

Toward a Real Green Transition?

Triple Constraints Holding Back EU Member States' "Greening" Industrial Strategies

Im, Zhen Jie; de la Porte, Caroline; Heins, Elke; Prontera, Andrea; Szelewa, Dorota

Document Version

Final published version

Published in:

European Social Policy and the COVID-19 Pandemic

DOI:

[10.1093/oso/9780197676189.003.0009](https://doi.org/10.1093/oso/9780197676189.003.0009)

Publication date:

2023

License

CC BY-NC-ND

Citation for published version (APA):

Im, Z. J., de la Porte, C., Heins, E., Prontera, A., & Szelewa, D. (2023). Toward a Real Green Transition? Triple Constraints Holding Back EU Member States' "Greening" Industrial Strategies. In S. Börner, & M. Seeleib-Kaiser (Eds.), *European Social Policy and the COVID-19 Pandemic: Challenges to National Welfare and EU Policy* (pp. 215-245). Oxford University Press. <https://doi.org/10.1093/oso/9780197676189.003.0009>

[Link to publication in CBS Research Portal](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

If you believe that this document breaches copyright please contact us (research.lib@cbs.dk) providing details, and we will remove access to the work immediately and investigate your claim.

Download date: 25. Jul. 2024



Toward a Real Green Transition?

Triple Constraints Holding Back EU Member States’ “Greening” Industrial Strategies

*Zhen Jie Im, Caroline de la Porte, Elke Heins, Andrea Prontera, and
Dorota Szelewa*

Introduction

Against the backdrop of the COVID-19 pandemic, the EU launched its flagship “European Green Deal” in 2021 to usher in a Green Transition—namely a climate-neutral Europe by 2050—by boosting the uptake of renewable energy resources, reducing household, transport, and industrial emissions, and creating new green jobs (European Commission 2021). Funding for this Green Transition would come partly from the EU’s post-pandemic recovery program, the NextGenerationEU (NGEU), which has been described by some scholars as a groundbreaking and “Hamiltonian” moment as it allows the EU to “borrow significant resources from the financial markets and use them to fiscally support national economies severely hit by the pandemic” for the first time (Lionello 2020, 22). Others argue that the NGEU decision is a response to past imbalances and question the likelihood of major changes (Armingeon et al. 2022). Irrespective of these interpretations, its design is new. By operating through “expansionary oriented conditionality” where reforms and investments must conform to the key aims of the EU, the NGEU is not just about helping Member States recover from the financial shock of the pandemic. Instead, it is also about investing in a green future. Thirty-seven percent of funding for Member States from the NGEU is earmarked for the Green Transition. The Commission’s first annual report on the Recovery and Resilience Facility (RRF), which is the lion’s share of the NGEU, shows that on average, Member States have spent 50% of their allocated funding on the Green Transition (European Commission 2022). Additionally, Member States’ RRF plans, which are needed to unlock funding from the

EU's post-pandemic recovery fund (NGEU), were positively evaluated by the European Commission.

However, to truly achieve a Green Transition requires a shake-up of Member States' industrial strategies. We focus here on industries because they are the major source of carbon emissions (European Environment Agency 2020; Intergovernmental Panel on Climate Change 2015, 743). Hence, decarbonization to achieve a green future would require Member States to change their industrial make-up by shifting away from heavy carbon-emitting industries toward green industries that emit less carbon. Yet, such industrial reforms may impose burdens on workers in fossil fuel-intensive and carbon-polluting industries. Member States may alleviate these burdens by strengthening labor market policies that support a socially fair transition in their RRFs. If social investment policies—education and activation policies—are earmarked in the RRF plans and targeted at workers who may become redundant as carbon-polluting industries where they work are being downscaled, this transition could be both green and socially fair. Social policies are thus crucial to facilitate a transition that is both just and inclusive. For instance, training enables workers who find themselves disadvantaged during the Green Transition to reskill and hence overcome job and wage loss in the long run. Employment support would also smooth their reentry into a much-transformed labor market (European Commission 2020a).

Overall, the European Green Deal presents an opportunity to pursue environmental sustainability, economic growth, and social cohesion (Mandelli and Sabato 2018). It appears as a win-win strategy that promotes green industries to fuel economic growth, decrease dependence on fossil fuels, and maintain social cohesion through its funding instruments like the NGEU (European Commission 2019, 2021). The European Green Deal also highlights the role of coordinated industrial, environmental, and social policies in meeting economic, social, and industrial decarbonization objectives concurrently.

Despite the opportunity presented by NGEU to pursue these three objectives, it remains to be seen whether Member States will take it up. Specifically, it is uncertain if Member States are willing to enact wide-ranging but necessary industrial decarbonization reforms. A green future requires Member States to embark on both “low-hanging” and uncontroversial reforms as well as “deep-seated” and divisive reforms. “Low-hanging” reforms promise a win-win situation because they are unlikely to yield clear winners and losers. Thus, these reforms resemble valence issues with low

political costs, making them expedient for governments to embark on them. For instance, improving energy efficiency is advantageous to both industry and consumers, and thus governments are unlikely to encounter substantial pushback with this reform. By contrast, “deep-seated” reforms that reduce dependence on fossil fuels or target carbon emissions in major industries could create stark winners and losers. For instance, some industries may become less competitive with these reforms, which may lead to job losses. These types of reforms resemble positional issues with high political costs, making them challenging for governments to embark on them even if they are critical to meet decarbonization objectives.

