instruments to

influence managerial decision-making. In the UK, TUs must enforce their own recognition with management and are dependent on sectoral agreements. Even those sectoral agreements do not offer the same extent of security as, for example, Spanish or German sectoral agreements because employers can opt-out one-sidedly. The cases therefore clearly illustrate how the country-specific institutional setting can facilitate or hamper social dialogue on decarbonisation. However, even in countries where the level of institutionalisation is low, such as the UK or Czechia, TUs were able to get involved using different resources and instruments.

Table 3 Overview of different internal and external trade union instruments and resources to influence decarbonisation processes

Internal	External
Expertise building Ex. UK, Germany, Finland	Political power Ex. All
Mobilizing unions/workers Ex. Finland, UK, Germany, Czechia	Discursive power Ex. Finland, Spain
Coordination action at several levels Ex. All	Collective action / boxing Ex. Czechia
(Inter)national collaboration between trade unions Ex. Germany, Finland, Spain	Institutional power Ex. All

TUs willing to be involved with or have a say over decarbonisation processes, have ample instruments to work with. The presented cases show that TUs invest in their internal operations and organisation, most notably investments in knowledge building and efforts to increase coordination of actions, as well as use different resources from which they can strategically draw to achieve their objectives.

E.4 IMPORTANT CONTEXTUAL VARIABLES

The five presented case studies elicit some important contextual variables:

- The context of **multinational companies** (Germany, UK, Spain): layered decision-making levels, competition between plants, regions and countries, their ability to disappear from a country (Spain), which can be two-sided for TUs' influence, either playing in their favour or slowing the discussion process.
- The context of **international financial markets** (Czechia): the huge investment costs of some decarbonisation processes make them vulnerable to what happens on the international financial markets – something TUs have little impact on.
- The context of **diverse institutional settings** (all): some outputs can highly differ from case to case, even when similar strategies were played, making generalisation of TUs' good strategies and lessons learnt difficult. The differing institutional settings in Europe highly influence the scope of action and available instruments of TUs.
- The context of **changing incumbent governments** (Czechia, Finland, Spain): the political power of TUs seems important, but might be to a certain extent linked to the incumbent government and hence fragile as dependent on elections.

E.5 OUTCOMES OF TRADE UNION ACTIONS

TUs do want to be involved in the Just Transition of the decarbonisation processes, but do they succeed? And do they have a say in decisions? Based on the five case studies, the outcomes of TUs' involvement in decarbonisation processes are mixed, uncertain but overall hopeful.

- **Mixed.** The five cases offer examples of situations where TUs' involvement was successful in influencing decarbonisation processes to the benefit of workers. At the same time, the cases offer examples of situations where TUs' involvement was modest or its impact limited. The UK case, for example, shows how British TUs successfully used the decarbonisation challenges to strengthen social dialogue and renew the collective agreement in the sector of offshore oil and gas extraction. In Finland as well, TUs probably gained some indirect advantages from being involved in the Roundtable on Climate Policy, despite the overall passive role assigned to the participants of the roundtable. The Spanish case illustrates how similar TU initiatives within related sectors can go either way, failing in one case, succeeding in another, often depending on contextual factors. The Czech case might be an example of a situation where TUs have had limited success in acquiring a say in decisions regarding decarbonisation, mostly due to the low level of institutionalisation of social dialogue and the complexity of negotiating with a multinational company. We, therefore, conclude that TU outcomes in the five case studies at hand are mixed.
- **Uncertain.** Decarbonisation requires a long transition phase and the actual outcomes for workers will, in most cases, only crystallise at the end of the process. TUs are currently opting for a proactive attitude, trying to influence the process from the start by negotiating security of employment or employment guarantees. However, many of the results of such a proactive strategy will only manifest in the future: for example, it is still a question of whether retraining programmes will actually be successful in enabling workers to find other jobs. We, therefore, conclude that the outcomes of TU actions on decarbonisation are still uncertain.
- **Hopeful.** Whether TUs can influence decarbonisation processes strongly relates to the resources and instruments available to them. Specifically, the institutional setting and the discussion timing can be decisive in this regard. Moreover, decarbonisation as a topic differs significantly from more traditional TU topics such as wages or working times. For example, it requires ex-ante consideration (proactivity, knowledge building, cooperation, etc.) instead of ex-post distributional bargaining (reactive, conflictual, etc.). Despite the relative newness of the topic and the relative scarcity of resources and instruments some TUs can rely on, the five case studies show that unions are almost always able to achieve certain objectives using ever-changing combinations of resources and instruments. For example, even the Czech TUs, which were confronted with weak social dialogue structures on the company and sectoral levels, were able to exert some influence using a combination of collective action and political power. We, therefore, conclude that TUs can be hopeful regarding their chances of influencing decarbonisation outcomes.

Nevertheless, the cases also identify three overarching challenges for TUs willing to engage with decarbonisation. First of all, TUs face an information challenge on two fronts: both information on decarbonisation as a complex process with uncertain outcomes and information on the managerial and governmental decision-making processes behind decarbonisation. Both kinds of information are hard to get and require significant investments. Secondly, TUs face difficulties in exerting influence over decisions on and the agenda regarding decarbonisation. Even in countries where social dialogue is highly institutionalised, such as Germany or Finland, TUs underline the difficulty of influencing the discussions, and the continuous effort they have to put into their attempt to keep up with and influence decarbonisation related decisions. In countries with weaker social dialogue structures, this challenge is even bigger. Finally, the temporality of TU action in decarbonisation processes seems

challenging. Because of the long duration of decarbonisation processes, the timing of TU actions seems to be of crucial importance. In the UK, Finland and Germany, TUs are involved early in the process and consequently have more leeway to influence the eventual outcomes. The Spanish and Czech cases provide examples of the decreasing scope of action and the shrinking likelihood of success to influence the decarbonisation process and its outcomes.

