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A just energy transition: Tapping into a century of ideas

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Credit: INA FASSBENDER / AFP.

Table of contents

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Executive summary

Under the pressure of climate change, countries across the globe are scrambling to reduce their dependence on fossil fuels: a global energy transition is under way. With the Green Deal as its flagship policy, the EU is stepping up to this challenge, aiming to reduce its overall emissions by 55% by 2030 and to net zero by 2050. This transition will change not only how energy is produced, but also implies changing the technology used to consume energy, for example by switching from combustion engine vehicles to electric vehicles (EVs). The transition will thus inevitably have a major impact on workers and their communities.

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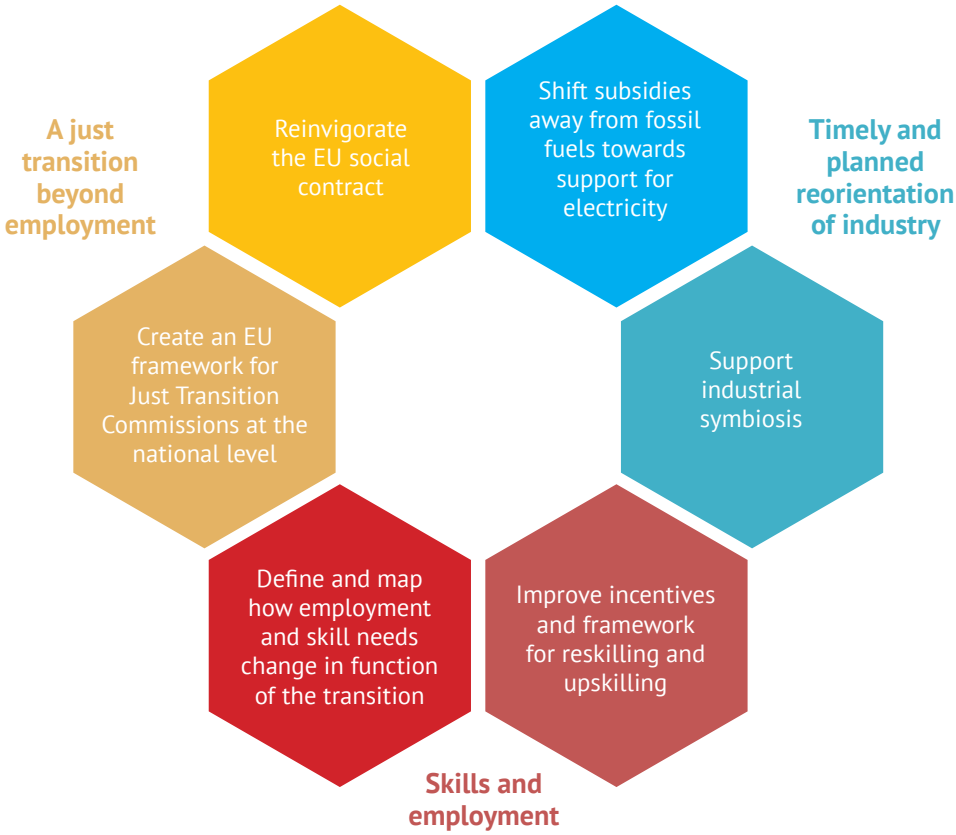
Ideally, transitions should take place over a long time span to give society time to adapt. However, because policymakers have been slow to enact strong climate policies so far, the negative effects of the current energy transition on workers and their communities, such as loss of employment or higher living cost, will likely worsen. If they do not address these social costs, governments risk public backlash against increased climate action. Nevertheless, the pace of action does not need to be a major obstacle if decisions are taken in a planned way. Drawing from historical examples, this paper makes recommendations for the EU to minimise the negative effects of today's changes on workers and their communities and to achieve a 'just transition'.

This paper focuses on two dimensions of the concept of just transition. The first concerns 'distributional justice': does the energy transition guarantee an outcome that is just *for* workers and their communities? The second dimension concerns 'procedural justice': is there participation *from* citizens and stakeholders in policymaking, and is the government responsive to their input?

Fig. 1

RECOMMENDATIONS FOR THE EU TO ACHIEVE AND HARNESS THE JUST TRANSITION



Both cautionary tales and positive examples from past transitions' effects on social justice and participation are used in the paper to illustrate ways in which the EU can foster a just transition and increase the acceptance of climate policies. The analysis suggests that, to achieve a just transition for workers and their communities, including distributional and procedural justice, further effort is required in three areas:

1. **The EU must ensure a timely and planned reorientation of industry to minimise job losses for workers during the transition.** To do this, the EU should create an enabling environment for the industrial transition. It should also remove all subsidies for fossil fuels, and ambitiously reform the Energy Taxation Directive (ETD) to set higher minimum taxes on fossil fuels, while allowing for member states to lower electricity taxation.

2. **Although the EU already focuses on improving skills and employment, it should pay further attention to the impact of the energy transition on jobs and skills.** It should define and track how the transition is changing jobs and skills. An EU-wide definition of employment and skills for the green transition would also ease the matching of changing skills with employment and allow the regional effects of the transition to be assessed. In addition, the EU should improve support and incentives for workers to retrain, as well as validate workers' existing skills, in coordination with the national level and stakeholders.

3. **The EU should do more to get citizens on board with the transition, and to achieve distributional justice that goes beyond employment considerations.**

   a) It should as much as possible **mitigate redistributive effects and costs of climate policies** (distributional justice) to increase the acceptance of those policies. To do this, the EU should reform its fiscal rules to give member states some financial breathing room to compensate for the social costs of the energy transition through strong social baseline systems. In addition, the Recovery and Resilience Fund (RRF) should also further incentivise member states to invest in social policies. The EU should guarantee and track the full implementation of the European Pillar of Social Rights (EPSR). The newly proposed Social Climate Fund is an example of where the EU should mobilise funding to first compensate the poorest citizens: social aspects should be placed at its core.

   b) Making the transition acceptable *for* the citizens is not the only challenge: **the EU should also guarantee input *from* citizens and stakeholders**. In other words, it should pay attention to procedural justice. For this, the paper proposes that the EU creates a framework for just transition commissions at the national level, and to improve the cooperation with stakeholders to monitor the social effects of the transition.

Although the ongoing energy transition is affected by market forces, it is less circumstantial than past energy transitions. Because it is driven by predictable policies to reduce emissions and achieve climate neutrality, better planning and coordination is possible. The EU has already taken many positive steps towards transition, but the historical examples give us cautionary tales of approaches to be avoided, as well as lessons that can be learned from good practices. It is now up to the EU and its member states to seize these opportunities by learning the lessons of the past and achieve a transition that is fair and inclusive for all.

1. Introduction

With the European Green Deal as its flagship project, the EU has placed the ongoing energy transition firmly at the centre of its policy agenda. The Green Deal's targets of emission reductions of 55% by 2030 and net zero by 2050 have unleashed legislative efforts across the board to achieve a European energy transition. The transition is also happening on a global scale: to tackle climate change, countries across the world are phasing out fossil fuels and the technologies that utilise them. The world economy, which still strongly relies on fossil fuels, is therefore facing a transformation. This will imply important adjustments in the labour market. It puts workers in affected sectors, as well as their communities, on the frontline of today's energy transition. If their voices and needs are not sufficiently taken into account, policymakers risk facing major opposition and losing public support to achieve the energy transition.

This paper shows, with the help of past examples, that energy transitions should be set in motion early, and be gradually phased in to minimise their negative effects on workers. However, decades of slow action in climate policies mean that the current transition must now happen faster than is ideal, and requires social action and input. Although policymakers at times still seem to underestimate the societal costs[1] and the difficulties workers will face, Executive Vice-President of the European Commission Timmermans nevertheless captured these challenges well when he said that the transition "will be bloody hard".[2]

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The EU will therefore urgently need to step up efforts. It has to ensure that workers and their communities[3] are not disproportionately hit, and that they are involved and heard when decisions about their future are made. In other words, today's energy transition also needs to be a 'just transition'. The just energy transition consists broadly of two core dimensions.[4] First, there is the need to to achieve 'distributional justice'. Workers' employment opportunities should be improved through economic development plans and investment, as well as by supporting the retraining of workers[5] in order to make sure that the output of policies is just *for* the people.[6]

Beyond improving workers' prospects of employment, distributional justice also implies minimising the negative impact on people's general welfare (e.g. preventing energy poverty, making green technologies affordable). The second dimension is 'procedural justice'. The just transition includes the need for consultation and participatory governance[7] – for a just transition, input *from* the people is required. This paper considers both these aspects of the energy transition.

Chapters 2 and 3 consider the impacts on workers and employment, and make recommendations to improve distributional and procedural justice. Although the transition is both a challenge and an opportunity for employment, it will require a timely and gradual reorientation of industries to keep them competitive, as well as extensive reskilling and upskilling to help workers adjust to newly created jobs.

Chapter 4 explores *broader* aspects of achieving a just energy transition for workers and their communities, going beyond employment considerations. It focuses first on possible actions for the EU to improve distributional justice through social policies: for people to accept the transition, it should not have a disproportionate effect on their welfare. Extra attention should be paid to how fiscal and social policies can support the workers and their communities where the outcomes of the transition do not make everyone better off. Broader actions to give workers and their communities input in the transition are also discussed, and suggestions made for the EU to improve procedural justice. If workers and their communities are not giving input to policymakers, or if their input is not being heard, the sustained policies and measures taken may lead to protests.[8]

The good news, however, is that the current transition is arguably more planned and less circumstantial than past transitions. Or at least it can be, if decision-makers make use of the policy options they have to plan the transition in a way that is socially fair.

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This paper will thus aim to draw lessons for EU policies to achieve such a *just and inclusive* transition on the basis of a selection of historical transitions – both cautionary tales and success stories. It focuses on the energy production and car manufacturing sectors, as both face major employment challenges. Drawing on

the literature on socio-technical transitions, it answers the question: *What can we learn from past transitions to achieve a just and inclusive energy transition for workers and their communities?*

1.1. WHY ACHIEVING A JUST ENERGY TRANSITION MATTERS MORE THAN EVER

The first energy transition dates from the 13th century, when humankind transferred "from animal, water, wind and firewood"[9] to coal: this was the start of the fossil fuel era. The second distinguishable energy transition can be pinpointed to January 1709, when Abraham Darby turned coal into coke, unlocking the fuel for the Industrial Revolution.[10] From the late 19th century, society transferred from coal to oil and natural gas as a fuel source[11] and witnessed the breakthrough and growth of electricity as a power source.

The current transition can be described as a transition towards renewables and higher energy efficiency that, to reach our climate objectives, should go along with a phase-out of fossil fuels. The political motivation to achieve the global energy transition took a major leap forward with the conclusion of the Paris Agreement in 2015, which spurred countries around the world into action. Major economies now find themselves in a global competition to reduce emissions to zero by 2050 and are implementing policies to phase out fossil fuels to achieve this goal. The summit conclusion of COP26, for example, mentions for the first time the phasing out of coal.