Therefore, it remains to be seen which types of industrial decarbonization reforms Member States will pursue, and if there will be substantial variations across Member States because such reforms may be more costly to some than to others. To examine such variation, we analyze the types of reforms Member States have planned in their RRF. We go beyond the European Commission’s (2022) declaration that Member States have spent 50% of their allocated funding on the Green Transition on average. We disaggregate this figure to see if this allocation comprises mostly “deep-seated” industrial decarbonization reforms or “low-hanging” ones. As there is no hard conditionality (Crnčec 2021; Schulz 2020) in the RRF, there is no incentive for Member States to earmark spending on “deep-seated” industrial decarbonization reforms, even though they are critical to avert a climate crisis (Intergovernmental Panel on Climate Change).¹

We develop a conceptual framework to account for variations in countries’ willingness to pursue deep-seated industrial decarbonization reforms. We postulate that three constraints reduce Member States’ willingness to pursue these difficult and politically costly reforms, even when they have EU funding to kick-start them. The three constraints are (a) Member States’ macroeconomic vulnerability, (b) reliance on carbon-polluting industries, and (c) the degree to which social policy institutions are geared toward social investment to enable a country’s workforce to transit and meet the new labor market demands of the Green Economy. We expect Member States to pursue these reforms only if they are macroeconomically stable, have low reliance

¹ Although governments are required to budget at least 37% of the fund to green growth, the Commission’s examples of policies supporting such growth are very broad. They cover various aspects of the Green Transition ranging from increasing the use of renewables, sustainable and efficient transportation, waste management, greener agriculture, and biodiversity investments (European Commission 2021a, 25–26). These examples are not exhaustive. https://ec.europa.eu/info/sites/default/files/document_travail_service_part1_v2_en.pdf

on carbon-polluting industries, and have strong social investment-oriented social policy institutions.

Our contributions are two-fold. First, we provide a framework that explains differences in governments' readiness to adopt costly deep-seated industrial decarbonization reforms, which brings to the fore the need to consider the role of politics in understanding environmental reforms (Burns 2008; Ćetković et al. 2017; Mandelli and Sabato 2018; Prinz and Pegels 2018; Turn 2014; Wood et al. 2020). Here, we focus on how comparative political economy can help understand environmental (industrial decarbonization) reforms. Second, we fill a gap within the social policy literature which has thus far overlooked the Green Transition (for a few exceptions, see Kaasch and Waltrup 2021, 321; Koch 2021, 2; Markova 2021). Social policy institutions oriented to the challenges of the Green Transition can enable the adoption of green reforms and alleviate the fallout that afflicts displaced workers. Thus, social policy institutions are crucial to enable an economy that is simultaneously green and inclusive (e.g., Meckling et al. 2015). In sum, this chapter provides a conceptual framework that links environmental policymaking to social policy and politics.

In the following, we first present our conceptual framework. We next empirically map where EU Member States are located within this triangle of constraints. Using cross-national data, we then assess the degree to which Member States have budgeted policies targeted at reforming carbon-polluting industries in their RRF plans. Thereafter, we delve deeper into four country cases which are confronted by the triangle of constraints to different degrees—Denmark, Germany, Spain, and Poland—to examine variations in their RRF plans. Last, we evaluate our conceptual framework based on these two sets of empirical analyses.

Conceptual Framework

With the climate emergency, Member States' policymaking aims to meet three objectives (Mandelli and Sabato 2018). The first objective is *macroeconomic stability*. Owing to the Stability and Growth Pact (SGP) as well as permanent austerity, macroeconomic stability has become a relevant policy objective for Member States (see De la Porte and Heins 2016). Member States are expected to pursue growth and keep unemployment, public debt, and deficit rates low to avoid massive fluctuations and downward pressure

on their macroeconomy. Next, governments are keen to maintain *social stability*. Third, Member States have come under growing pressure to ensure *environmental stability* by pursuing decarbonization within industry and among private consumers.

As these three policy objectives may conflict with each other, governments face trade-offs. For instance, governments are unlikely to pursue industrial decarbonization if it worsens the macroeconomic outlook and reduces social stability. Thus, while Mandelli and Sabato's (2018) framework shows the three overriding policy objectives that Member States face today, it does not underline the conditions under which these conflicting objectives may be reconciled. In short, the framework does not show when Member States can and are willing to pursue costly “deep-seated” decarbonization industrial reforms. To this end, we put forward a conceptual framework consisting of three constraints to show when such reforms are likely to occur.