E.6 Conclusions & Lessons learned

In the five cases, the TUs' position, whatever the level of action, is beyond the 'jobs versus environment dilemma'. They agreed to deal with an ecological approach regarding the future of their company, sector, region, or country. However, the issue of decarbonisation transition raises internal debates and draws attention to the importance of internal democracy within TUs (Thomas & Pulignano, 2021).

It is indeed the case that decarbonisation falls out of the original scope of TUs' expertise. However, the implementation of European and/or national norms aimed at carbon neutrality raises concrete issues about impacts on workers and work organisations that have more to do with TUs' usual field of competencies. The implementation stage of norms and policies can therefore constitute a window of opportunity for TUs to invest in negotiations where they hold a more comfortable position in terms of expertise and recognition: Just Transition in the decarbonisation.

Decarbonisation transition has cascading effects on stakeholders active in territories impacted by transition measures. It has been noticed in the five cases that TUs decided to go first for a collaborative approach with management and public authorities when possible. This collaborative approach is fed by mutual interests from territorial authorities and companies management to team up in order to protect economic activity at the territorial level. Multilateral partnerships, for example through the creation of local training agencies, allow combining resources to cope with the impact of the decarbonisation transition as well as to foster TUs' recognition of the actions to be taken to deal with these impacts.

Decisions on decarbonisation are firmly in the hands of governments and companies. Consequently, current discussions on decarbonisation are mostly framed within managerial or technical discourses and its qualitative and quantitative impacts on workers are rarely considered, and consequently ill-understood. TUs opting for an innovative, proactive, and consensual approach, therefore, have to structurally invest in and reorganize the way they act and think about social dialogue. Even then, the success of such an approach is not guaranteed, but is partly dependent on the willingness of companies and governments to share power over decisions on decarbonisation. TUs prefer to dance, but are in dire need of finding an appropriate score and especially willing dance partners.

F CONCLUSIONS & RECOMMENDATIONS

F.1 CONCLUSIONS

In this report, we provide insights on the TUs' responses and involvement toward the decarbonisation of four sectors of the industry (energy, automotive, extractive and energy-intensive sectors). Thanks to a survey, expert interviews, and five case studies, the authors analysed about seventy initiatives involving TUs in the decarbonisation. Impacts of TUs' initiatives for the different parties involved in the decarbonisation were reported.

Our findings emphasize the complexity of decarbonisation as a megatrend requiring European industries to fundamentally restructure. Given this complexity, TUs find themselves in a difficult spot. They must simultaneously gather expertise on a process with yet unclear consequences and impacts, form opinions on the required course of action to protect workers' interests and develop a corresponding strategy to gain leverage in decision-making processes. This report provides insights into how TUs are currently tackling those challenges.

We found that most initiatives undertaken by TUs on decarbonisation are being done at the national level, often by TU confederations. TUs mostly use their institutional power to position themselves toward decarbonisation. By comparing the different levels of TUs' involvement, it appears that most initiatives are taken at regional or national levels rather than at the company level. Although such a situation is understandable at the start of the decarbonisation process, TUs should now keep an eye on the actual implementation of national-level agreements on the sectoral and company levels. It is at these latter levels that the impacts and outcomes of decarbonisation will be mostly felt. Moreover, the results of the initiatives taken at higher political levels are yet difficult to estimate.

Knowledge is key in decarbonisation related discussions, as TUs' representatives would benefit from more expertise to debate, take positions, and develop strategies. Currently, such expertise is being developed at the higher levels of TUs, for example at the level of the confederations. However, we identified a lack of downward circulation of knowledge and information towards the lower levels of TUs' organisations (e.g. sectoral, company, plant levels). Knowledge transfer could be organised from the confederation to their member unions and from national unions to sectoral or company levels. Indeed, there seems to be insufficient structural communication among the different levels within TUs. Such structural communication and coordination of TUs' positions are even more important given the multi-layered decision-making processes related to decarbonisation, requiring TUs to collaborate and coordinate their actions at all levels. Finally, we found that unions insufficiently documented initiatives conducted at sectoral and company levels. More efforts should be made by TUs to share and advertise their actions toward decarbonisation. It seems that several initiatives could be highlighted as best practices to provide guidance and information to other TUs at both sectoral and company levels.

TUs can adopt various strategies in response to the challenges decarbonisation poses to the manufacturing sector in Europe. A key question is which strategy enables TUs to best represent the workers' interests. From the initiatives analysed in this report, it seems that most unions use proactive strategies either directly at the sectoral level (as observed in the UK or the Spanish case) or even at the company level (IGM in the automotive sector). When direct contact (at sectoral and company level) does not work, unions seem to be able to utilise their network and power to escalate their request to a higher level (government) to defend workers' interests.

In what follows, we discuss several challenges that accompany a proactive strategy as depicted in the different case studies and present different ingredients a proactive strategy could consist of. This

overview is based on TUs' past experiences in developing proactive strategies, combined with the limited knowledge we have of current initiatives.

F.2 CHALLENGES FOR TRADE UNION PROACTIVE STRATEGY

We identified four challenges related to the development of a proactive strategy toward decarbonisation.

First of all, the previous sections of this report showed that attitudes towards decarbonisation among TUs can be very mixed, ranging from a fundamentally green attitude (in Spain) to an attitude of resistance (in Czechia). A first challenge is therefore to **acknowledge that decarbonisation may not yet be a priority for all TUs**. This support can be fed through knowledge and public awareness.

Second, and as highlighted in this report, TU initiatives mainly focus on providing flanking measures for workers and their communities experiencing the impact of decarbonisation. This objective offers clear linkages with the more traditional topics of TUs' actions such as working conditions, training and social security benefits. Although the importance of this message is undeniable, TUs are struggling to sell their perspective. Given the multitude of stakeholders involved in the decarbonisation process and their different backgrounds, **a common language is required** that, from the initiatives analysed in this report, does not exist yet. TUs would benefit from further discussing and coordinating actions to homogenise their language to properly spread their message to the different stakeholders.