There are important reasons why this transition is not the same as previous ones:

- First, the **current energy transition is broader and more far-reaching than past transitions**. It is in fact composed of several *simultaneous transitions*: reducing energy-related emissions requires changing how we produce and consume energy across sectors. It requires a simultaneous switch away from fossil fuels towards new sources of energy in the industrial sector (for example in the production of steel and chemicals), the transport sector (for example switching from internal combustion engine vehicles to electric vehicles (EVs)) and in buildings (for example switching from oil and gas heaters to solar panels and heat pumps).[12]

  The fact that these transitions happen at the same time means that they increase the challenges for the labour market. Several sectors transitioning at the same time increases both the number of people affected, and the need for reskilling and upskilling. It also entails matching workers' skills to the changing requirements of new job opportunities. Workers and their communities will therefore be under severe pressure, especially in the energy sector, the automotive manufacturing industry, and in industries heavily dependent on fossil fuel (such as steel and chemicals production).

- Second, **the current transition is *driven by policies* that need to be sustained over a longer period**. Consequently, they will be heavily dependent on the support of citizens and stakeholders. Previous transitions were driven by market forces. Despite the new energy sources' negative externalities (such as pollution) and the enormous impact they had on employment (for example in the coal transition), they had direct benefits that made them more competitive on the market. These benefits included increased economic growth due to technological progress (such as the development and deployment of coal and steam engines in the Industrial Revolution) or lower costs (e.g. oil becoming cheaper than coal). The current transition, however, is driven mainly by policies rather than market forces. In fact, the transition is happening (despite the current energy shortages due to supply issues) at a time of fossil fuel abundance rather than shortage.[13] In addition, the benefits of the current transition (i.e. preventing the worst effects of climate change) are only visible to citizens in the long term, and can only be achieved if action takes place at a societal level. Because of the transition's policy-driven nature and indirect benefits, both citizens and civil society actors need to be on board to accept the transition. This makes it more important than ever to pay attention to procedural justice.

- Third, **given that this transition is driven by policies, the process can be more planned than in past transitions**.[14] Past transitions rarely actively considered the effects on workers or the need to encourage the participation of citizens in the process.[15] They were mostly driven by market forces that determined the speed and nature of the transition. Because of the policy-driven nature of the current transition, there is more room for measures to be planned, timed and sequenced for an optimal social outcome. However, the lack of earlier climate action has decreased the time span in which those actions can be taken, and increased the speed at which they need to reduce emissions. Actions need to be taken now to not further increase the future burden, but should still be taken in a planned way to minimise or compensate social costs.

Given these particularities, it is more important than ever that the current transition focuses on distributional and procedural justice. If the transition is not acceptable for workers and their communities, it risks not happening at all because of blocked policies. Despite the pressing need to make the transition *just*, however, the current literature focuses strongly on how to achieve the transition, rather than how to achieve it in a just way. This paper aims to contribute to filling this gap. To achieve a transition that citizens accept and perceive as legitimate, the EU has to reorient its existing industry in a timely way, manage impacts on employment, and provide tools for managing the greatest energy transition humankind has arguably faced: achieving a *just* transition away from fossil fuels.

1.2. THE ENERGY TRANSITION TODAY: ENERGY PRODUCTION AND THE AUTOMOBILE INDUSTRY

This paper focuses on energy production and car manufacturing because both these sectors are undergoing rapid change. This chapter illustrates how the transition is projected to affect employment fundamentally and rapidly in these sectors, requiring significant reorientation of the workforce.

There is an ongoing shift away from coal in the energy sector, and other fossil fuels will also be reduced and replaced by renewable energy sources (RES) because of the global climate commitments. The industry producing electric vehicles (EVs) is growing globally and governments across the world are pursuing phase-out strategies for internal combustion engines (ICE). These changes are reflected in the scenarios for employment in the energy production (Figure 2) and car manufacturing (Figure 3) sectors in the EU, where significant shifts are projected away from fossil fuels and towards renewables and electric cars respectively.

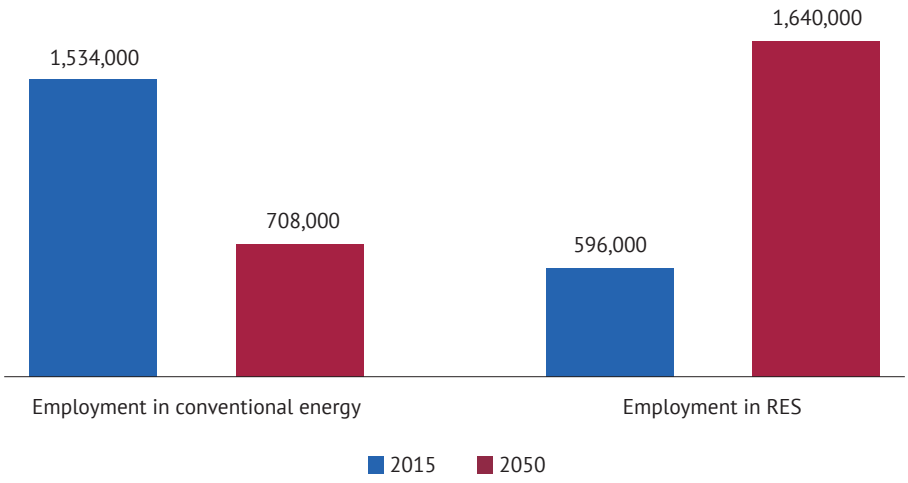
In the case of energy production, the transition is expected to create an increase in employment within the EU's energy sector. This is because the renewables sector (in particular solar panels and biofuels) requires new workforces within the EU, while the supply of oil and gas relies disproportionately on imports and thus employs more people outside the EU. However, the shift from fossil fuels to renewables creates a new challenge for the labour market as a significant part of the employed population will have to shift sectors. The estimation is that around 826.000 jobs (or about 1,4% of the total EU labour market) would have to be reallocated away from the EU's fossil fuel industry by 2050.[17] A welder working in the fossil fuel industry, for example, might be able to shift to renewables relatively easily, but a steamfitter would need some degree of reskilling before being employed in the building sector. This means that significant upskilling and reskilling is required as well as acceptance of the transition by the affected workers and communities. The story is similar for the automotive sector.

Figure 3 illustrates the size of the reorientation challenge for the automotive sector. Although the effect of the automobile industry's transition on employment is considered close to neutral,[19] especially if the transition is managed well,[20] a significant number of people will need to change employment. This is illustrated in the figure on page 8: overall, jobs are projected to be lost with manufacturers of ICE and non-ICE cars, as well as with ICE-suppliers (combined around 500.000 jobs), while jobs will be created with non-ICE suppliers[21] and due to transport-related increases in energy production and infrastructure installation (about 420.000 jobs combined).

As with the energy sector, there will be an important need for re- and upskilling to compensate workers and allow them to transfer to other industries. Even though EVs need less labour effort in manufacturing (e.g. the powertrain requires far fewer components), jobs are created in the manufacturing of other components, for example in the production of battery packs. Local battery production, therefore, could create new employment opportunities. This development is not limited to car manufacturing itself: there could be better paying jobs, for example, in the installation of charging points for EVs, as illustrated in Figure 3.

Fig. 2

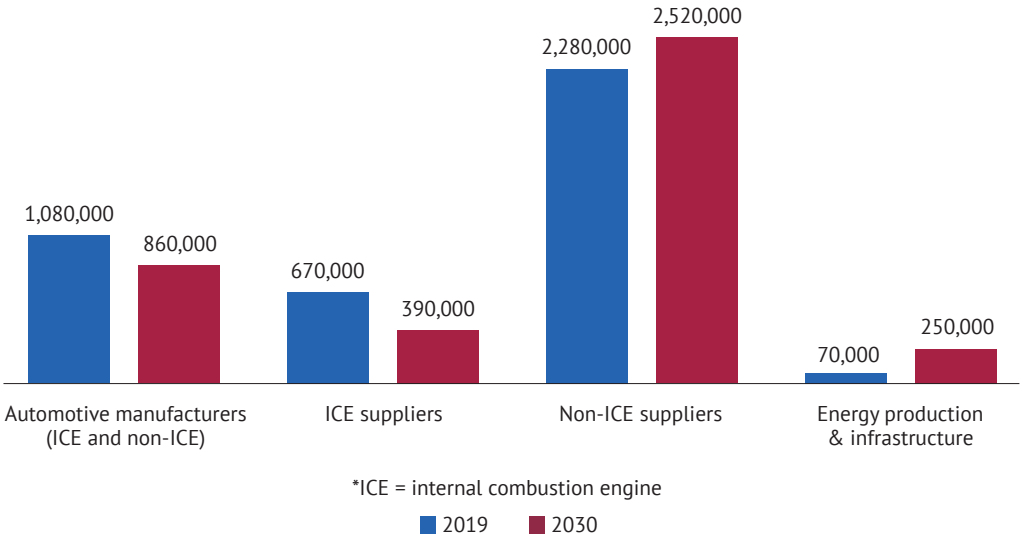
THE EVOLUTION OF EMPLOYMENT IN THE ENERGY INDUSTRY (2015-50)



Source: author's composition based on European Commission (2021).[16]

Fig. 3

EVOLUTION OF EMPLOYMENT IN THE AUTOMOTIVE INDUSTRY (2019-30)



Source: author's composition based on Kuhlmann et al. (2021).[18]

Reorienting and preparing for the changes in the supply chain will be especially crucial, as it currently constitutes an important part of employment in the European automobile sector. As shown in Figure 3, a significant amount of employment will be lost among ICE-focused suppliers. The fewer components required by EVs will result in changes in the supply chain and affect employment. However, successful examples of reorientation across supply chains do exist. One of them is ZF Friedrichshafen, a company that used to be a major supplier of ICE car components. In 2020 it announced a reorientation to components for the growing EV market and away from fossil fuel-based transport.[22]

Reorientation of the energy and the car manufacturing sectors also presents a regional challenge. In many cases, energy production is clustered in particular regions, as are automotive producers and suppliers.[23] To guarantee long-term resilience, regions must have the power to reinvent themselves, and this requires cooperation between educational institutions (e.g. the presence of universities), companies including their supply chains, and regional and national governments (see also chapter 3).

2. Planned reorientation of incumbent industries

2.1. LESSON FROM THE PAST: GOVERNMENT ACTION AND PLANNING AS A KEY TO REORIENTING INCUMBENT INDUSTRIES

Creating the right conditions for better jobs and new employment opportunities for workers has to be at the heart of a just energy transition. This can be a challenge when incumbent industries decline or reorient themselves in the transition process and redundancies ensue. However, transitions can equally create new opportunities in growing industries. Historical examples show that incumbent industries tend to block this process of employment transition from 'old' to 'new' industries. Governments can also be tempted to support incumbent industries instead of shifting support to emerging industries to give them a competitive edge.