The first is Member States' reliance on these industries. While some industries can readily adopt available technology or work practices that reduce their emissions significantly, others may struggle to do so because such technologies and practices are unavailable or expensive (Fischer and Heutel 2013). If Member States can afford it, they may subsidize the research and adoption of such expensive technologies and practices to meet the EU's carbon targets of being climate neutral by 2020. If they cannot afford it, these industries are left with the costly tab to decarbonize, or risk being phased out so that Member States can meet these climate targets. Either way, industries which struggle to decarbonize or find decarbonization too costly will struggle to be competitive, with negative labor market consequences for their workers. By contrast, industries like the automotive industry, which can adapt to decarbonization through technological innovations, would be able to avoid large-scale unemployment increases or dramatic wage losses. Hence, the risk of unemployment or wage loss incurred by workers is greatest among Member States which rely on carbon-polluting industries that cannot adapt, such as the coal industry (see Dechezleprêtre and Kruse 2018).² These consequences may trigger opposition from affected trade unions, industry lobby groups, and employer associations (see Mildenerger 2020), as well as electoral backlash from afflicted workers (for related see Ballard-Rosa et al. 2021; Im et al. 2019; Kurer 2020). Owing to the likelihood of deterioration in

² Research on industrial transformations show that these they often yield unemployment or wage loss (e.g. Goos et al. 2014).

macroeconomic and social stability, Member States that rely heavily on non-adaptable carbon-polluting industries are unlikely to pursue deep-seated reforms.

The second constraint is whether Member States' social policy institutions are sufficiently geared toward social investment to help affected workers adapt to the demands of the Green Economy. Social policy institutions are often sticky and resistant to change (Hall and Gingerich 2009; Pierson 1996; Pontusson 2006). Therefore, existing configurations of Member States' social policy institutions affect how well they can help disadvantaged workers adapt to the Green Economy and thus avoid backlash arising from these transformations. While existing research shows that enacting environmental reforms is easier in Coordinated Market Economies than in Liberal Market Economies because of the latter's limited welfare state (e.g., MacNeil 2016), it does not account for the role of social investment and enabling active labor market policies (ALMPs). Therefore, we provide a finer-grained analysis of the role of variations in national social policy institutions. Some Member States spend more on compensatory policies like unemployment benefits, early retirement policies, and pensions, whereas others spend more on social investment policies like training, education, and employment support (Bengtsson et al. 2017; Hemerijck 2017; Morel et al. 2012). Within the social investment framework, enabling ALMPs like training and reeducation are crucial to reskill and shift structurally unemployed workers into new and better jobs in the Green Economy (see European Commission, 2021). Likewise, employment support facilitates labor market reentry of disadvantaged workers and prevents long-term structural unemployment and skill atrophy. Although unemployment benefits and early retirement policies mitigate affected workers' income loss, they do not of themselves enable workers to benefit from the Green Economy. Such compensation is also expensive and may act as a downward drag on macroeconomic stability. Furthermore, without adequate social investment institutions, affected workers may feel that they have been left behind, which worsens social stability.

The third is Member States' macroeconomic vulnerability. With the SGP and permanent austerity, Member States suffering from low economic growth, high public debt and deficit, and high unemployment may seek to avoid huge short-term economic costs from decarbonizing industry (for related, see Armingeon et al. 2022; Walter et al. 2020). Decarbonizing industries may entail subsidies to incentivize industries to research and adopt new technologies and work practices to decarbonize, or compensation

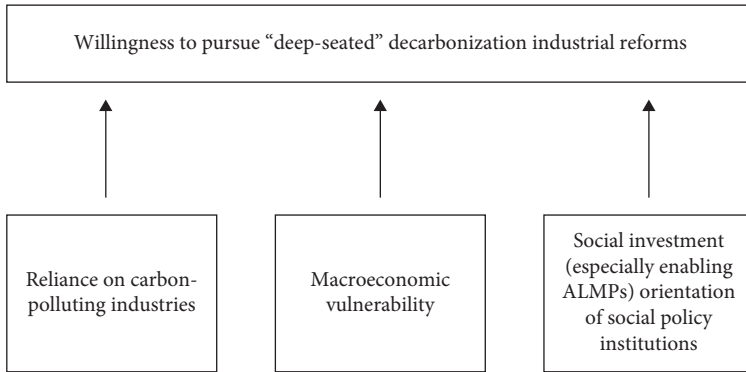


Figure 9.1 Triple constraints limiting governments’ willingness to pursue “deep-seated” decarbonization industrial reforms.

for phasing out unadaptable carbon-polluting industries. If deep-seated decarbonization industrial reforms lead to a rise in unemployment (such as when these industries are phased out), public expenditure on compensatory and social investment policies will also rise. Hence, deep-seated decarbonization industrial reforms will require Member States to have deep pockets or be able to absorb temporary macroeconomic and labor market shocks.

Therefore, we expect Member States’ willingness to pursue deep-seated decarbonizing industrial reforms to depend on these three constraints (Figure 9.1). A government is most likely to pursue these reforms if it is macroeconomically stable, does not rely on carbon-polluting industries, and has social investment–oriented social policy institutions that enable workers to adapt to the labor market demands of the Green Economy. By contrast, a government is least likely to pursue such reforms if it is macroeconomically vulnerable, relies heavily on these industries, and does not have social policy institutions that help workers adapt to the labor market demands of the Green Economy. Failing to meet any one of these constraints will reduce governments’ willingness to pursue reforms to achieve the green and inclusive transition called for by the European Green Deal.

Member States’ Profiles Based on the Three Constraints

Using indicators taken from Eurostat and the World Bank, we mapped and categorized EU Member States based on their positions relative to the three

constraints over a 10-year period (2009 to 2018). First, we operationalized Member States' macroeconomic vulnerability based on Armingeon et al. (2022) and Walter et al.'s (2020) measure—a summary index of a country's unemployment rate, its public debt expressed as a percentage of gross domestic product, its public deficit expressed as a percentage of gross domestic product, and private debt. However we omitted private debt, as we are primarily concerned with the aspect of governments' macroeconomic stability that influences their ability to allocate resources to social expenditures and subsidies for industrial decarbonization, as well as the ability to absorb macroeconomic shocks from such industrial reforms. To make these three variables' scales comparable, we inversed the variable measuring governments' public deficit and then standardized all of them. We then combined them into a single index (Cronbach's Alpha = 0.69).³ Higher values indicate greater macroeconomic vulnerability.