Decarbonisation solutions and outcomes are often presented in a (technologically) deterministic way: an inevitable evolution with fixed outcomes (in Spain and the closure of mines and power plants, in Germany with electric vehicles and in Czechia with the electrification of the steel making process). This implies that TUs have no role in shaping the decarbonisation as such and push toward a reactive stance towards decarbonisation. Previous transformations have shown that (technological) changes are the outcome of both technical and policy processes and therefore mouldable by TUs (specially observed in the Czechia case). A third challenge, hence, consists in **actively repudiating the opinion that the outcomes of (technological) solutions to decarbonisation are inevitable or the result of a natural process** and, therefore, cannot be shaped by TUs. When such mechanisms of reprocessing are put in place (in Spain, with the introduction of new industries to replace the power plants), there is a new work dynamism that enables unions to support the transition. Such challenges can be remediated if unions are involved in governmental, sectoral and company planning toward decarbonisation.

Fourth, a proactive strategy focused on shaping decarbonisation initiatives requires a **thorough understanding of the processes, options and possible outcomes**. Knowledge building on decarbonisation is complicated by the uncertainties revolving around the different solutions and especially their outcomes. It, therefore, requires significant financial and human investments. Most of this knowledge is currently being developed at the higher levels of TUs. A related challenge is therefore to spread this knowledge to sectoral and company levels. It must be noted that few off-the-shelf responses are available. Hence, each company will have to develop more customized plans and strategies to deal with the decarbonisation challenges.

F.3 RECOMMENDATIONS FOR TRADE UNIONS TO ACHIEVE JUST TRANSITION TOWARDS DECARBONISATION

A proactive strategy towards decarbonisation can consist of various TU initiatives with different objectives and using diverse instruments. As the report illustrates, it is very important to have some

pre-conditions for unions to have a significant impact on decarbonisation processes at the sectoral and company level. We, therefore, differentiate between initiatives focusing on setting the right preconditions, and initiatives focused on the actual shaping of decarbonisation and its outcomes.

F.3.1 Setting the right preconditions for trade unions

Two of the main challenges TUs face regarding decarbonisation are building sufficient internal capacity and getting decarbonisation on the agenda of social dialogue. Therefore, we propose the following initiatives:

- **Initiatives focused on the mobilization of union members.** Such initiatives can consist of informing members, asking their opinion, increasing members' awareness of the challenges of decarbonisation or the possible impact TUs can have (such as the case of IGMetall in the automotive sector but also the RISE, BRISE and ASBL Arbeid & Milieu programmes in Belgium). Increasing TU members' knowledge and engagement on the topic of decarbonisation guarantees their support for TUs' actions (such as in the Spanish case). In case negotiations or initiatives are led by TU confederations, sufficient time and resources have to be allocated to channelling the necessary information to their member unions, both to keep them up to date and involved, and to ask for their support for the confederations' strategies. Initiatives focused on building up expertise on decarbonisation should be encouraged. Decarbonisation is a highly complex process with uncertain outcomes. Consequently, it requires in-depth knowledge to be able to understand and shape its outcomes (as emphasised in the Finnish case). TUs should therefore focus on gathering information to build up their internal expertise and develop their own strategy. This can be done by doing research themselves, by (inter)national cooperation between TUs, by inviting external experts or by ordering specific studies from academic partners. Such expertise building requires human and financial investments.
- **Initiatives with a focus on promoting and strengthening social dialogue** on decarbonisation. In a recent report, the OECD stresses the importance of social dialogue as a solution for overcoming the challenges of decarbonisation (OECD, 2020). Strengthening social dialogue can address different decision-making levels: European, national, sectoral and company levels. Special monitoring committees, tripartite working groups or anchoring the involvement of TUs in high-level policy plans are examples of relevant trade union initiatives found in the cases (such as the Finnish case). In general, we found that TUs and their confederations have to put significant effort into trying to influence decarbonisation-related decisions and plans.

F.3.2 Shaping decarbonisation and its impact on jobs

TUs can launch various kinds of initiatives regarding decarbonisation, either relating to shaping the outcomes or consequences of decarbonisation on jobs (e.g. the quality and/or quantity of jobs), or by trying to directly shape decision-making on decarbonisation itself. Both kinds of initiatives are important.

- The decarbonisation transition will influence **the quantity (number) of industry jobs** in European industries. Corresponding TU initiatives can be aimed at (re)skilling, organizing mobility between and within the sector and safeguarding the necessary social protection measures for both direct workers and contractors, but even further for all workers in the affected regions. Firstly, TUs can promote the development of (re)training strategies, negotiate agreements aiming to map skill needs, identify challenges and opportunities for reskilling and use information and consultation rights to anticipate such changes (such as in the UK case). Secondly, the promotion and reinforcement of social protection measures are

crucial to absorbing disruptions caused by decarbonisation, especially in regions that are heavily impacted by the transformation. Furthermore, and simultaneously, unions can activate strategies to attract different kinds of industries to utilise newly trained and available workers (such as in the Spanish case). To do so, TUs might strive for the inclusion of social protection measures in national decarbonisation plans, develop and promote mitigation strategies and develop risk assessments of stranded assets, work together with companies and federations of employers. TU initiatives focusing on the number of jobs can be organised at both macro, meso and micro levels.

- Decarbonisation will influence **the quality of industry jobs** in European industries. The impact of decarbonisation on job quality in terms of both working environment, job content, employment conditions and industrial relations should be acknowledged and monitored in both new green jobs, but also in job categories that experience major changes. For example, new technologies can reduce physical demanding tasks while at the same time raising new safety-related threats (such as in the Czech case). Other elements related to the quality of the jobs that require follow-up are worker rights, employment standards, risk of increasing precarity, and cost-saving operations with a risk of entailing dumping strategies.
- Finally, **shaping decarbonisation initiatives and decision-making** can be the topic of TU initiatives as well. On a macro-level, such initiatives can include (collaboration on) the development of new, sustainable industrial models, industrial policies and decarbonisation target-setting (such as for the case investigated in Finland). On a meso-level, TUs can engage in the translation of national targets and policies into sectoral objectives and policies (in the Spanish and UK case). Finally, on a micro-level, TUs can be a valuable partner in company strategies and initiatives that focus on decarbonisation (in the German case).