Box 1 illustrates a case in point from history. To foster emerging industries, governments need to actively remove support from incumbent industries so they do not stall the transition. Support for incumbent industries not only harms the competitiveness of new industries; it can also delay the transfer of the workforce to new sectors. Such support may maintain employment for a time, but it becomes unsustainable, for example when economic realities or government preferences change. If support policies are suddenly reversed, a negative employment shock can occur. So, what at first might seem like a measure supporting workers can at the end of the day lead to a larger unmanaged decline with wider implications for the labour market and social cohesion.

Box 2 uses the case of the decline of the British coal industry between 1930 and 1997 to show how a sudden reversal of policies can have an adverse effect on achieving a just energy transition. Although the incumbent industry needs to be incentivised to reorient, there is also a need to plan this transition, and in a timely way. Through an early and planned shift, governments maximise the time for the labour market and workers to adjust to the changes.

Governments can plan the transition by putting forward a clear horizon for the incumbent industry to reorient itself, for example by setting a phase-out date for the incumbent technology. More importantly, support should be removed gradually for the declining industries and shifted towards support for emerging industries.[29] This can be done by setting the right price signals, subsidies and taxation to create the framework to incentivise companies' reorientation. Regulatory instruments are also part of a framework to help nudge companies towards reorientation: regulation should be tapered away from the incumbent industry for a more managed transition. Box 2 provides an example of how not to use these instruments: instead of supporting the incumbent industries, they should be used to support the emerging technology and industries.[30] A transition that is better planned and done in a gradual and sequenced way by using the instruments as suggested above not only allows companies to plan their restructuring process, but also to facilitate the mobility of workers to other employment opportunities.[31]

BOX 1. TRANSITION OF THE IRON INDUSTRY IN FRANCE AND BELGIUM (1820-60)[24]

Although coke-based smelting of iron was invented in 1709, it remained a niche product (with charcoal being the dominant fuel) until around 1815, when the technology quickly spread in the UK.

In France, there was a protracted coexistence of the charcoal industry with coke-based iron production. Charcoal-fired blast furnaces hastily upgraded to remain competitive, and between 1822 and 1860 the French government took protectionist measures against cheaper English (coke-based) iron.[25] This blocked the transition of the incumbent industry to coke-based smelting, delaying the spread of the new technology and the employment in the coal-mining sector that came with it.

This was not the case in Belgium, where deforestation had led to an early decline and the absence of the incumbent charcoal industry. The efficiency of the new technology of coke-based smelting propelled Belgium towards a leadership position in the new industry,[26] with the resulting growth in employment.[27]

2.2. RECOMMENDATION: HOW THE EU CAN STIMULATE REORIENTATION OF INCUMBENT INDUSTRIES

The EU's fossil fuel industry, as well as the car manufacturing industry and its supply chain, can and must be reoriented in a timely way to decrease the social impact of the transition. They must do this before the sector declines further, risking relocation of production to foreign competitors who have already established expertise and supply chains for the transition. Both energy companies[32] and car manufacturers[33] have pathways to reorient their business model towards one that is competitive and aligned with the climate and environmental goals. However, as in past transitions, incumbent industries have already stalled this process: the European automotive industry's strong focus in recent years on making ICE cars more efficient rather than investing in EVs is only one case in point.

As the examples above illustrate, governments should not delay the transition and related changes in employment if they want to achieve a just transition. Instead, they

should phase out support for incumbent industry, and favour the emerging industry to increase innovation and employment. The EU and its member states can do this with the following actions.

► Create an enabling environment for the industrial transition

The European Green Deal and the Paris Agreement provide a clear horizon for companies in the energy production and car manufacturing sectors. The EU already uses tools such as the Emissions Trading System (ETS) and green standards, and proposed a Sustainable Finance Taxonomy to nudge companies in this direction. It also supports companies in their reorientation, for example through the Modernisation Fund[34] and the Innovation Fund.[35] However, action can still be undertaken to create a more enabling environment for the industrial transition. Lessons from the past show that setting targets is merely a start. Providing a strategy dedicated to creating an enabling environment for businesses will be the key to a successful reorientation of the industry. In more concrete terms, the following three elements would improve both distributional and procedural justice.

- **Increase investment in emerging sectors** – The EU should aim, through a review of its fiscal rules, to allow the member states more space to invest in emerging sectors. Enormous investment will be required to achieve the energy transition; annual investment to reach the 2030 climate target will require raising investments from €683 billion per year to €1,040 billion per year, an increase of around 2 percentage points of GDP.[36] These investments, for example to upgrade the power grid to cope with an increased share of renewables, will be carried to a large extent by member states. There are several ways for the EU to give member states more fiscal room for this.[37] The European Commission could, for example, estimate, and the Council recommend, a percentage of member states' respective expenditures to be dedicated to green public investment. Other options include taking green public investment off of member states' balance sheets or through a 'Green Golden Rule' under the Stability and Growth Pact.[38]

- **Support industrial symbiosis** – The EU should use the Industrial Strategy's 'transition pathways' to facilitate coordination between companies and their supply chains, so that they can contribute to the energy transition. The Industrial Strategy review mentions 'transition pathways' for 14 industrial ecosystems, which include identifying actions to be undertaken in this direction. Among the sectors identified by the Strategy is the highly interdependent car manufacturing sector and its suppliers, the latter of which tend to be smaller companies with less planning capacity. The renewables sector is equally reliant on the supply chain for its components. Support for the reorientation of the supply chain should be a priority for the planning of transition pathways, to help incumbent industries reorient and to support the growth of emerging industries. The discussions should take place in coordination with industry and trade unions, civil society, as well as regions (in the case of national level dialogue) and local authorities, actors that are best placed to assess and plan for the transition.

- **Broaden the work of stakeholder platforms to plan for the transition** – The Just Transition Platform (JTP), which is the main stakeholder platform dealing with the just transition, should be broadened in scope. The JTP was created as part of the Just Transition Mechanism (JTM) and serves as a forum for connecting stakeholders (such as member states and regions, social partners and NGOs), providing technical assistance for the transition and for sharing best practices. The JTP was inspired by the Initiative for Coal Regions in Transition but aims to cover a broader range of areas. But discussions have so far mainly focused on coal areas and the extension of the areas of work promised by the JTP requires implementation. The JTP should also cover the transition of the car manufacturing industry, and by extension, other relevant industrial ecosystems in the Industrial Strategy, such as the "energy intensive industries" and "energy-renewables" ecosystems. In addition, the JTM requires member states to put together

BOX 2. DECLINE OF THE BRITISH COAL INDUSTRY (1930-97)[28]

The first challenges for the British coal industry emerged in the 1930s with a decreasing demand in international markets. However, reconstruction efforts after World War II led to new demand and nationalisation of the sector. From 1956-67, the sector faced renewed pressure from new fossil fuels (oil, gas) and nuclear, leading to mine closures and reduced employment. In response, the government supported industry with a focus on coal-fired electricity and by establishing long-term contracts with the coal sector.

Between 1981 and 1990, the UK government underwent an ideological change with the election of Margaret Thatcher. The government's support policy for the incumbent sector was suddenly reversed: the coal market was liberalised, financial support for the sector was severely limited and conditions of restructuring were put forward. The lack of timely reorientation of the industry after years of government support resulted in sudden, unplanned dissolution of the industry and severe job losses that led to social unrest.

"Territorial Just Transition Plans". Broadening the scope of work to the industrial ecosystems mentioned above would allow for a more holistic planning of the just transition.[39]

- **Shift support away from fossil fuels and towards electricity use at EU and member state levels, to incentivise industry reorientation**

There is a lot more that policies could do to nudge industries towards reorientation. In several member states, for example, significant subsidies are still given to fossil fuels and related end-use technologies (such as gas transport infrastructure or ICE vehicles).[40] Although in the short run these subsidies sustain employment in the industry, they artificially support a sector that already faces pressure to transition. More guided planning that ends subsidies to the incumbent sector is necessary to reorient it towards new technologies. Removing subsidies for fossil fuels and related technologies for consumers also prevents citizens from investing in technologies that are not compatible with the EU's climate ambitions, and that might need replacing before the end of their useful life. There are three key action points:

- **Remove subsidies for fossil fuels** – Fully ruling out subsidies to fossil fuels in the EU budget is a priority. Spending on fossil fuels is explicitly excluded in specific EU financial instruments, such as the Just Transition Fund, or – under the new Commission proposal – the Modernisation Fund and the EU has taken significant action to reduce fossil fuel support through its budgets. However, the Multiannual Financial Framework 2021-2027 (MFF) does not fully exclude EU funds supporting fossil fuels. The Connecting Europe Facility, for example, still allows support for fossil fuels.[41] Given the efforts that have already been undertaken to reduce support for fossil fuels under the EU budget, the EU should now fully rule out any support for fossil fuel subsidies under the MFF.

- **Incentivise electrification** – Even though the electricity sector is not yet fully decarbonised, electrification[42] will be a central pathway to achieve our target of net zero emissions by 2050.[43] The steep increase of electricity prices in 2021 – due to rising fossil fuel prices – illustrates the need to do this in a way that keeps prices low and affordable, especially for the most vulnerable segments of the population. The EU should improve incentives for affordable, low-emission electrification both on the supply and the demand side. On the supply side, the upcoming review of the Climate, Energy and Environmental Aid Guidelines (CEEAG) can allow member states more room to support low-emission electricity. The CEEAG review can also give them the option to support the accessibility of, for example, EVs, by giving state aid to support their charging infrastructure. On the demand side, the EU could allow member states to maintain a number of guidelines of the EU toolbox to tackle rising energy prices[44] beyond the current energy price crisis. An example is the use of ETS revenue to provide income support for electricity to energy-poor consumers.

- **Review the energy taxation directive (ETD)** – An ambitious review of the ETD would help achieve the two recommendations above. The Commission proposal[45] suggests applying the highest minimum tax rate to fossil fuels and lower taxes on electricity. Member states might receive these proposals coldly because they feel that such measures could impinge on their right to decide on their energy mix (Article 194 TFEU). However, given the interconnectedness of EU economies, it is important to address the differentiated fossil fuel taxation at EU level. In most member states electricity is currently taxed at a higher rate than fossil fuels. Setting common minima for fossil fuel taxation, combined with requirements for the amount of renewables in the energy mix, would create a clear driver for electrification of our energy and mobility systems. This would push both energy production and car manufacturing to reorient accordingly.