Second, we measured reliance on carbon-polluting industries as the weighted share of workers employed in greenhouse gas (GHGs) polluting industries in each Member State. We consider a country to be more reliant on carbon-polluting industries if there are more workers employed in such industries. We first identified industries that are most responsible for carbon emissions based on the Intergovernmental Panel on Climate Change's report on industry (2015)—mining and quarrying, food production, leather and textiles, paper and pulp, chemicals, metals, and cements.⁴ We next calculated the annual share of workers employed in these sectors as a proportion of all sectors in each country. To account for differences in carbon emissions across countries and years owing to technological or work-practice improvements, as well as electricity and heat from renewable energy sources (Intergovernmental Panel on Climate Change 2015), we multiplied this value by the air emissions intensity of the respective sector per country-year and the share of renewable energy used for producing electricity and heat. Reliable estimates on air emissions intensity, which measures the amount of GHGs emissions produced per value added, runs from 2009 to 2018 for most Member States, which explains the timespan of our analysis. In short, this

³ We crosschecked the validity of this index with exploratory factor analysis (EFA). EFA detects a single dimension with which all three variables have factor loadings greater than 0.5, which suggests the suitability of this index.

⁴ Food production here does not include agriculture. It is considered separately by the Intergovernmental Panel on Climate Change (2015). The NACE-2 categories are B (mining), C10-C12 (food production), C13-C15 (leather and textiles), C17 (paper), C20 (chemicals), C23 (cement), C24 (metals).

index captures the share of workers employed in GHGs-emitting industries weighted by variations in air emission intensity and use of renewable energy. To ease comparison, we standardized the variable for which higher values would indicate a higher share of workers employed in these GHGs-emitting industries which suggests greater reliance on these industries.

Third, we used public expenditure on training and employment support as a proxy for the social investment orientation of Member States’ social policy institutions. This expenditure approach is commonly used in previous studies in comparative political economy and social policy (e.g., Bengtsson et al. 2017). We chose public expenditure on these two social policy instruments because they are the most direct and relevant pathways through which affected workers can improve their labor market prospects in the Green Economy (European Commission, 2021). Training reskills disadvantaged workers, and employment support smooths their reentry into the labor market and green jobs. Public expenditure on both is measured as percentages of countries’ gross domestic product (GDP). As expenditure on both policies varies as unemployment levels fluctuate, we divided them by the respective country’s annual unemployment rate (Bengtsson et al., 2017). Higher values indicate that a Member State has social policy institutions that are more social investment-oriented.

Our estimation strategy relies on latent profile analysis (LPA) to identify latent profiles or unobserved “subgroups” in a population that share similar characteristics on relevant dimensions included in the model (Nylund-Gibson and Choi 2019, 441). It is commonly used in psychology, labor market, and education research (e.g., Lindblom-Ylänne et al. 2018; Nylund-Gibson and Choi 2018). A strength of LPA over other classification techniques such as a cluster analysis relying on *k*-means clustering is that it is model-based and permits a mathematical evaluation of how well a proposed LPA model, and hence its profiles, represent the data (Nylund-Gibson and Choi 2019, 442) through a battery of fit indices. We elaborate on our analytic and identification strategy in the supplementary material, available in the online edition of this book.

We identified four different profiles (clusters) that differ in their three constraints (Table 9.1). We postulate that willingness to pursue deep-seated but difficult reforms to carbon-polluting industries varies by these profiles. Profile 1 contains Member States with moderate reliance on carbon-polluting industries and social policy institutions are moderately high in their social investment orientation to enable their workforce to adapt to the

Table 9.1 Profiles (clusters) of Member States by the Position on the Three Constraints**Profile 1: Moderate reliance on carbon-polluting industries and moderately high social investment orientation**

<i>Characteristics</i>	<i>Description</i>	<i>Countries (55.55%)</i>
Macroeconomic vulnerability	Statistically insignificant	Belgium, Cyprus, Germany, Estonia, France, Croatia, Hungary, Ireland, Italy, Lithuania, Latvia, Malta, the Netherlands, Portugal, Slovenia
Reliance on carbon-polluting industries	Moderate reliance+	
Social investment orientation	Moderately high*	

Profile 2: Low macroeconomic vulnerability, low reliance on carbon-polluting industries, and high social investment orientation

<i>Characteristics</i>	<i>Description</i>	<i>Countries (18.52%)</i>
Macroeconomic vulnerability	Low vulnerability***	Austria, Denmark, Finland, Luxembourg, Sweden
Reliance on carbon-polluting industries	Low reliance***	
Social investment orientation	High***	

Profile 3: High macroeconomic vulnerability, moderately low reliance on carbon-polluting industries, and low social investment orientation

<i>Characteristics</i>	<i>Description</i>	<i>Countries (7.41%)</i>
Macroeconomic vulnerability	High vulnerability***	Spain, Greece
Reliance on carbon-polluting industries	Moderately low reliance***	
Social investment orientation	Low***	