It should not be forgotten that TUs' involvement in decision-making and influence on decisions regarding decarbonisation cannot be taken for granted. Previous transformations of industry, such as globalisation, have shown that TUs tend to struggle to shape those changes because their involvement in and influence on decision-making are sometimes limited. Their involvement and influence in decision-making can take many forms, each with their own advantages and drawbacks. Involvement in high-level decision making can be favourable because of the importance of decisions at such levels. Conversely, others stress the importance of being involved on a lower, workplace level, since that is the source of employee representation vis-à-vis the management. Similarly, TUs' influence on decisions can range from having an influence on the consequences of decisions, or, more ideally, on the decisions themselves. Being involved or having an influence on decision-making on decarbonisation might depend on the available institutional instruments the national industrial relations regimes have to offer. The different historical evolutions and traditions have led to heterogeneous industrial relations regimes in Europe and, consequently, provide TUs with very different institutional instruments to shape decarbonisation initiatives (Geels, Berkhout, et al., 2016; Geels, Kern, et al., 2016; Healy & Barry, 2017; Kuzemko et al., 2016). The more institutional instruments TUs have, the more likely it is possible for them to opt for a proactive strategy and vice versa.

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APPENDICES

1. SURVEY QUESTIONNAIRE NAMED 'TRADE UNION INVOLVEMENT IN JUST TRANSITION INITIATIVES'

Introduction letter

European Union climate policies target net-zero emissions by 2050 and the recently announced Green Deal seems to have further stirred salience and urgency. In the next few decades, the European industry is facing a major challenge: transitioning towards climate-neutral and low-carbon production processes. In this transition, trade unions will also be addressed, as this transition may lead to challenges for the workforce. According to industriAll Europe, "the transition to a cleaner, more sustainable economy must be economically and socially just and fair for workers and their communities". In order to develop a Just Transition plan, it is crucial to gain insight in initiatives already taken by companies, governments or trade unions.

The objective of this survey is to gather examples of initiatives taken in regard to this transformation towards a climate-neutral industry and to look at the involvement of trade unions in these initiatives. The term 'initiative' gathers any action and proposition taken at any level, which aims at transforming the actual industry landscape either in term of ethics, process, management, governance, etc. These initiatives could include internal actions in trade unions or joint actions, including management, trade unions, and other parties. Initiatives may be introduced by management, government, trade unions, or external parties and could take place at several levels (workplace, company, sectoral, country level).

This survey is part of a broader research project entitled "Building Capacities and Strategies of Trade Union Involvement in shaping a Just Transition towards a Sustainable and Decarbonised Industry" that was initiated by industriAll Europe and is led by KU Leuven (Belgium). The best identified practices will be followed by in-depth interviews.

The survey will take approximately 15 minutes. You can fill in the survey for one or as many examples of initiatives as you are aware of. At the end of this survey, we ask you to pin the initiatives on Google Maps.

Thank you for your feedback!

This project is funded by the European Commission (DG Employment Budget line VP/2019/002 Information and training measures for workers' organisations, Project reference VP/2019/002/0047)

GDPR information

The purpose of this survey is to gather data regarding Trade Union interesting initiatives. The research is part of a project managed by industriAll Europe and is led by KU Leuven. The project is funded by the European Commission, *DG Employment* Budget line VP/2019/002 *Information and training measures for workers' organisations, Project reference VP/2019/002/0047*. You are invited to participate in this research project because you have been identified as a stakeholder of the Trade Unions.

This survey is a searching survey to gather good practice cases. The sole purpose is to report initiatives. The best identified practices will be followed by in-depth interviews. Your participation in this research study is voluntary. You may choose not to participate. If you decide to participate in this research survey, you may withdraw at any time. If you choose not to participate in this study or if you withdraw from participating at any time, you will not be penalized.

The procedure involves completing an online survey that will take approximately 15 minutes. Your responses concerning personal data will be confidential. While, and only upon your agreement, we collect identifying information such as your name and e-mail address, only the information collected prior the section 4 – General Information (regarding the initiative), will be semi-public and shared with industriAll Europe. The information collected in section 4 will never be shared outside the research team of KU Leuven. The survey questions will be about the Trade Unions initiatives.

Your information will be stored from the time when the information is collected and for seven years after the completion of the research project due to auditing requirements.

If you have any questions about the research study, please contact the researchers at: zero-carbon-transition@kuleuven.be

ELECTRONIC CONSENT:

Please select your choice below.

Clicking on the "I agree" button below indicates that:

- you have read the above information
- you voluntarily agree to participate in the survey
- you are at least 18 years of age

Alternatively, if you do not want to complete the survey and do not wish to participate in the research study, please decline participation by clicking on the "I disagree" button.

- o I agree
- o I disagree

Section 1 - initiatives related to low-carbon industry and Just Transition: Overview

The Paris Agreement and the European Green Deal objectives will trigger important transformations for the industry in terms of processes, products, business models, management, governance, employment, etc. This first section of the questionnaire aims to identify initiatives adopted at various levels to anticipate, stimulate or accompany those changes in any of the following sectors: extractive industries, energy sector, automotive sector, energy-intensive sectors (aluminium, cement, chemical, pulp and paper, steel, glass).