3. Changing employment and skills for a just energy transition

3.1. LESSON FROM THE PAST: THE NEED TO SUPPORT THE REORIENTATION OF EMPLOYMENT AND SKILLS

As industry reorients, workers will need to be equipped with the necessary skills to be active in emerging jobs. As part of a just energy transition, governments can play a role in facilitating education, reskilling and upskilling of workers. In the past, governments faced with transition often did not undertake social action, however. The transition away from hard coal in Germany (see Box 3) provides a more positive example of government intervention. It shows that reskilling and upskilling, as well as matching skills with employment, can help ensure a relatively smooth transition for workers.

The evidence from Box 3 shows that the transfer of workers happens more easily if the change in required skillsets is minimal. In Saarland, for example, the decline of the coal industry coincided with the growth of the automotive sector, which sought similar skillsets.[52] In the current transition, the skillsets for manufacturing ICE vehicles and those for component manufacturing of EVs, or the installation of charging points, are also relatively similar.[53] However, reskilling and upskilling can go beyond a transfer from one manufacturing sector to another; an important factor in the success of the German regions was that they developed "the endogenous capacity […] to renew themselves" by building up new skill bases.[54] Government support for reskilling and upskilling can therefore be considered a crucial factor in the relative success of the historical transition in the Ruhr area.

To optimally allocate skills to employment in transition, regional specificities need to be taken into account. Bluestone coined the term 'absorptive capacity':[55] the capacity of the regional labour market, and its industrial ecosystem, to 'absorb' workers that change jobs owing to the transition, through demand for workers in other sectors. A higher local absorptive capacity strongly affects the re-employment of workers in transition in a positive way, as workers can at least partially reuse existing skills.[56] Given the strong geographical concentration of the energy production[57] and car manufacturing sectors[58] in specific regions, the need for absorptive capacity in the regions in question is higher.

This highlights a challenge of the current energy transition: although jobs that are compatible with the green transition often arise in the same region where incumbent industries disappear,[59] this is not always the case.[60] This can lower the absorptive capacity of the respective regions: more jobs may disappear than appear in a certain region. In addition, the current transition affects multiple sectors simultaneously, meaning that the fast transition in Saarland, where coal miners could transfer to the car manufacturing industry or steel production, cannot be achieved in the same way. There is a high need for reskilling to achieve workers' transition. Attention to regional specificities and the existing industrial ecosystem can make it easier to create the right circumstances to match reskilling and upskilling needs with the existing or new employment.[61] This means that regions, cities and industries need to be closely involved and coordinate in the management of the just transition. It is important to mention that the case presented above is one of an EU member state that was able to support

BOX 3. TRANSITION AWAY FROM HARD COAL IN GERMANY: SAARLAND AND RUHR (1958-2018)

From 1958, the German coal industry started to decline as oil became a competitive alternative. The German legislative framework allowed for relatively strong action to facilitate the transition for workers. Their reskilling was supported from the very beginning (through placement programmes) and further increased through the 1960s,[46] including with the support of the European Coal and Steel Community (ECSC),[47] the forerunner of the EU as we know it today.

Broadly speaking, the German transition was based on two principles: reskilling and upskilling combined with financial support for workers to enter new employment (placement programmes); and strong social security support (early retirement, redundancy payments) where this was not possible. The approach was relatively successful, with 110,000 workers[48] being retrained by 1960 under the ECSC's programme,[49] and 400,000 people taking part in retraining programmes in Germany[50] in the first half of the 1990s.

In Saarland, workers' transition happened quickly, yet mainly *within* the manufacturing sector (i.e. from coal to car manufacturing). The relocation of workers within the manufacturing sector led to a fast reduction in unemployment. Conversely, in the Ruhr area, transition happened *between* sectors (e.g. from coal to the services sector). From 1976 to 2014, employment in manufacturing decreased from 58% to 26%, while it increased in the services sector from 42% to 74%.[51] This led to a more positive long-run effect on employment because it reduced dependency on a single sector.

The success and speed of the transitions also depended on regional specificities and how well industrial and education structures matched emerging industries. Regionally integrated programmes that took local economic structures into account contributed to the success in both cases.

its regions to increase their absorptive capacity. Not all member states have the same resources to support their regions in the transition; the EU therefore will have to involve and support member states accordingly.

In addition, it is important that 'old' jobs are replaced as much as possible with new jobs that are comparable in terms of wages and working conditions, if not better. This is an important factor in getting workers and communities on board for the transition. But it can be a severe challenge. The manufacturing of batteries for EVs, for example, may create employment – but not necessarily at the same working conditions and pay as the manufacturing of components for combustion engine cars. However, jobs linked to the transition in energy resources and car manufacturing will often also have better working conditions. Jobs in renewable energy production, for example, are likely to have better conditions than their 'old' counterparts,[62] and both the transitions in energy production and road transport will create many employment opportunities in renewables. However, if the progress towards a fair transition is to be tracked, the quality of new jobs has to be monitored and taken into account during the reorientation of incumbent industries. More research is necessary to monitor the effects of the transition on income dynamics and quality of jobs.[63]

Finally, despite the best efforts to improve the matching of skills and work, it has to be acknowledged that it will not always be possible to find employment for each worker that matches their potential skills. Reskilling and upskilling are not silver bullets, and social policies are necessary to support people beyond employment (see chapter 4).

3.2. RECOMMENDATION: EMPLOYMENT AND SKILL NEEDS FOR THE TRANSITION

The changing nature of employment (see also section 2.2) makes it clear that the challenges for reskilling and upskilling due to the transition will be enormous. The EU has several instruments to tackle this. The updated Skills Agenda, for example, specifically takes the effects of the energy transition into account, and the RRF and the Just Transition Fund devote particular attention to the financing of upskilling and reskilling. The European Social Fund+ (ESF+), an instrument of around €110 billion that supports, among other things, employment and skills training, also deserves to be highlighted in this context.[64] ESF+ devotes particular attention to the needs of youth and the most vulnerable groups in society (e.g. the long-term unemployed, lowest income households and socially excluded groups). Under the predecessors of ESF+, namely the European Social Fund and the Youth Employment Initiative, more than 5 million people were supported to gain qualifications, and 4.5 million people were helped to find employment.[65]

However, member states are not always following suit; the push for reskilling and the skills agenda are being implemented in different ways. As many as 20 EU countries did not achieve the 15% adult education target set by the European Agenda for adult learning for 2020,[66] even though education and skills training programmes are crucial for guaranteeing secure and well-paid employment during the energy transition.[67] The main reason for this is that workers are still unable to access further education and training after their formal education. The validation of skills at member state level is also underdeveloped.[68] Nevertheless, polls show that citizens, and the most vulnerable in particular, think that their national governments should be more active in assisting reskilling.[69] At the EU level, more action should be undertaken to further coordinate member state action in this area.

- **Define and map at the European level, in coordination with member states and regions, how the energy transition is changing jobs and skills**

  - **Define jobs and skills for the green energy transition** – The European Commission should, in coordination with member states, regions and social partners (companies and trade unions), define how jobs and skill requirements are changing because of the transition. Defining how jobs and skills are changing due to the transition is not straightforward.[70] However, it is crucial to understand and map the way in which the transition is affecting workers. Knowing what 'jobs and skills for the green energy transition' are needed is not only a condition for measuring the transition's effect on employment, it is also an important tool gathering support among citizens, who need to understand how their jobs may be changing and which new skills are required.[71]

    Action 6 of the Skills Agenda highlights the need to define a taxonomy of 'skills for the green transition', but this approach needs to be holistic. It should not only focus on skills, but also match those with a taxonomy of 'jobs for the green energy transition'. The Commission itself recognises the challenges created by the absence of definitions for both employment and skills needed for the transition.[72] The European Taxonomy of Skills, Competences, Qualifications and Occupations (ESCO) identifies, categorises and shows the relationship between skills, competences, qualifications and occupations. An update of ESCO related to the energy transition would therefore be an excellent tool to define and link 'jobs and skills for the green transition'. It should deal with questions such as how employment is changing because of the transition ('new', 'changed' and 'unchanged' jobs), what 'green' jobs are, and which skills are necessary to match these changing jobs.

  - **Map changing employment and skill needs** – Based on the definition of 'jobs and skills for the green energy transition', the European Commission should map, together with member states, regions and social partners, the changes

in job and skill needs in the different regions of the EU. The challenges in the car manufacturing supply chain today, as well as the experience from the German coal transition regarding 'absorptive quality' and diversification, show that an overview of these changes is needed. EU-wide industrial ecosystems need to be part of this mapping process. The latter should also pay attention to the working conditions of newly created jobs.

Despite reskilling and upskilling efforts, regional disparities may remain as certain regions may be harder hit if they do not manage to find a role in the energy transition. Put simply, an EU-wide increase in employment due to the transition does not mean that workers in certain sectors or certain regions will not be left behind. It is important to prepare for and manage regional disparities by understanding how employment and skill needs change.

► **Improve the incentives and framework for reskilling and upskilling, and the validation of skills**

- **Increase funds for reskilling and upskilling** – The EU should validate the importance of human capital for the transition by using the income from the EU's ETS for industry to also fund reskilling and upskilling. The EU's ETS is currently under review, and the Commission's proposal mentions the potential to fund reskilling and upskilling, as well as other social corrections, with the income from the sale of emission allowances.[73] However, this budget is currently almost entirely used to support industry. Under the ETS review, the European Parliament and Council of the European Union should consider using these funds to support reskilling and upskilling efforts as well, by allocating them to member states and regions that have workers who are particularly challenged.

- **LEARN FROM PAST SUCCESSES OF RETRAINING PROGRAMMES** – The JTM, which includes support for reskilling and upskilling, should learn from the experiences of retraining programmes such as ESF+. The ESF+ and its predecessors have long been an important tool for retraining and have in general managed to implement their targets.[74] These targets included providing retraining for people to find employment, but also, amongst others, a broader target of supporting disadvantaged groups (such as the low-educated, unemployed, people with a disability and migrants). Another lesson for the JTM from the ESF+ is the need to involve stakeholders (such as social partners) throughout the different stages of the implementation of projects, and to provide technical assistance and share best practices.[75]

- **IMPLEMENT A 'RIGHT TO RETRAIN'** – To support reorientation of workers, the EU should create a 'right to retrain', giving employees the time and opportunity to retrain for new employment on the job. The right to retrain would first make it mandatory for employers to allow workers the time for retraining, and limit the potential for employers to oppose worker retraining. For example, if a manufacturer of combustion engine cars reorients to the production of EVs, workers would have the right to acquire the necessary skills to be employed in the new processes, and during their working hours. The right to retrain would not only be linked to changing employment under the transition, but would also apply broadly for workers who require retraining. Sectoral agreements could support this retraining, for example by using the revenue from allowances sold under the existing ETS.