Profile 4: Moderately low macroeconomic vulnerability, high reliance on carbon-polluting industries, and low social investment orientation

<i>Characteristics</i>	<i>Description</i>	<i>Countries (18.52%)</i>
Macroeconomic vulnerability	Moderately low vulnerability***	Bulgaria, Czech Republic, Poland, Romania, Slovakia
Reliance on carbon-polluting industries	High reliance***	
Social investment orientation	Low***	

Notes: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.005$

labor market demands of the Green Economy. They are statistically indistinct ($p > 0.1$) on macroeconomic vulnerability, which means some of them are macroeconomically stable whereas some are macroeconomically vulnerable. It is the largest profile and includes Belgium, Cyprus, Germany, Estonia, France, Croatia, Hungary, Ireland, Italy, Lithuania, Latvia, Malta, the

Netherlands, Portugal, and Slovenia. We expect this profile to be mixed in terms of pursuing deep-seated decarbonization industrial reforms. Member States which are macroeconomically stable may pursue limited reforms, whereas those which are macroeconomically vulnerable may not.

The second profile comprises Member States with low macroeconomic vulnerability, low reliance on carbon-polluting industries, and social policy institutions that have high social investment orientation. It consists of Austria, Denmark, Finland, Luxembourg, and Sweden. We expect these Member States to have the greatest likelihood of pursuing these reforms. They are least tied down by the three constraints and may thus face the least cost from deep-seated decarbonization industrial reforms. Consequently, they may also face the least political blowback.

The third profile contains Member States with high macroeconomic vulnerability, moderately low reliance on carbon-polluting industries, and social policy institutions that have low social investment orientation. It consists of a smaller group of countries, namely Spain and Greece. Finally, the fourth profile includes Member States that have moderately low macroeconomic vulnerability, high reliance on carbon-polluting industries, and social policy institutions that have low social investment orientation. They consist of Bulgaria, Czech Republic, Poland, Romania, and Slovakia. We consider it unlikely that Member States in both the third and fourth profiles will pursue deep-seated decarbonization industrial reforms.

Comparative Overview of Member States’ Willingness to Pursue Decarbonization Industrial Reforms

We used the dataset provided by Bruegel—a European think tank—to explore if RRF budget allocations to decarbonization industrial reforms varied across Member States according to their identified profiles.⁵ Through this comparative overview, we examine if these variations vary according to our identified profiles. Bruegel classified budget allocations for programs in 20 Member States’ RRFs based on the six pillars listed in the EU’s plans for the RRF (European Commission 2021c).⁶

⁵ See: <https://www.bruegel.org/publications/datasets/european-union-countries-recovery-and-resilience-plans/>

⁶ Bruegel classified the budget allocations in several ways. However, this one based on the pillars is most relevant for us.

We focused on budget allocations for programs that correspond with the pillar on the Green Transition. We next filtered for programs with descriptions indicating industrial reforms related to decarbonization, climate neutrality, or circular economy. As our interest is in industry, we then narrowed our search to programs that related to manufacturing or the energy sector that produces heat and energy for manufacturing activities.⁷ Decarbonization industrial reforms can relate to direct changes to industry, or indirect changes from their energy and heat inputs. Finally, we classified Member States based on whether or not they included these decarbonization industrial reform programs.

We cannot distinguish between additive or new programs in the RRF with the Bruegel dataset (see also Armingeon et al. 2022). Regardless of whether programs are additive or new, they nevertheless reflect a Member State's broader policy approach toward decarbonization industrial reform. Hence, the RRF plans are useful indicators of Member States' willingness to undertake such reforms.

Table 9.2 presents Member States by their profiles but splits them by their (non)inclusion of decarbonization industrial reforms. There is an observable difference in the percentage of Member States that have budgeted for programs reflecting such reforms. As we had posited, profile 2 has the highest percentage of Member States which have budgeted for such reforms. By contrast, profiles 3 and 4—Member States with social policy institutions that are not social investment-oriented and are macroeconomically vulnerable or dependent on these industries respectively—have the lowest percentage of Member States that have budgeted such reforms. Finally, and as expected, the picture is evenly split for Member States in profile 1. Although we expected this split to depend on Member States' macroeconomic vulnerability, it seems to resemble a divide between the EU-15 and the EU-11. Overall, the descriptive results suggest that Member States' willingness to pursue deep-seated decarbonization industrial reforms depends on their ability to overcome the three necessary constraints.

Danish, German, Spanish, and Polish RRF Plans

We explore the RRF plans of one Member State from each profile in greater detail. We focus on the extent to which deep-seated decarbonization industrial

⁷ Manufacturing industries have NACE classifications B and C. Energy industries have classification D.