- Are you aware of any initiative (past, on-going or future) to anticipate, stimulate, or accompany the transition towards a low-carbon industry, *in which a trade union will play, plays or played a role*? We are not expecting long descriptions of initiatives, but key factual data related to a specific initiative (name, date, place, sector). You may add hyperlinks to relevant websites detailing the initiatives. The initiatives can be reported at four different levels (1-political, 2-sectoral, 3-company, and 4-workplace), please fill in for all relevant levels (boxes):

1.1 List the most relevant political initiatives taken at government/public authorities level (past, on-going or future): *(Example: A regional re-development plans developed to phase out certain sectors/technologies)*

Examples may include (but are not limited to):
- Phase-out strategies for certain sectors/technologies to decarbonise the economy
- Collective agreement
- National Energy and Climate Plans as requested by the Regulation on the Governance of the Energy Union (EU/2018/1999)
- Adoption of Just Transition goals
- Investments in Just Transition fund
- Phasing out of some industries
- Consulting external experts (public/private)
- Strategies related to the roll-out of specific low-carbon technologies (renewables, hydrogen, etc.), etc.
- Modification of supply chains regulations to include ethical standards

1.2 List the most relevant sectoral initiatives adopted/launched by social partners in your sector(s) (past, on-going or future):

(Example: In a member state, social partners from the energy sector reached an agreement to accompany the decarbonisation of electricity production by 2030)

Examples may include (but are not limited to):
- Up-skilling and re-skilling programmes
- Phasing out of some industries
- Collective agreement at a sector level
- Consulting external experts (public/private)
- A collective agreement to address possible restructuring, redundancies, early retirement, etc.
- Adoption of Just Transition goals
- Investments in Just Transition fund
- Standardisation improvements (new standards in place to improve eco-efficiency of a process or the building)
- Voluntary carbon offsetting or carbon pricing (voluntary contribution and partnership to offsite carbon footprint investments)
- Modification of supply chains to include ethical standards
- Improvements related to circular economy
- Low-carbon product design
- Lifecycle approach to production
- Innovation in new products

1.3 List the most relevant initiatives adopted at company level (past, on-going or future):

(Example: In the automotive sector, company X decided to fully electrify its fleet by 2030 and has negotiated a plan with unions to accompany this shift)

Examples may include (but are not limited to):
- A collective agreement targeted at the re- and upskilling of the employees to adapt to technological changes
- Changes in organization of work (teleworking, etc.)
- Modification of means of transportation, on and off-site (teleworking, carpooling, bus, train, bike, etc.)
- A collective agreement to address possible restructuring, redundancies, early retirement, etc.
- Changes to the production line
- Supplier switch (change or upgrade in suppliers to improve sustainability and energy efficiency of your supply chain etc.)
- Process improvements (change in machines to improve energy efficiency, new machines, new production methods, new technologies, new tools, etc.)
- Modification of supply chains to include ethical standards
- Improvements related to circular economy
- Low-carbon product design
- Lifecycle approach of production
- Innovation to launch new products

1.4 List the most relevant initiatives you are aware of at workplace level (past, on-going or future):

(Example: A plan to make a factory fully circular in terms of energy, water, and raw materials)

Examples may include (but are not limited to):
- Changes in organization of work (teleworking, etc.)
- Improvement of the waste management (recycling, sorting of some materials, etc.)
- Modification of means of transportation, on and off-site (teleworking, carpooling, bus, train, bike, etc.)
- Building enhancement and renovation (insulation, improvement of windows, air conditioning, low consumption lighting, natural lighting, etc.)
- Surrounding improvement (implementation of blue and green zones, areas for biodiversity, beehives, etc.)
- Carbon sequestration (plantation of trees and crops for carbon capture, technologies for carbon capture such as filters, etc.)
- Energy system improvement (changes in the energy production system, CHP engine, solar panels, etc.)
- Process improvement (changes in machines to improve energy efficiency, new machines, new production methods, new technologies, new tools, etc.)

- Any other initiatives? … If yes, please specify: ……

Section 2 - ONE initiative related to low-carbon projects

For the following questions, pick one of the initiatives related to low-carbon project you mentioned above.

- Briefly specify and detail the initiative you pick for the following questions: ……
- When did (does) the initiative related to low-carbon start? Please provide the year the initiative started and the year it ended (if still ongoing, write "ongoing""): ……
- To which of the following sectors of industry does the initiative belong?
    - extractive industries
    - automotive sector
    - energy sector
    - energy intensive sectors
        a. aluminum
        b. cement
        c. chemical
        d. pulp and paper
        e. steel
        f. glass
        g. Other – please specify……
    - Other – please specify…
    - I don't know – please provide the name of the company…
- At which level was the initiative taken?
    - Country level
    - Regional (province) level
    - City (district) level
    - Sector level
    - Company level
    - Workplace level
    - Department level
    - I don't know
    - Other – please specify…
- Who introduced the initiative?
    - National government
    - Regional government
    - Employer federation(s)
    - Trade union(s) at sectoral level
    - Trade union(s) at local level
    - Joint initiative by social partners
    - Company management
    - Works council
    - Shop stewards
    - Employee representatives
    - Workers
    - I don't know
    - Other – please specify ……
- Which actors were involved in the initiative?
  Multiple answers allowed
    - National government

- Regional government
- Employer federation(s)
- Trade union(s) at a sectoral level
- Trade union(s) at a local level
- Joint initiative by social partners
- Company management
- Works council
- Shop stewards
- Employee representatives
- Workers
- I don't know
- Other – please specify…

- If a trade union (or employee representatives) and another party were involved, how was the trade union involved in this initiative?
  - The trade union was informed about the initiative
    Information = trade unions are provided with information but were not asked to give their view or feedback.
  - The trade union was consulted about the initiative
    Consultation = the process by which trade unions were informed about an initiative and where the other parties involved actively seek and take account of the views of the trade union, either directly or through their representatives, before making a decision.
  - The trade union negotiated/co-determined the initiative
    Negotiation = the process by which the parties involved seek to reach an agreement through bargaining and where trade unions thus can co-determine the initiative.
  - I don't know

- Could you please specify how trade union(s) was/were involved and what actions they took as a result of this initiative? (for example: developing collective agreement, building an action plan, training, going on strike, etc.) ……
- How would you evaluate the level of cooperation between the trade unions and the other actors of the initiatives? Please rank the level of cooperation from 0 (bad) to 5 (excellent)

Cooperation level with	0	1	2	3	4	5	DK/NO
National government							
Regional government							
Employer federation(s)							
Trade union(s) at a sectoral level							
Trade union(s) at a local level							
Joint initiative by social partners							
Company management							
Works council							
Shop stewards							
Employee representatives							
Workers							
Other							

If Other, please specify……

- What **goals** did (do) the **trade union want** to achieve through this initiative?