- **VALIDATE NON-FORMAL AND INFORMAL LEARNING** – Vocational Education and Training (VET) plays an important role in helping workers adjust to the transition, but more attention could be given to broadening the approach to skills development. Currently, the recognition of skills, especially in non-formal and informal learning, is not validated equally in member states across the EU.[76] Strengthening the recognition of these skills would allow workers, especially those with lower levels of formal training, to better validate the skills they have at member state level. This broader approach should be recognised in the Skills Agenda, and the EU's guidelines should incentivise member states' funding (for example through ESF+) of organisations such as training and validation centres to further develop programmes to assess prior skills before further training, in support the recognition of non-formal and informal learning.

4. Getting workers and their communities on board: giving the transition a human face

4.1. LESSON FROM THE PAST: THE NEED FOR DISTRIBUTIONAL JUSTICE FOR WORKERS AND THEIR COMMUNITIES

Achieving a just energy transition requires attention to both distributional and procedural justice. The previous chapters focused on distributional justice for workers in terms of skills and employment. This chapter looks at distributional justice going beyond employment (i.e. paying attention to social policies to 'cushion' the social effects of the energy transition) and procedural justice.

Citizens, workers and their communities need to support the transition process. The Belgian coal transition and the start of European integration demonstrate how governments can enhance acceptance of phase-out policies by supporting national welfare systems through EU policies.

The example in Box 4 illustrates how the social contract – an unspoken contract between people to live together in a society - was supported through European solidarity, with a positive effect on distributional justice. In this case, the EU coordinated the phase-out in the member states and supported worker placement and training. In exchange for output reductions in the most inefficient mines, Belgium received (German) subsidies for the industrial restructuring and support for national welfare objectives. The latter was achieved through the ECSC's Readaptation Fund, which supported the relocation and retraining of workers whose jobs were lost, increasing the acceptance of the transition by those workers and their communities. In exchange, the (relatively) more competitive German coal producers could also export their coal to the Belgian steel and electricity industry. The collapse of the coal market almost broke the ECSC, but it survived because it provided valuable support for national welfare systems by reducing unemployment.[79]

The example illustrates the pressure transitions can put on the public acceptance of phase-out policies. It also demonstrates how 'cushioning' policies, which reduce the negative effects of the phase-out, can be a tool for furthering the acceptance of transition policies. Recognising that the ongoing energy transition will not only affect workers in transitioning sectors, but also their communities beyond the workplace, is essential to ensure wide societal acceptance.

BOX 4. DECLINE OF COAL MINING IN BELGIUM AND EUROPEAN INTEGRATION[77]

In the early 1950s, the Belgian coal industry faced the international downturn in coal demand (see Box 3). In addition, Belgian coal production had become far less efficient than German or Dutch, meaning it was produced at higher prices. The Belgian government tried to sustain the industry with high subsidies, but the downturn in demand for Belgian coal turned out to be structural: restructuring of the coal industry and ensuing unemployment was inevitable. Belgium's initial reluctance to accept the newly created European Coal and Steel Community (ECSC), which restricted coal subsidies and proposed a restructuring of the Belgian coal industry, disappeared in the face of this threat. Belgium accepted its integration into the ECSC to help it deal with the unemployment consequences of the transition. The ECSC "increased stability, welfare and the need for a managed interventionist response to economic change."[78] It offered a framework for a structured decline of the coal sector, and financial support for worker placement and training. In other words, the early phases of European integration helped Belgium to cushion the increasing levels of unemployment of the energy transition.

4.2. RECOMMENDATION: REINVIGORATE THE SOCIAL CONTRACT IN THE EU

Since the transition does not only affect workers, but also involves changing the way people utilise energy, it will arguably lead to much wider economy and society-wide impacts than we have seen in the past. Climate policies and measures implemented across the EU will come with transitional costs, which can hit especially vulnerable groups, including low-income households and the unemployed. For example, although carbon pricing is not necessarily a regressive policy, it can increase prices of electricity and products.[80] A just outcome for the current energy transition therefore requires achieving distributional justice beyond the workplace. Should the workers not be able to adapt to the energy transition and should their communities see consecutive rises in unemployment, poverty and energy costs, they risk falling behind in the wider green transition.

The social contract needs to be reinvigorated through social policies that compensate for the costs of the energy transition in the EU and its member states. If not, the political parties in power risk having to roll back their policies, face protest, or a capturing of these issues by extremist parties. The example in Box 4 shows that EU policies can play an important role in avoiding these consequences. A new social contract in the EU will require a broad range of actions, and the suggestions below aim to make a start.

► **Reinvigorate the social contract in the EU to tackle the emerging disequilibrium between the EU and member state levels**

Having signed up to the EU's climate ambitions through the Climate Law, EU countries will now face pressure domestically for the redistributive consequences that follow. Member states find themselves in a challenging position of disequilibrium since the Maastricht Treaty, where they face increasing pressure from their populations.[81] When it comes to climate policies, member states on the one hand accept the legitimacy of the EU to deal with climate matters, but on the other hand face increased dissent from their citizens when those measures come with costs. This paper argues that a reinvigorated social contract in the EU and social policies to compensate these costs are an important way to tackle this disequilibrium.

The Green Deal has become a new *raison d'être* for the EU as well as being its 'new growth strategy'. Nevertheless, its success rests on whether the EU presents the Green Deal in a way that appeals to citizens, and therefore to member states. The benefits and opportunities of European policies should be reinforced to improve distributional justice in order to compensate for the costs and losses (such as loss of employment, changes in energy taxation or the cost of carbon pricing)[82] the transition will bring for workers and their communities. The financial and economic crisis in the past decade divided the EU, but the recent response to the COVID-19 pandemic has shown that fruitful cooperation at the EU level can emerge in the face of a common crisis.[83] As with the COVID-19 crisis, the energy transition is a challenge where member states have a common interest to act at the supranational level. European cooperation can thus be the solution to the disequilibrium member states find themselves in today. The recommendations below can help vulnerable people in the transition and, at the same time, increase societal buy-in and acceptance of energy transition policies.

- **Support member states' social policies** – First and foremost, the EU should create the fiscal space for member states to guarantee their own just transition. A reform of the Stability and Growth Pact (SGP), before it is reinstated, should give member states enough fiscal space to strengthen their social baseline systems and, in particular, make additional social investments to achieve the energy transition. For example, the reform could allow the Commission to estimate the needs of investments in social policies to achieve a just energy transition in the member states, and this estimate could be endorsed by the Council through the same mechanism suggested in chapter 2.2. This would give member states more incentives to invest in social justice measures that can compensate for the transitional costs, which will be a precondition to achieve the energy transition. In addition, the EU could extend the possibility for member states to use revenue from the ETS to give income support to low-income households, which is foreseen in the guidelines of the recent EU toolbox to tackle rising energy prices.[84] It could, for example, also use the CEEAG review to make charging points for EVs more available to citizens.

  The RRF could provide firepower to combat the negative effects of the transition on people's welfare beyond employment alone. However, its focus is clearly on a just transition in employment, and broader welfare aspects (combating increasing energy prices and taxes, preventing energy poverty) play second fiddle.[85] Although the National Recovery and Resilience Plans do include several social actions not related to employment,[86] they also reflect the subordinate role of welfare policies in general. These issues should be given broader consideration during the RRF's upcoming implementation phase.

  The Commission should use the social scoreboard to assess the potential redistributive impact of the energy transition (for example to assess the social impacts of the RRF investments) in the different member states. During such an assessment, it should guarantee the full implementation of the EPSR: the just transition actions focus strongly on employment aspects, but more attention should also be paid to achieving the 'social protection and inclusion' principle (which includes social protection, minimum income, unemployment benefits).

- **Put social policies central in the social climate fund** – The Social Climate Fund (SCF), an instrument proposed by the Commission to compensate for the potentially negative effects of a proposed ETS extension to buildings and transport, should be used as a tool to first compensate the poorest, in addition to its target to increase low-emission investments. The energy transition's potential for negative redistributive effects is symbolised by the debates around the SCF. Although the ETS extension may increase living costs for lowest income households relatively more than for higher income households,[87] the SCF proposal does not include the necessary tools to fully compensate for this at the European level. To start, the revenue is not redistributed to compensate low-income households. If the SCF is genuinely to mitigate negative redistributive consequences, then it should compensate the poorest first, along with its criterion of stimulating low-emission investments by citizens. Rather than funding projects proposed by the member states, as with the current proposal, the Commission could therefore consider targeting the funds to a pre-defined expenditure in favour of the poorest households. This could, for example, be done through a carbon dividend[88] at the EU level that is allocated progressively (i.e. the poorest households receive most compensation). The funds can also be earmarked to support social policies at the member state level, for example to decrease income taxes on the lowest wages or support for the unemployed, in case their own social security falls short. Decreasing compensation as people's income goes up means that the strongest shoulders carry the heaviest burden.

4.3. LESSON FROM THE PAST: HOW TO GIVE WORKERS AND THEIR COMMUNITIES A VOICE

However, achieving redistributive justice by reinforcing the social contract is not sufficient. A just energy transition should also entail input from people into the decision-making on the energy transition. In other words, there should be 'procedural justice' that allows citizens and stakeholders to participate in policymaking, and makes government responsive to their input. More recent examples of transition highlight new ways of doing this. Several countries, including Canada,[89] Germany[90] and Scotland,[91] have experimented with transition commissions to increase the understanding and acceptance of phase-out policies through participation (see Box 5). Recent historical experience shows that a well-balanced transition commission (with representatives from industry, trade unions, governments at different levels, civil society and affected citizens) and a mandate for just transition can be an extremely positive vector for gathering public support.

As illustrated in Box 5, JTCs usually include citizen representatives and a relatively wide number of stakeholders, increasing the procedural justice of energy transition decisions. Such broad involvement does not need to be traded off against a *balanced* composition: the composition of the German Transition Commission, with 31 representatives, was broadly perceived as balanced.[93]

BOX 5. THE SCOTTISH JUST TRANSITION COMMISSION

In the absence of a UK-level just transition strategy, the Scottish government decided to create a just transition commission (JTC) to help design climate legislation that is in line with the principle of a just transition. The JTC's secretariat falls under the Decarbonisation Division of the Scottish Government and since 2019 it has been tasked with advising relevant state secretaries on the just transition and creating a strategy for the phase-out of fossil fuels across different sectors of the economy. It comprises a Chair and 12 individuals and experts from industry, unions, technology, civil society, the public sector and environmental groups.[92] It discusses ways to achieve a just energy transition across sectors and looks at aspects such as regional cohesion, economic development, quality of work and social inclusion. This set-up is similar to the German Coal Phase-out Commission, which was composed of 31 members representing industry, trade unions, environmental NGOs, science and politics (municipalities, regions and federal states). The JTC also engages with the public through public meetings, workshops and social research, and is also tasked to take the views of young people into account.