Table 9.2 Breakdown of Member States by Profiles and Allocation for Decarbonization Industrial Reforms in the RRF

Profiles	Characteristics	Countries with allocations for decarbonization industrial reforms in RRF	Count	Countries without allocations for decarbonization industrial reforms in RRF	Count	Percentage of countries with allocations for decarbonization industrial reforms in RRF
Profile 1	Moderate reliance on carbon-polluting industries, and moderately high social investment orientation	Belgium, Estonia, France, Germany, Portugal, Slovenia	5	Cyprus, Croatia, Hungary, Italy, Latvia, Lithuania	5	50.00
Profile 2	Low macroeconomic vulnerability, low reliance on carbon-polluting industries, and high social investment orientation	Austria, Finland, Sweden	3	Luxembourg	1	75.00
Profile 3	High macroeconomic vulnerability, moderately low reliance on carbon-polluting industries, and low social investment orientation		0	Spain, Greece	2	0.00
Profile 4	Moderately low macroeconomic vulnerability, high reliance on carbon-polluting industries, and low social investment orientation	Slovakia	1	Czech Republic, Poland, Romania	3	25.00
Total			9		11	45.00

Notes: Member states that are missing were not included in the Bruegel dataset.

reforms are budgeted in their plans submitted to the European Commission. We triangulated our analysis of the plans with the Commission's evaluation reports, and assessment reports from relevant think tanks.

Denmark

Among our country cases, Denmark is the best prepared to deal with the Green Transition based on the three constraints. Regarding social investment orientation, Denmark is considered a leader in active labor market policies. Its labor market is considered flexible but also adaptable due to the focus on reinvestment in skills in case of job redundancy. Key indicators, when controlled for unemployment, show that ALMP expenditure has been increasing between 2010 and 2019. Expenditure increased from 0.178% to 0.272% of GDP for each percent of unemployment. Also, the unemployment rate decreased from 7.7% to 5.0% between 2010 and 2019, and it was 5.6% in 2020. Regarding macroeconomic vulnerability, Denmark has a low level of accumulated public debt (33.6% of GDP), which means that the economy is very robust and can handle short-term economic costs derived from phasing out carbon-polluting industries. Denmark has a relatively low reliance on carbon-polluting industries, with only a small proportion of the economy depending on manufacturing.⁸ Yet, as it will be demonstrated through the case of Aalborg Portland below, there are still substantial political costs which Danish governments will face when they embark on decarbonization industrial reforms, even if they are well-placed to pursue them.

Denmark has become the first country globally to constitutionalize the Green Transition with a climate law whereby the Danish government commits to reduce carbon emissions by 70% in 2030 (1990s emissions as reference) and to be climate neutral by 2050. It ties present and future governments to these benchmarks and requires fundamental changes in some industries to achieve the aims. While the minority Social Democratic (SD) government (2019 onward) has adopted various measures to meet these aims, critics—especially green nongovernmental organizations—argue that they are insufficient. In line with the collective bargaining tradition in Denmark, more specific agreements to reach the aims of the climate

⁸ We rely on Eurostat on industrial composition and macroeconomic data when describing the case studies.

law are made sectorally. For instance, there is a concrete agreement to decrease carbon emissions by 55%–65% by 2030 in agriculture, which implies reducing the territory used in agriculture and converting it to forest and other nature areas (Politiken 2021). In other areas, there is hesitation to make binding political commitments, especially on carbon tariffs. For instance, the cement industry is symbolically and economically important, especially Aalborg Portland. The company stands out because it is the largest single carbon emitter in Denmark (4% of total carbon emissions). It has agreed to reduce its carbon emissions by one-third by 2023 through investments in a new form of cement which is less carbon-polluting. However, in line with the climate law, there are still plans to levy a new national tariff, which Aalborg Portland opposes. It argues that it would then become too difficult to compete internationally (Politiken 2022), which led to the SD prime minister Mette Frederiksen (2019–present) proclaiming on several occasions that she will support Aalborg Portland and its 350 workers. Consequently, there are political deliberations about reconsidering these carbon tariffs for Aalborg Portland. This case shows that the Danish government faces a dilemma due to large companies’ concerns about cost competitiveness as well as adverse labor market effects on their specialized workforce, even if Denmark is not severely limited by the three constraints.

Denmark’s Recovery and Resilience Plan invests 59% of the allocated expenditure on climate objectives through six reforms and 33 investments. Most of the investments are channeled toward energy efficiency and reduction of carbon emissions, which reflects the fact that Denmark’s climate law has constitutionalized carbon reductions with two clear benchmarks. The largest initiative is a green tax reform, which reorients energy taxation to encourage reducing carbon emissions and rewrites the tax code by introducing a broad tax on GHGs. Almost one-third of Denmark’s RRF resources is devoted to this reform, which indicates commitment to the national climate law. This substantial earmark shows that Denmark’s government was able to plan these reforms because they are not heavily restricted by the three constraints. Nevertheless, the case of Aalborg Portland suggests that compromises may have been made to ensure that symbolically and economically important industries keep their production in Denmark. The second largest commitment in the RRF is toward energy effectiveness (including the shift to green heating sources). Part of this investment is already ongoing, such as replacement of oil burners and gas furnaces, and the RRF further supports this. Other components include energy efficiency in industry, energy renovation

of public buildings, and energy efficiency of private households. Thus, the RRF here supports reforms that are less contentious and more acceptable to citizens and industries but nevertheless has an impact on the climate. The third largest financial commitment in Denmark's RRF is dedicated to sustainable road transport, with plans to boost the current practice of improving the linkage of the car registration tax to carbon emissions, in order to incentivize buyers to buy hybrid or electric cars. It is also notable that the Danish plan has allocated a considerable amount of funds—the fourth largest component in its RRF—to research and development in green solutions as along with incentives to boost such research in companies.