- Decrease industrial impact on climate
- Improve energy/resource efficiency
- Decrease maintenance costs
- Decrease in turnover
- Change in labour skills
- Avoid lay-offs
- Raise trade union membership
- Avoid job destruction
- Attract younger members
- Stimulate pro-activity in trade union
- I don't know
- Other – please specify…

- What **outcomes were achieved** with this initiative?
  - Reduced industrial impact on climate
  - Improved energy/resource efficiency
  - Reduced maintenance costs
  - Reduced turnover
  - Change in labour skills
  - Avoided lay-offs
  - Raised trade union membership
  - Avoided job destruction
  - Attracted younger members
  - Stimulated pro-activity in trade union
  - I don't know
  - Other – please specify…

- On a scale from 0 (very unsuccessful) to 5 (fully successful), please rank how successful do you consider the initiative was towards a low-carbon industry?

	0	1	2	3	4	5	DK/NO
From the initiator point of view *(did the initiative succeed to achieve its initial goals)*							
From a timeline perspective *(did the initiative achieve its goals on time)*							
From the trade union perspective *(were the goals of the trade union achieved)*							
Did the initiative taken by the trade union support the successfulness of the transition							

Any comment……

- On a scale from 0 (no issue) to 5 (major issue), please rank the barriers and issues occurring during the initiative. For example, if the budget was one of the larger issues during the initiative please tick boxes 4 or 5. If time was a minor issue tick 1 or 2. If equipment was not an issue tick box 0.

Lack of:	0	1	2	3	4	5	DK/NO
Time							
Equipment (technology)							

Budget (liquidity, funding)							
Staff availability							
Competence and skills							
Knowledge and information							
Communication							
Existing legislation							
Legal support							
Support from the government							
Support from the employer federation(s)							
Support within the trade union (internally)							
Support from workers							
Support from other trade unions							
Support from the company management							
Other							

If Other, please specify……

- Overall, how do you estimate the impact of the covid19 pandemic on the low-carbon initiatives:
  - Positive impact
  - Negative impact
  - Positive impact on the awareness towards climate change
  - Negative impact on the awareness towards climate change
  - Accelerating the initiative process/implementation
  - Slowing the initiative process/implementation
  - Providing more funding
  - Providing less funding
  - Allow more support
  - Reduce support
  - Avoid job destruction
  - Allow job destruction
  - Stimulate activity in trade union
  - Reduce activity in trade union
  - Other – please specify…

- *Please kindly refer to any document that could provide additional information to the initiative mentioned above (website, report, etc.). You can also send the document to* zero-carbon-transition@kuleuven.be .

Please include interesting links here

Upload form

- *Please kindly click on the link below to input on the map all the locations of the initiative mentioned above (please name each of the initiatives for each pin)*

https://www.google.com/maps/d/drive?state=%7B%22ids%22%3A%5B%221QRWJB2BN9uvmQ8tS3sGPu1LuTBPjaSzr%22%5D%2C%22action%22%3A%22open%22%2C%22userId%22%3A%22101121262033814915658%22%7D&usp=sharing

Instructions to add a location on the map:

- First, select the sector which the initiative belongs to. (the sector is selected when there is a thin blue line on the right of the box of the sector)
- Second, click on the map to add a pin.
- Third and last, add a name and a short description about the initiative.

Section 3 – Additional initiatives

- If you specified more than one initiative at the beginning of this survey, could you fill in the survey for one of the other initiatives you have identified?

REPEAT ALL QUESTIONS FROM 3 to 17

Section 4 - General information

If you agree to be contacted by KU Leuven for providing further information, please answer the following questions (anonymity will be guaranteed):

- Do you agree to be contacted for further inquiry
  - Yes
  - No

If yes,

- Your name: ……
- Your e-mail address: ……

2. THE LONG LIST OF INITIATIVES

Initiatives from the interviews			
Country	**Year**	**Sector/industry**	**Information on the initiative(s)**
Germany	2012	Automotive	Electrification of the automobile industry in Germany (TU initiative)
Czechia	2019	EII (Steel)	Modernization of production processes in the steel industry
			Hybrid furnaces (company initiative)
			Production line of seamless pipes (company)
			Social program regarding this modernization process (TU initiative)
Belgium	2014	Automotive	Transition from production buses with classic combustion engines to hybrid and electric buses.
			New manufacturing plant for production of electric buses in which production will be climate neutral (zero tolerance for emissions) (company initiatives)
Denmark	2018	Energy	Creating energy scenario reports per year: how to get a 100% renewable energy system in Denmark (transition of energy systems) (TU initiative)
			Support to stop gas exploitations and just transition package/plan (TU + other external partners)
			Initial 'icebreaker' project for matching up SMEs and white-collar workers + directed towards the green transition (TU initiative)
Spain	2018	Mining (Coal)	'Just transition' agreements for closures coal mining industry. Protection of employment (TU initiative)
UK	2018	Energy	Document 'green economy' to trigger a debate (TU initiative)
Slovakia	2012	Mining (Coal)	Closing of the mines in Prievidza + new employment possibilities for this region (Government and company initiative)
France	2009	Energy	Avoid unemployment and facilitate dialogue when closing a power plant
			Nuclear plant
France	2017	Energy	Transformation of coal energy plant into waste and wood (the new site also makes wood pellet)
			Territorial pact
			Transfer of skills
Germany	2018	Mining (Coal)	National agreement on coal mining phase-out
	2013	EII (Chemical)	National hydrogen council
			Chemistry for climate
			Chemie alliance on sustainability: https://corporate.evonik.com/downloads/corporate/verantwortung/20130522_chemie3_leitlinien_engl.pdf