The involvement of citizens should be central to such a commission, though not all transition commissions include direct citizen involvement. The German Coal Phase-out Commission, for example, included mainly indirect participation,[94] while the Canadian[95] and Scottish[96] examples directly consulted with citizens and communities, and paid particular attention to outreach. The effect of direct participation on procedural justice and acceptance of policies has not been specifically studied, but indications are that direct citizen involvement does increase the legitimacy of policy decisions.[97] The examples given above also seem to indicate that direct citizen involvement leads to a positive outcome, and that citizens need to have a direct say and be able to follow the discussions of such commissions publicly.

However, indirect representation can also improve procedural justice. The Scottish, Canadian and German transition commissions have all included a range of actors for indirect representation. The three cases involved regions and local authorities in energy transition decisions – the importance of their involvement has been demonstrated. The same applies for involving the industry and trade unions. Trade unions are crucial partners to get on board for advancing climate action,[98] and may increasingly play a role as actors for change in the energy transition.[99] They represent the interests of workers in ensuring a fair transition and play an important role in policymaking at the national level. They are therefore best placed to signal the needs, concerns and fears of workers for the transition. Broader community organisations (civil society, churches etc.) and non-workers should also be involved in such deliberations, making sure that the under-represented[100] groups can also give their input. Giving a stronger voice to the under-represented remains an under-exploited opportunity. For example, the provision of employment to groups such as migrants has been shown to improve integration.[101] By taking their needs into account during deliberation, the EU can make them part of the just transition, improving both procedural justice (by taking all groups on board) and distributional justice (by improving the integration of these groups, for example via the job market).

The recent history of transition commissions shows that they can increase procedural justice. Although the German transition commission has not been a success across the board, for example because of its late phase-out date for coal,[102] it did manage to break the deadlock on the coal phase-out, setting out a plan towards a phase-out date with the agreement of a broad range of stakeholders. The Scottish and Canadian examples were broadly considered a success for involving stakeholders and citizens in an open deliberation process.

The Conference on the Future of Europe is another recent example of citizen and stakeholder involvement, and also covers aspects related to the just transition. One of the four European Citizens Panels deals with climate change, and several topics related to the just transition (including social justice and democracy) were among the most discussed.[103] The Conference Plenary involves citizens from a diversity of backgrounds (usually including under-represented groups), stakeholders and decision-makers from the EU, national, regional and local levels. The Conference is an experiment to directly connect citizens

with policymakers, but equally highlights the traps to be avoided. Among other things, its policy agenda is relatively broad and coordination with the member states could be improved.[104] Although this does not mean that the outcomes of the Conference will not be innovative or not represent the diversity of inputs, lessons can be learned for stakeholder involvement.

4.4. RECOMMENDATION: IMPROVE CITIZEN AND STAKEHOLDER INVOLVEMENT IN THE TRANSITION

To achieve a just energy transition, workers and their communities should be engaged in the process of decision-making; in other words, the EU should improve procedural justice. Chapters 2 and 3 have mentioned aspects of procedural justice for employment, but the scope goes beyond that: people need to be involved in decisions on all aspects of the transition. This paper therefore proposes that the Commission creates a clear framework for JTCs at the national level to encourage a broader public debate.

- **Create an EU framework for just transition commissions (JTCs) at the national level to encourage platforms for stakeholder and citizen participation**

  - **Create a framework for national just transition commissions** – The European Commission, in cooperation with existing EU platforms such as the European Climate Pact,[105] could put together a framework and support member states in setting up such JTCs. Such commissions have demonstrated that they are a useful tool for citizens to provide input into decision-making processes, but relatively few commissions have been organised at the member states' level. The availability of a template, based on good practices of how to organise a well-functioning and procedurally just JTC, would streamline the creation of JTCs in the member states.

    Learning from the past, a new framework should ensure that a broader range of stakeholders is included, and should be linked directly to policymakers, specifically the European Commission and national governments. These platforms would simultaneously facilitate the reorientation of industry (through a refreshed dialogue) and give citizens a more effective input in decision-making. Trade unions and employers should be central interlocutors in such a framework. This would provide a forum for direct social dialogue on EU and national climate policies' effects on employment. Other working groups should also incorporate consultation with government representatives at all levels (e.g. national parliaments, regions and cities). The need to include regions, cities and industry – which help to take regional specificities and industrial ecosystems into account – is shown above. Broader community organisations (civil society, churches, organisations representing youth and pensioners etc.), as well as scientists and environmental NGOs, should also be included. The outcomes of these working groups could then be presented to citizen representatives affected by these decisions in public meetings. The lessons from the Conference on the Future of Europe shows that these frameworks should be clearly defined, aligning their respective "agenda, format and reporting form"[106] to maximise their impact. Proposals of member states to access EU funds related to the just transition - such as the Territorial Just Transition Plans to access the funds from the JTF or the Social Climate Plans under the SCF – will be assessed on the basis of the range of stakeholders involved in the decision-making process. The EU should strongly enforce the requirement of broad stakeholder involvement by the member states while making these plans, and a national JTC could be a standardised and low-cost way to do so.

  - **Monitor the social effect of the transition with stakeholders** – These platforms can also help monitor and assess the effect of EU climate policies (such as Fit For 55) and national climate policies on member states' social policies, and their compatibility with the EPSR. They could also help invest in research into the just transition.[107] Specifically, research could focus on past cases of mitigating negative social effects of energy transition and the interplay of social policies and acceptance of the transition, as well as the effect of the energy transition on legitimacy itself.[108] In addition, sectors other than coal merit increasing attention in research on just transitions: more research should be done on the impact of transitions in end-use sectors (e.g. buildings,[109] the car manufacturing end of the transport sector, and certain niches of industrial production such as the steel sector). Finally, the EU should further strengthen its guidelines for stakeholder involvement at the national level, for example in the assessment of national plans for the just transition (such as the Territorial Just Transition Plans and the Social Climate Plans mentioned above). Certain stakeholders – for example trade unions[110] and civil society organisations – are at risk of being underrepresented in the consultation process for these plans in a number of member states. An important part of the assessment of member states' plans should be how national governments take into account these stakeholders' voices, for example whether they are in the position to participate structurally and at the relevant political level.

Conclusion

Learning from the past is not a straightforward endeavour. Past energy transitions were centred on changing the source of energy we needed to support our lives and livelihoods, mobility and industry. The current transition is our first attempt at phasing out fossil fuels. It is broader and deeper and is policy- rather than market-driven. This is why it needs to be fair and inclusive for workers, their communities and society as a whole, more than ever before. Attention to the links between fossil fuel phase-outs and the impact they have on workers and their communities is still lacking at the EU level, despite the Green Deal's just transition objective of "leaving no person or region behind". This needs an urgent fix at the highest political level: a just energy transition will not happen by accident.

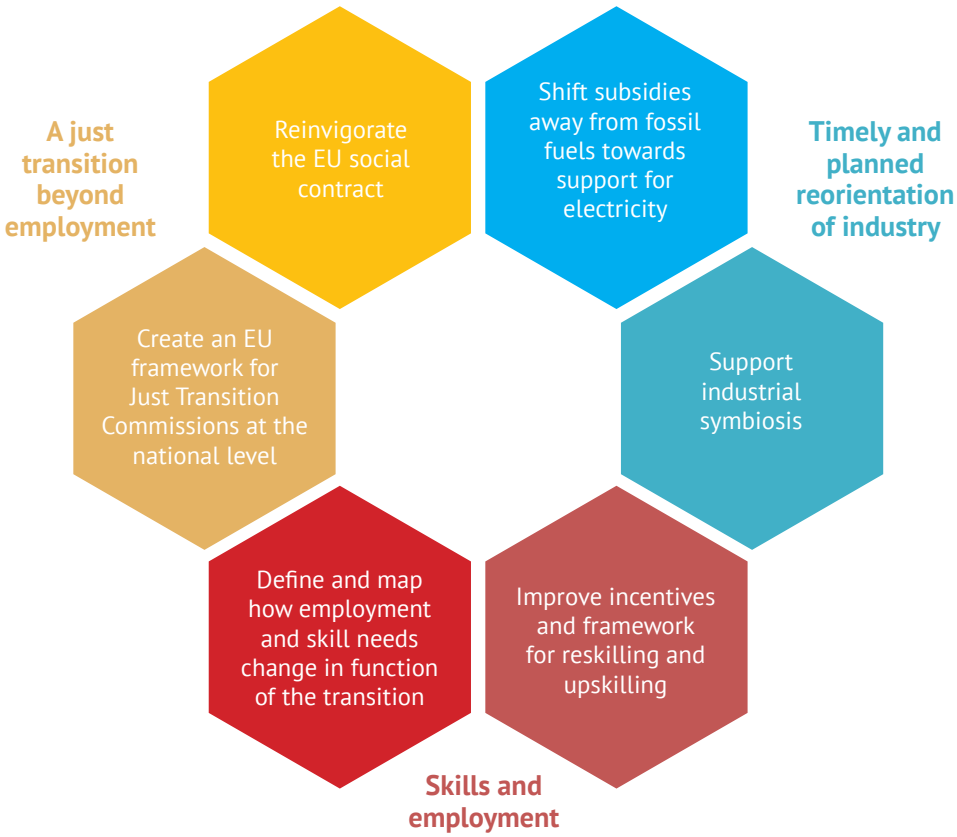
Past energy transitions provide several lessons– both cautionary tales and positive examples – for achieving a fair and inclusive transition in the EU. This paper suggested policy recommendations to lower the costs and increase the benefits of the transition.

Conscious decisions have to be made that minimise the impact on workers and their communities through the reorientation of declining sectors and encourage workers and citizens' acceptance of the green energy transition. Figure 4 summarises the recommendations drawn from lessons learnt from past transitions for all three of these challenges.

Chapters 2 and 3 considered the impacts on employment. The current transition will inevitably lead to job losses in some sectors and specific regions – losses that will not necessarily be fully compensated by the creation of employment in new industries. However, the transition does simultaneously create new employment opportunities: the transition from imported oil and gas to home-produced renewable electricity, electric vehicle manufacturing or building renovation, is one example. While overall, the employment effects of the energy transition are considered to be positive,[111] there are major challenges for changing employment and skill requirements that have to be tackled.

Fig. 4

RECOMMENDATIONS FOR THE EU TO ACHIEVE AND HARNESS THE JUST TRANSITION



One part of the complex puzzle of achieving a just energy transition is the reform of the incumbent industry. In his seminal work on the ECSC and Belgium's acceptance of supranational authority quoted in chapter 4.1., Alan Milward noted that "the adjustment of Belgian coal mining to the realities of an interdependent world was not brought about through the supranational machinery, but more brutally through the old familiar mechanism of bankruptcy". In that same way, incumbent industries such as fossil fuel production and ICE vehicles will crack under the pressure of a world grappling with climate change and ensuing changes in the economy. EU climate policies are just the harbinger, not the cause of this evolution. To be ready, it is important for the EU to position its industries by giving them incentives to reorient. This can be achieved by providing a clear horizon and adjusting, for example, subsidies and energy taxation.