Altogether, the green ambitions in Denmark's RRF are substantial but perhaps watered down to meet the concerns of important large companies. Some reforms are low-hanging fruit in that they are uncontroversial with voters, such as energy efficiency in housing and public buildings. However, Denmark also proposes several reforms that are deep-seated and contentious, such as taxation on carbon emissions that will impose substantial economic costs to carbon-polluting industries if they fail to reform. It remains to be seen if special deals will be made with major polluters such as Aalborg Portland, or even with agriculture. Separately, there is no plan to boost social investment or enabling ALMPs in the RRF, as the infrastructure, policies, and financial commitments are already high and the system functions well.

Germany

Germany, the EU's biggest economy, is in profile 1, which is characterized by moderate reliance on carbon-polluting industries. There is also considerable reliance on fossil fuels for power, especially after the withdrawal from nuclear energy after the 2011 Fukushima disaster. Its social policy institution has a moderately high social investment orientation and is thus relatively prepared to help workers negatively affected by the Green Transition. Traditionally, the German welfare state relied heavily on social compensation via generous social insurance systems. However, the Hartz reforms in the mid-2000s brought about far-reaching labor market and unemployment policy reforms that strengthened activation policies (Manow 2020; Seeleib-Kaiser 2002). ALMP spending in 2019 stood at 0.087% of GDP for each percent of unemployment. While this spending level in 2019 is greater than in Spain and

Poland, it is lower than in Denmark. Unlike some other countries in profile 1, Germany is on solid macroeconomic footing in 2019. Unemployment is at a historical low of 3.0%, and public debt stood at 58.9% of GDP in 2019. GDP is forecasted in April 2022 to recover at a growth rate of around 3% by the end of 2022 when compared to before the pandemic. Germany’s pursuit of decarbonization industrial reforms is therefore limited by its reliance on carbon-polluting industries rather than by the other two constraints.

Despite Germany’s reliance on such industries, carbon-polluting industries already faced a raft of decarbonization reforms prior to the submission of the German RRF plan. In August 2020, the government decided to incrementally phase out coal by 2038 (*Kohleausstiegsgesetz*) to meet Germany’s climate targets. Energy companies will receive subsidies of €4.35 billion for the demolition of coal production facilities, and affected regions will be supported with investments in infrastructure and countryside conservation. An additional act makes funding of up to €14 billion available for investment in former coal production regions. A further package of up to €26 billion will support research, transport infrastructure, and job creation programs (Bundesministerium für Wirtschaft und Klimaschutz 2020). Finally, industries relying heavily on fossil fuels for their production—notably the steel, chemicals, cement, and metal working sectors—have been supported financially with a €3 billion decarbonization program so that Germany can meet its aim of a 65% greenhouse gas reduction by 2030 (Bundesumweltministerium 2020).

The German RRF plans mirror the government’s prior policies on the Green Transition. The German RRF amounts to around €28 billion. Climate protection and energy transition is a core of the plan, with an earmark of around 40% of overall spending (Bruegel 2021). The most important measures are massive investments in hydrogen power comprising research, capacity, and infrastructure (€1.5 billion). A second set of instruments relates to climate-friendly transport (investments into fuel cells, incentives for private and public electric vehicles, and improvements to the charging infrastructure—€2.4 billion). A third broad package of measures relates to increasing the energy efficiency of residential buildings (€2.5 billion) (Bundesministerium der Finanzen 2021), thus supporting the construction sector. Furthermore, unlike the coal, steel, or cement industries, the important German car industry—although not explicitly mentioned—has also been earmarked for decarbonization in the RRF through investments in fuel cell research and e-vehicles infrastructure.

While industry reforms indicate a move toward a green economy and there is capacity to use enabling ALMPs to reskill the workforce in this direction, the German RRF plan is silent about the use or strengthening of enabling ALMPs, even if it has earmarked social policies to improve social resilience. By contrast, early retirement schemes—not used since the 1990s—seem to have been reactivated as a tool to compensate workers who would become redundant due to the Green Transition. Following recommendations by the European Commission, social cohesion measures are put in place to support the energy transition (Bundesministerium der Finanzen 2021): 5,000 jobs are planned to be created via the relocation of federal agencies, and coal industry workers will be supported through a long-term financial compensation scheme to smooth their transition into early retirement (Bundesministerium der Justiz 2020). Although the government plans to expand job creation programs to help the long-term unemployed and other vulnerable labor market groups, there appears to be little focus on providing enabling ALMPs to support the transition to the Green Economy, despite the solid footing of Germany’s macroeconomy and social policy. Crucially, there is very little in the plan on upskilling or retraining workers—apart from a mention of furthering education in timber construction—and nothing in relation to those who might lose their jobs in carbon-polluting industries. Instead, the government appears keen to foster future workers’ economic opportunities in the Green Economy through a general commitment to early education and further training.

Overall, the plans tally with expectations that governments in profile 1 would pursue some degree of comprehensive reform to carbon-polluting industries. The German plan contains a mix of both “low-hanging fruit” as well as “deep-seated” decarbonization reforms targeted at some of the carbon-polluting industries, especially in terms of reducing polluting energy sources. It is however uncertain if the transition will be supported by enabling ALMPs, as there is policy momentum to compensate affected workers rather than reskill them.