Initiatives from literature			
Country	**Year**	**Sector**	**Information on the initiative(s)**
Italy	1989	EII	Novamont etuc.org/sites/default/files/publication/file/2018-09/Final%20FUPA%20Guide_EN.pdf
Germany (rhuhr)	2001	Mining (Coal)	Ruhr region in Germany (North Rhine-Westphalia) etuc.org/sites/default/files/publication/file/2018-09/Final%20FUPA%20Guide_EN.pdf
Belgium	2006	All	RISE, BRISE and ASBL Arbeid & Milieu : training and awareness raising on decarbonisation for TU members etuc.org/sites/default/files/publication/file/2018-09/Final%20FUPA%20Guide_EN.pdf
Uk	2006	All	TU strategy to build capacity to tackle climate change issues at work; ensure good practice in workplace environmental activities; implement environmental training for workplace green representatives; raise awareness; boost workforce participation
France	2007	EII	Tripartite negotiations are compulsory thanks to the law on modernising social dialogue 2007, for government to reform industrial relations, employment or vocational training. Https://www.eurofound.europa.eu/sites/default/files/ef_publication/field_ef_document/ef1126en.pdf
Germany	2007	EII	IG Metall provide guid for sector level to link the ecological aim of boosting resource efficiency in resource-intensive sectors with the social objective of preserving jobs.
Belgium	2009	All	Ecovoucher introduced by TU
Poland	2009	All	Independent economic expertise: a key tool of social dialogue etuc.org/sites/default/files/publication/file/2018-09/Final%20FUPA%20Guide_EN.pdf
France	2009	Automotive	Vénissieux transport equipment plant (Bosch group) etuc.org/sites/default/files/publication/file/2018-09/Final%20FUPA%20Guide_EN.pdf
Romania	2009	EII	Tripartite dialogue for drafting the economic stimulus package in 2009 withdecarbonisation aspects https://www.eurofound.europa.eu/sites/default/files/ef_publication/field_ef_document/ef1126en.pdf
Denmark	2009	Energy	Lindø Offshore Renewables Centre (LORC) etuc.org/sites/default/files/publication/file/2018-09/Final%20FUPA%20Guide_EN.pdf
Bulgaria	2009	All	Development of workforce competence assessment system by sectors and regions etuc.org/sites/default/files/publication/file/2018-09/Final%20FUPA%20Guide_EN.pdf
Germany	2013	Energy	Settlement of solar panels and wind turbine page 116 https://www.caissedesdepots.fr/sites/default/files/2020-05/etude_filieres_ceri-cdcbis.pdf
Netherlands	2015	All	Trade union FNV and Milieu Defensie commissioned a study on the socio- economic impact of environmental policies in the Netherlands etuc.org/sites/default/files/publication/file/2018-09/Final%20FUPA%20Guide_EN.pdf
Germany	2016	All	The government adopted the Climate Action Plan 205021 etuc.org/sites/default/files/publication/file/2018-09/Final%20FUPA%20Guide_EN.pdf

Initiatives from literature			
Country	**Year**	**Sector**	**Information on the initiative(s)**
Uk	2016	All	Low carbon task force - in the yorkshire & the humber region etuc.org/sites/default/files/publication/file/2018-09/final%20fupa%20guide_en.pdf
Germany	2016	Automotive	Future Pact – Volksvagen
France	2017	All	Paris' green urban development plan (ECECLI)16 etuc.org/sites/default/files/publication/file/2018-09/Final%20FUPA%20Guide_EN.pdf
Portugal	2017	All	Adapting the vocational training system in Portugal to include climate related skills etuc.org/sites/default/files/publication/file/2018-09/Final%20FUPA%20Guide_EN.pdf
Sweden	2017	All	The climate policy framework etuc.org/sites/default/files/publication/file/2018-09/Final%20FUPA%20Guide_EN.pdf
Italy	2017	Mining (Coal)	Enel Future-e programme
Greece	2018	All	Agreement on a just transition and climate change etuc.org/sites/default/files/publication/file/2018-09/Final%20FUPA%20Guide_EN.pdf
Greece	2018	All	Agreement on a just transition and climate change etuc.org/sites/default/files/publication/file/2018-09/Final%20FUPA%20Guide_EN.pdf
Germany	2019	Automotive	Projekt Zukunft Daimler Truck Ag & Mercedes-Benz AG
France	2019	Energy	Conversion of harbour into energy supplier – important role of TU in Normandie page 73 https://www.caissedesdepots.fr/sites/default/files/2020-05/etude_filieres_ceri-cdcbis.pdf
Uk	2020	All	Fighting for the future of UK manufacturing
Czechia	2020	EII	Promotion of Social Dialogue in the Chemical Industry of the Czechia
Spain	2020	Energy	A fair energy transition for thermal power plants in closing: employment, the industry and the territories.
Spain - Andalucia	2020	Energy	Dismantling on coal power with local actors and people working in the coal thermal power plant
France	2021	Automotive	Comment relever le défi d'une transition juste ? Notre scénario pour l'emploi et le climat - FNH & CFDT
France	2021	Automotive	Accord pour l'avenir des sites renault dans les hauts de france
Poland	2021	Mining (Coal)	Action by TU to include all coal regions and workers in the JTP