Another part of the puzzle is reskilling and upskilling: the German transition away from coal since the 1950s illustrated the challenges and opportunities for skills and supporting workers in the transition. The EU should improve its monitoring of jobs and skills for the green energy transition. These should be further defined: to what extent is employment changing because of the energy transition, and how can (formal, non-formal and informal) skills be matched to this changing employment? These definitions need to be mapped across sectors and regions to better assess the impact on individuals and regions, rather than only focusing on macro-level job creation.

Broader issues of citizen support for energy transition policies were then considered, including distributive justice (mitigating the impact on citizens' social welfare), and procedural justice (allowing citizens to directly and indirectly participate in decision-making). The EU social contract should be reinvigorated and restated to broaden distributive justice: the energy transition and social policies are two sides of the same coin. The impact of climate legislation on social systems (EU-wide and in member states) needs to be assessed, and social policies put in place to directly compensate for any negative redistributive effects they may have. To improve procedural justice, the EU can learn from recent examples of JTCs to create a framework for the member states to set up their own commissions.

As this paper has shown, the current energy transition is less circumstantial than past transitions, which is why it can be better planned and coordinated. It is now up to the EU and its member states to seize this opportunity by learning from the century of lessons presented above, and achieve a transition that is fair and inclusive for all. The EU has already taken many positive steps to do so, but the examples of historical transitions discussed in this paper show that there is still much work to be done. Without a just transition that respects both distributional and procedural justice, it will not be possible to sustain climate policies. The EU and its member states risk losing public support; they may face protests and see populist parties capture discontent. After having lost precious time with slow climate action, the EU cannot afford to delay the just transition as well. It must step up to the challenge.

[1] Pisani-Ferry, Jean (2021), "Climate Policy is Macroeconomic Policy, and the Implications Will Be Significant", Washington DC: Peterson Institute for International Economics.

[2] Timmermans, Frans, "Let me be very clear: this is going to be bloody hard to do. But it can be done. The sooner we start, the lower the cost. And just imagine the costs of inaction, of horrible storms like in Limone, or another monthly Gota Fría. Those costs are huge #ClimateLaw #ClimateNeutralEU https://t.co/1wsUyUMOFI", Twitter, @TimmermansEU, 7 October 2020.

[3] The transition does not only affect workers. This paper refers to 'workers and their communities' in order to include citizens around those workers (such as their families, the unemployed or pensioned) who are indirectly affected by the changes in the labour market caused by the transition.

[4] ILO (2018), "Just Transition Towards Environmentally Sustainable Economies And Societies For All", ILO ACTRAV Policy Brief.

[5] Henry, Mathew S; Morgan D. Bazilian; and Chris Markuson (2020), "Just transitions: Histories and futures in a post-COVID world", *Energy Research & Social Science*, Volume 68, p. 101668.

[6] Williams, Stephen and Adréanne Doyon (2019), "Justice in energy transitions", *Environmental Innovation and Societal Transitions*, Volume 31, pp. 144-153.

[7] Henry, Mathew S; Morgan D. Bazilian; and Chris Markuson (2020), *op.cit.*

[8] As illustrated, for example, by the 'gilets jaunes' movement in France that started in 2018 after an increase in fuel taxes.

[9] Allen, Robert C. (2012), "Backward into the future: The shift to coal and implications for the next energy transition", *Energy Policy*, Volume 50, p. 17.

[10] Yergin, Daniel (2020), *The New Map: Energy, Climate, and the Clash of Nations*, New York: Penguin Random House.

[11] Unger, Richard W. (2013, ed.), Energy Transitions in History, RCC Perspectives, Number 2.

[12] See also Vandenbussche, Thijs (2021), "Is the EU's building renovation wave 'fit for 55'?", Brussels: European Policy Centre.

[13] Blondeel, Mathieu; Michael J. Bradshaw; Gavin Bridge; and Caroline Kuzemko (2021), "The geopolitics of energy system transformation: A review", *Geography Compass*, Volume 15, Number 7.

[14] Sovacool, Benjamin K. (2016), "How long will it take? Conceptualizing the temporal dynamics of energy transitions", *Energy Research & Social Science*, Volume 13, pp. 202-215.

[15] See Box 2 for an example of a transition that did not take social issues into account, and Box 3 for an example of a transition that did.

[16] European Commission (2021), ASSET Study on Job creation related to Renewables, Brussels, pp. 82-83.

[17] *Ibid.*, p. 90.

[18] Kuhlmann, Kristian; Daniel Küpper; Marc Schmidt; Konstantin Wree; Rainer Strack; and Philipp Kolo (2021), "Is E-mobility a Green Boost for European Automotive Jobs?", Boston: Boston Consulting Group.

[19] The final outcome for employment depends strongly on the scenario, for example: to what extent is employment of battery production created within the EU, rather than outside? The same goes for other new components, as well as, for example, the manufacturing of charging infrastructure for EVs.

[20] Galgóczi, Béla (2019), "Towards a just transition: coal, cars and the world of work", Brussels: European Trade Union Institute.

[21] Non-ICE suppliers are car manufacturing suppliers that do not uniquely depend on ICE-car manufacturing, e.g. manufacturers of windshields and rearview mirrors.

[22] *ZF Friedrichshafen*, "New division and change in ZF's Board of Management: E-mobility strengthened as one of ZF's core businesses" (accessed 9 September 2021 at https://press.zf.com/press/en/releases/release_17858.html).

[23] Klier, Thomas H. and Daniel McMillen (2013), "Agglomeration in the European Automobile Supplier Industry", Chicago: Federal Reserve Bank of Chicago.

[24] Madureira, Nuno Luis (2012), "The iron industry energy transition", *Energy Policy*, Volume 50, pp. 24-34.

[25] Nicolle, Rémy (2020), "The operation of charcoal blast furnaces in the XIXth century", *Metallurgical Research & Technology*, Volume 117, Number 1.

[26] Madureira, Nuno Luis (2012), *op.cit.*

[27] Delbeke, Jos (1981), "Growth accelerations and decelerations in the industrial production of Belgium 1831-1913", Katholieke Universiteit Leuven, *Centrum voor economische studien*, Discussion papers, p. 7.

[28] Turnheim, Bruno and Frank W. Geels (2012), "Regime destabilisation as the flipside of energy transitions: Lessons from the history of the British coal industry (1913–1997)", *Energy policy*, Volume 50, pp. 35-49.

[29] Geels, Frank W. (2005), *Technological transitions and system innovations: a co-evolutionary and socio-technical analysis*, Cheltenham: Edward Elgar Publishing.

[30] Geels, Frank W; Benjamin K. Sovacool; Tim Schwanedn; and Steve Sorrell (2017), "The socio-technical dynamics of low-carbon transitions", *Joule*, Volume 1, Number 3, pp. 463-479.

[31] Geels, Frank W. (2005), *op.cit.*

[32] Fattouh, Bassam; Rahmat Poudineh; and Rob West (2018), "The Rise of Renewables and Energy Transition: what adaptation strategy for oil companies and oil-exporting countries?", Oxford: The Oxford Institute for Energy Studies.

[33] Llopis-Albert, Carlos; Daniel Palacios-Marqués; and Virginia Simón-Moya (2021), "Fuzzy set qualitative comparative analysis (fsQCA) applied to the adaptation of the automobile industry to meet the emission standards of climate change policies via the deployment of electric vehicles (EVs)", *Technological Forecasting and Social Change*, Volume 169, p. 120843.

[34] For more information see European Commission https://ec.europa.eu/clima/eu-action/funding-climate-action/modernisation-fund_en (accessed 20 September 2021).

[35] For more information see European Commission https://ec.europa.eu/clima/eu-action/funding-climate-action/innovation-fund_en (accessed 20 September 2021).

[36] Lenaerts, Klaas; Simone Tagliapetra; and Guntram B Wolff (2021), "How much investment do we need to reach net zero?", Brussels: Bruegel.

[37] Pekanov, Atanas and Margit Schratzenstaller (2020), "The role of fiscal rules in relation with the green economy", Brussels: European Parliament.

[38] De Angelis, F. And Frederico Mollet (2021), "Rethinking EU economic governance: The Stability and Growth Pact", Brussels: European Policy Centre.

[39] It would also facilitate coordination with similar initiatives the Commission put forward under the proposal for a Social Climate Fund, such as the transition pathways and the Social Climate Plans.

[40] *CoolProducts* (2020), "Mapping Europe's subsidies for fossil fuel heating systems", Brussels, 21 December.

[41] Simon, Frédéric (2021), "EU climate and infrastructure agency eyes end of fossil fuel projects", Brussels: Euractiv (accessed 28 October 2021).

[42] I.e. increasing the use of electricity to replace fossil fuels.

[43] Bouckaert, Stéphanie; Araceli Fernandez Pales; Christopher McGlade; Uwe Remme; and Brent Wanner (2021), "Net Zero by 2050: A Roadmap for the Global Energy Sector", Paris: International Energy Agency.

[44] European Commission (2021), Communication on Tackling rising energy prices: a toolbox for action and support, Brussels, COM(2021)660.

[45] European Commission (2021), Proposal for a Council directive restructuring the Union framework for the taxation of energy products and electricity (recast), Brussels, COM(2021)563.

[46] Oei, Pau-Yu; Hanna Brauers; and Philipp Herpich (2020), "Lessons from Germany's hard coal mining phase-out: policies and transition from 1950 to 2018", *Climate Policy*, Volume 20, Issue 8, pp. 963-979.

[47] An overview of ECSC Readaptation Aid actions can be found in the archive of European Integration.

[48] Across the then-members of the ECSC.

[49] Communauté européenne (1960), "La Haute Autorité a permis la réadaptation de 110.000 travailleurs", *Bulletin mensuel d'information*, Mars 1960, n°3, Paris, p. 3.

[50] Herpich, Philipp; Hanna Brauers; and Pau-Yu Oei (2018), An historical case study on previous coal transitions in Germany, DIW Berlin.

[51] Oei, Pau-Yu; Hanna Brauers; and Philipp Herpich (2020), *op.cit.*

[52] Giersch, V. (2007), "Erfolgreiche Industrieansiedlung - tragfähige Basis für Wachstum, Beschäftigung und Strukturwandel im Saarland", cited in Oei, Pau-Yu; Hanna Brauers; and Philipp Herpich (2020), *op.cit.*, p. 970.

[53] Hamilton, James (2012), "Electric Vehicle Careers: On the Road to Change", Washington: *Occupational Outlook Quarterly*, Volume 56, Number 2, pp. 14-21.

[54] Campbell, Stephanie and Lars Coenen (2017), "Transitioning beyond coal: Lessons from the structural renewal of Europe's old industrial regions", CCEP Working Papers, Centre for Climate Economics & Policy, Crawford School of Public Policy, The Australian National University, p. 12.

[55] Bluestone, Barry (1984), "Is deindustrialization a myth? Capital mobility versus absorptive capacity in the US economy", The Annals of the American Academy of Political and Social Science, Volume 475, Number 1, pp. 39-51.

[56] Neffke, Frank and Martin Henning (2013), "Skill relatedness and firm diversification", *Strategic Management Journal*, Volume 34, Number 3, pp. 297-316.

[57] Botta, Enrico (2019), "A review of "Transition Management" strategies: Lessons for advancing the green low-carbon transition", OECD, Green Growth Issue Paper, p. 64.

[58] Wehrmann, Benjamin and Sören Amelang (2021), "Concern over auto job losses as Europe transitions to EVs", *Energy Post*, 22 October.

[59] Gündzüyeli, Elilf and Jörg Mühlenhoff (2021), "Coal regions are ideally suited for utility-scale Wind, Solar and jobs", *Energy Post*, 14 December.

[60] Eriksson, Rikard H; Martin Henning; and Anne Otto (2016), "Industrial and geographical mobility of workers during industry decline: The Swedish and German shipbuilding industries 1970–2000", *Geoforum*, Volume 75, pp. 87-98.

[61] *Ibid*.

[62] E2 (2020), "Clean Energy Jobs Pay 25% More Than National Median".

[63] García-García, Pablo; Óscar Carpintero; and Luis Buendia (2020), "Just energy transitions to low carbon economies: A review of the concept and its effects on labour and income", *Energy Research & Social Science*, Volume 70, pp. 101664.

[64] ESF+ was created from the European Social Fund, the Youth Employment Initiative, the Fund for European Aid to the Most Deprived, and the Employment and Social Innovation programme. It also provides food and material assistance.

[65] European Commission (2020), ESF programme performance overview, Brussels.

[66] See European Commission (2021), Joint Employment Report. Countries achieving the 15% target were Austria, Luxembourg, France, The Netherlands, Estonia, Denmark and Finland.

[67] See for example the importance of education and skills for employment in the renewables sector in Garcia-Casals, Xavier; Rabia Ferroukhi; and Bishal Parajuli (2019), "Measuring the socio-economic footprint of the energy transition", *Energy Transitions*, Volume 3(1-2), p. 116.

[68] See European Commission (2021), Joint Employment Report, Brussels. Countries achieving the 15% target were Austria, Luxembourg, France, The Netherlands, Estonia, Denmark and Finland.

[69] Deloitte (2019), "Expected skills needs for the future of work", (accessed 11 September 2021).

[70] IRENA (2020), "Measuring the socio-economics of transition: Focus on Jobs", Abu Dhabi: International Renewable Energy Agency.

[71] See for example Sofroniou, Nick and Pauline Anderson (2020), "The green factor: Unpacking green job growth", International Labour Review.

[72] European Commission (2021), Joint Employment Report, Brussels, p. 56.

[73] European Commission (2021), Proposal for a directive of the European Parliament and of the Council establishing a system for greenhouse gas emission allowance trading within the Union (ETS revision), COM(2021)551, Brussels, p. 86.

[74] European Commission, "European Social Fund+ - Performance", Brussels (accessed 1 October 2021).

[75] European Commission (2020), ESF programme performance overview, Brussels.

[76] Fleury, Nicolas (2014), "Validation of non-formal and informal learning: new opportunities for all?", Brussels: European Trade Union Institute.

[77] Milward, Alan (1999), *The European rescue of the nation state*, Abingdon-on-Thames: Routledge, p. 101.

[78] *Ibid*.

[79] Milward, Alan, *op.cit.*, p. 101-102.

[80] Ohlendorf, Nils et al. (2020), "Distributional impacts of carbon pricing: A meta-analysis", *Environmental and Resource Economics*, Volume 78(1), p. 18.

[81] Bickerton, Christopher J; Dermot Hodson; and Uwe Puetter (2015, eds.), *The new intergovernmentalism: states and supranational actors in the post-Maastricht era*, Oxford: Oxford University Press.

[82] See, for example, Enel Foundation, Eurelectric, Cambridge Econometrics and Guidehouse "E-quality - Shaping an inclusive energy transition", June 2020.

[83] de la Porte, Caroline and Mads Dagnis Jensen (2021), "The next generation EU: An analysis of the dimensions of conflict behind the deal", *Social Policy & Administration*, Volume 55(2), pp. 388-402.

[84] European Commission (2021), Communication on Tackling rising energy prices: a toolbox for action and support, Brussels, COM(2021)660.

[85] Rayner, Laura (2020), "The recovery triangle must include social investment if it is to succeed", Brussels: European Policy Centre.

[86] See for example Portugal's NRRP.

[87] Maj, Magdalena; Wojciech Rabiega; Aleksander Szpor; Stefano Cabras; Andrei Marcu; and Dóra Fazekas (2021), "Impact on Households of the Inclusion of Transport and Residential Buildings in the EU ETS", Warsaw: Polish Economic Institute.

[88] See for example the 'economists' statement on carbon dividends'.

[89] Gürtler, Konrad; David Löw Beer; and Jeremias Herberg (2021), "Scaling just transitions: Legitimation strategies in coal phase-out commissions in Canada and Germany", *Political geography*, Volume 88, p. 102406.

[90] Reitzenstein, Alexander and Rebekka Popp (2019), "The german coal commission – a role model for transformative change?", Briefing Paper, London: E3G, April.

[91] Houston, Donald; Georgiana Varna; and Iain Docherty (2021), "The political economy of and practical policies for inclusive growth—a case study of Scotland", *Cambridge Journal of Regions, Economy and Society*, Volume 14, Issue 1, pp. 197-215.

[92] Mercier, Sinéad (2020), "Four Case Studies on Just Transition: Lessons for Ireland", Dublin: National Economic and Social Council, Research Series Paper Number 15, p. 121.

[93] Edomah, Norbert; Morgan Bazilian; and Benjamin K. Sovacool (2020), "Sociotechnical typologies for national energy transitions", Environmental Research Letters, Volume 15, Number 11, p. 111001.

[94] Agora Energiewende and Aurora Energy Research (2019), "The German Coal Commission. A Roadmap for a Just Transition from Coal to Renewables", Berlin.

[95] European Commission (2019), "Task force on Just Transition for Canadian Coal Power Workers and Communities", Case Study, Brussels.

[96] UNFCCC (2021), "Scotland's Just Transition Commission", Advising on a net-zero economy that is fair for all.

[97] Kamlage, Jan-Hendrik and Patrizia Nanz (2017), "Crisis and participation in the European Union: energy policy as a test bed for a new politics of citizen participation", *Global Society*, Volume 31, Issue 1, pp. 65-82.

[98] Evans, Geoff and Liam Phelan (2016), "Transition to a post-carbon society: Linking environmental justice and just transition discourses", *Energy Policy*, Volume 99, pp. 329-339.

[99] Prinz, Lukas and Anna Pegels (2018), "The role of labour power in sustainability transitions: Insights from comparative political economy on Germany's electricity transition", *Energy research & social science*, Volume 41, pp. 210-219.

[100] McCauley, Darren et al. (2019), "Energy justice in the transition to low carbon energy systems: Exploring key themes in interdisciplinary research", *Applied Energy*, Volume 233-234, pp. 916-921.

[101] Zucker, Noah (2021), "Social Ties and Industrial Decline: Evidence from Historical Fossil Fuel Busts", Working paper.

[102] The German case had mixed results; although it achieved societal acceptance of a coal phase-out, the date of 2038 is considered too late in light of climate action, and the case also highlights the risk of committing further funds to support incumbent industries. For example, the plan allegedly committed funds to the incumbent industry that go beyond their phase-out needs; see Simon, Frédéric, (2021), "Brussels opens in-depth investigation into Germany's coal phase-out plan", Brussels: Euractiv.

[103] At the time of writing, three of the most followed topics ('climate change and the environment', 'a stronger economy, social justice and jobs' and 'European democracy') all related to the just transition.

[104] Stratulat, Corina and Janis Emmanouilidis, J (2021), "The Conference on the Future of Europe: Mind the Gaps!", Brussels: European Policy Centre.

[105] The Climate Pact aims to bring together citizens and help them give input to EU climate policies. It encourages citizens to make climate pledges, works with 'climate pact ambassadors' to represent change in their communities and organises events for citizen awareness and to give citizens a voice in climate policies.

[106] Stratulat, Corina and Janis Emmanouilidis, J, *op.cit.*

[107] For an overview see Köhler, Jonathan; Frank W. Geels; Florian Kern; Jochen Markard; Elsie Onsongo; Anna Wieczorek; Floortje Alkemade; Flor Avelino; Anna Bergek; Frank Boons; Lea Fünfschilling; David Hess; Georg Holtz; Sampsa Hyysalo; Kirsten Jenkins; Paula Kivimaa; Mari Martiskainen; Andrew McMeekin; Marie Susan Mühlemeier; Bjorn Nykvist; Bonno Pel; Rob Raven; Harald Rohracher; Björn Sandén; Johan Schot; Benjamin K. Sovacool; Bruno Turnheim; Dan Welch; and Peter Wells (2019), "An agenda for sustainability transitions research: State of the art and future directions", *Environmental innovation and societal transitions*, Volume 31, pp. 1-32 and Healy, Noel; John Barry (2017), *Politicizing energy justice and energy system transitions: Fossil fuel divestment and a 'just transition'*, *Energy Policy*, Volume 108, pp. 451-459.

[108] See the literature on discursive regime change (e.g. Isoaho, Karoliina and Kamilla Karhunmaa (2019), "A critical review of discursive approaches in energy transitions", Energy Policy, Volume 128, pp. 930-942); and the literature on legitimacy and energy transitions (e.g. Siddharth Sareen; Håvard Haarstad (2020), Legitimacy and accountability in the governance of sustainable energy transitions, *Global Transitions*, Volume 2, pp. 47-50; and Proedrou, Filippos (2021), "Exploring EU energy governance and policy under a democratic lens: citizen participation, output legitimacy and democratic interdependence", *European Politics and Society*, pp. 1-16).

[109] Martiskainen, Mari; Johan Schot; and Benjamin K. Sovacool (2021), "User innovation, niche construction and regime destabilization in heat pump transitions", *Environmental Innovation and Societal Transitions*, Volume 39, pp. 119-140.

[110] Simon, Frédéric, (2021), Union leader: 'With more social ambition, climate ambitions will also become higher', Brussels: Euractiv.

[111] García-García, Pablo; Óscar Carpintero; and Luis Buendia, *op.cit.*

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