Initiatives from the survey			
Country	**Year**	**Sector**	**Information on the initiative(s)**
Spain	2019	Energy	National integrated energy and climate plan (PNIEC) 2021-2030: https://www.idae.es/informacion-y-publicaciones/plan-nacional-integrado-de-energia-y-clima-pniec-2021-2030
	2018	Automotive	Plan to boost the value chain of the Automotive Industry, towards Sustainable and Connected mobility: https://www.idae.es/file/15534/download?token=4HOCiDqC
	2019	Automotive	Agreements on teleworking and digital disconnection signed in SEAT: https://www.ccoo.cat/noticia/232256/ccoo-valora-positivamente-los-acuerdos-sobre-teletrabajo-y-desconexion-digitales-firmados-en-seat#.X19PFlUzaUk
	2018	Automotive	Iveco installs a 'smart flower' and 'Carpooling' at its Valladolid factory: https://transporteprofesional.es/ultimas-noticias/8492-iveco-ha-instalado-smart-flower-factoria-valladolid?cookie_8f2136e65f1733214df7cb1fd26b51e1=accepted
Finland	2020	All	The Finnish government set up a Climate Policy Round Table this year that includes members from all three confederations of trade unions: https://valtioneuvosto.fi/-/10616/valtioneuvosto-asetti-ilmastopolitiikan-pyorean-poydan-tukemaan-ilmastotoimien-valmistelua-ja-toimeenpanoa.
	2019	All	Finland has a general, ambitious goal of climate neutrality by 2035. This will likely be delayed by the coronavirus, but the mentality of quick but careful transition is still there.
			Harm taxes for most things that negatively affect the environment (gasoline, etc.).
			Several actions aim to make the electricity and heating very close to being climate neutral by the end of 2030, although safety and security of supply still come first. This includes progressively raising taxes for fossil fuels and giving tax benefits for climate neutral production facilities and innovations.
			Finland is keeping the current nuclear plants open, and nuclear energy is generally considered a valid, safe and necessary option. Most would like to see it included in the EU green deal to make it more realistic.
			The government has asked each sector to make their own road map for climate neutrality. Depending on the sector, these have a target of climate neutrality by 2035-45.
			The government is also creating a strategic development program for circular economy. This is being worked on right now, but circular economy is a central part of the policies of the current government.
			Recycling and environmental issues are being handled relatively well in Finland, and both have large public support (although there is also opposition, but it is a clear minority in most cases).

Initiatives from the survey			
Country	**Year**	**Sector**	**Information on the initiative(s)**
	-	All	Some of the employer associations are creating their own programs for climate neutrality that the government asked them to do. These have some good and ambitious goals, but they rarely if ever involve employees or unions in setting these goals or when discussing the methods for reaching them.
Finland	2017	All	The Finnish Innovation fund Sitra has made a very good list of the most interesting companies furthering circular economy. It can be found here: https://www.sitra.fi/en/projects/interesting-companies-circular-economy-finland/#business-examples
	2021	All	Recycling is taken seriously and done well in most workplaces. There is a government initiative for 2021 where the employer gets an employee a bicycle for work and either deducts the price from their salary or gives it as an additional benefit. Insulation and building energy efficiency in Finland is at the highest levels in the world, since it is a matter that has been paid attention already to in the past.
Denmark	2018	EII	Climate law: the purpose of this law is for Denmark to reduce greenhouse gas emissions by 20 per cent by 2030 in relation to the level in 1990, and that Denmark will achieve a climate-neutral society by 2050: https://www.ft.dk/samling/20191/lovforslag/L117/som_vedtaget.htm
			Government climate partnerships: as part of the Danish climate effort, the government has established 13 climate partnerships with the business community and a Green Business Forum: https://kefm.dk/klima-og-vejr/regeringens-klimapartnerskaber-og-groent-erhvervsforum
			In the Collective bargaining negotiations between the Danish Industry and the CO industry on the renewal of the industry's collective agreements, a three-year agreement has been entered into for 2020 to 2023 with i.e. a Protocol on the Green Transformation.
			It is expected that a consulting service will get started in advising the companies' cooperation committee (Local Works Councils) in the first quarter of 2021.
Belgium		All	Involvement of TU in numerous initiatives. Torrero, Steelanol, wind turbines, solar panels and the conversion of blast furnace B are such projects. TU's role is limited to getting the message across to the community in a positive way via affiates and members, employees, neighbours, etc.... Politics is also involved by subsidising initiatives.
		EII (Steel)	A training course is currently being started for employees who will be employed by the steelanol project in the future. In any case, training is provided for those who are interested in numerous projects on the site. Fit and healthy commuting: bicycle lease and bicycle allowance. At the moment a lot of work is done from home, but this was already possible to a limited extent by Covid 19. Water purification. Waste sorting. Oil collection. LED lighting in the halls.

Initiatives from the survey			
Country	**Year**	**Sector**	**Information on the initiative(s)**
Sweden	2017	All	https://www.government.se/press-releases/2020/10/sweden-increasing-its-contribution-to-climate-action-in-developing-countries/
			https://www.government.se/articles/2017/06/the-climate-policy-framework/
			The Environmental Protection Agency has been commissioned, along with other central government agencies and the county administrative boards to support local climate investments. http://www.swedishepa.se/Environmental-objectives-and-cooperation/Swedish-environmental-work/Work-areas/Climate/
			https://www.unionen.se/om-unionen/unionen-hallbarhet
			Development of a tool to support trade union representative in all 3 dimensions of sustainability: https://www.unionen.se/mitt-unionen/foretagens-hallbarhetsansvar and our statements https://unionen.extern.shop.strd.se/product/8969/0/0/679219?search=klimat
Finland	2020	EII (Chemical)	Finland will be carbon neutral in 2035 and will strive to be the world's first fossil-free welfare society: https://valtioneuvosto.fi/en/marin/government-programme/carbon-neutral-finland-that-protects-biodiversity The chemical industry in Finland has set an ambitious goal to strive for carbon neutrality by 2045. New raw materials, new technologies, and circular economy will play an important role in this process. The Chemical Industry Federation of Finland coordinates the implementation of the Responsible Care programme in Finland: https://responsiblecare.fi/
Austria		Automotive	Switch to renewable forms of energy. Phasing out the fuel oil programme for home heating systems.
			Support of the cycle path network programme in urban areas. Promotion of shuttle buses for company transport. Increased home-office use during pandemic periods. Soft access to home office in normal "family-work-leisure" times.
			Office buildings: Promote natural shading over air-conditioning. Production halls: Push photovoltaic panels on roof and wall surfaces.
			Energy-saving measures in the form of "switching off/on" as opposed to "standby". Promotion of soft mobility: encourage employees to cycle in their daily commuter traffic, a more comprehensive network of cycle paths in urban areas is needed. In the future, every company with an employment figure of 1,000 employees should have a cycle path connected to a public cycle path network or to a transport connection.