Spain

Spain is in profile 3, which is characterized by moderately low reliance on carbon-polluting industries but high macroeconomic vulnerability and social policy institutions that have low social investment orientation. Spanish

macroeconomic vulnerability was particularly high even before the COVID-19 pandemic crisis, which only made it worse. In 2020, GDP fell massively by 10.8%, unemployment rose considerably to 15.5%, and public debt grew to 120.0% of GDP. Concurrently, Spanish spending on ALMPs dropped from 0.71% in 2010 to 0.563% in 2019, despite the stubbornly high unemployment rate. This spending level trails that of Denmark and Germany, as well as Poland. Hence, Spain may be less equipped to help workers to adapt to the new demands of the Green Economy in comparison to these other countries. Unlike Germany and Poland, Spain is less reliant on carbon-polluting industries.

Since the early 2010s, the socioeconomic transition of coal mining regions has been prominent within the political agenda. In 2018, the government led by Pedro Sánchez of the Spanish Socialist Workers’ Party was able to finalize a deal for the closure of several coal mines after long negotiations with trade unions, employer associations, and local authorities.⁹ This deal provided €250 million of investment in affected regions, early retirement schemes for workers, local re-employment in environmental restoration works, and reskilling programs for green industries. Furthermore, in 2019 the Sánchez government adopted a “Strategic Framework for Energy and Climate” based on three components: the (then-draft) Integrated National Energy and Climate Plan 2021–2030; a draft law on climate change; and the Just Transition Strategy, which provided for additional compensation measures for the coal mining sector (Barreira and Ruiz-Bautista 2020).

The Spanish RRF plan builds on these earlier governmental initiatives. It allocates €28 billion to the Green Transition (about 40% of the total amount). Of this €28 billion, the plan devotes a substantial share to accelerating energy transition and climate targets with important investments in the areas of renewables (€3.9 billion) and energy efficiency (€3.4 billion). However, the plan lacks specific decarbonization reforms directly targeted at carbon-polluting industries. The lack of specificities may be traced to splits within industry actors (Green Recovery Tracker 2021). A large group, which covers over 50% of the IBEX35-listed companies, advocated for a green recovery, whereas a separate industry alliance—“La Alianza por la Competitividad de la Industria Española”—did not advocate for a green recovery and instead emphasized compensations for carbon emission charges and tax reductions.

⁹ See “Spain’s National Strategy to Transition Coal-Dependent Communities,” available at <https://www.wri.org/just-transitions/spain>.

This latter alliance comprises industries from carbon-polluting sectors such as paper, chemicals, food production, cement, and metal, as well as the automotive industry. This debate therefore gets at the core of difficult deep-seated decarbonization industrial reforms: affected industries seek support to compensate for costs incurred by changing practices, adopting new technologies, or being phased out. If a government is macroeconomically constrained like Spain, it may avoid such reforms that may impose further economic burden on itself. This may explain why Spanish reforms are targeted in a limited way at carbon-polluting industries that have already been earmarked for transition (shift from coal to renewable energy) or are “low-hanging” valence reforms like energy efficiency. Additionally, cost concerns may also explain why the Spanish RRF earmarks funding for public–private cooperation projects to fund the green restructuring of strategic industries (*Proyectos Estratégicos para la Recuperación y Transformación Económica*: PERTE). The first of these projects targeted the automotive industry, focusing on electric vehicles and the related supply chain.

Additionally, the Spanish RRF seeks to reinforce social resilience by allocating €300 million to social policies including those of the social investment mold. The Spanish government appears to belatedly realize the need to devote a sizable sum to modernizing its vocational education training and invest in upskilling and reskilling of its workers. Although Spain starts from a weaker point in terms of its social policy institutions’ readiness to enable workers to adapt to the demands of the Green Transition, spending from the RRF may improve these institutions to better support such workers than they do today.

Overall, it seems that the Spanish RRF is largely consistent with expectations of a low willingness to pursue deep-seated decarbonization industrial reforms. Yet, it is important to highlight that spending on the RRF lays an overdue groundwork for more socially fair labor market outcomes in the future, whenever the Spanish government decides to pursue similar economic transformations. Beyond willingness, the tradition of state-led corporatism may affect the success of decarbonization industrial reforms. Spain has a tradition of “state-led corporatism” in which the state steps in to help collaboration between employers, unions, and government (Schmidt 2009, 524). The coal phase-out and the PERTE concept are successful examples of this corporatism, which enables the government to enact these reforms. However, the lack of support from employers may also mean that implementing these reforms will be challenging, as shown in the lack of targeted action on the

most carbon-polluting industries that have demanded compensation for reforms. Finally, Spain has a regionalized institutional structure which makes effective cooperation between the national government and regional and local actors a key challenge for the implementation of the recovery plan.

Poland

Poland represents profile 4, with a high reliance on carbon-polluting industries. It is the country with the second highest number of coal power plants (37) in the EU (Joint Research Centre 2018), and 72% of its energy mix is based on coal. Social policy in Poland has been dominated by compensatory schemes—cash transfers/compensatory measures including early retirement schemes, severance pay, or transferring workers into disability payment schemes have been easily available for even small disability payments (Żukowski 2011). Spending on ALMPs is still much lower than countries in profile 2. Spending on ALMPs between 2010 and 2019 declined from 0.589% to 0.253% of GDP respectively. Concurrently, unemployment fell from 10% to 3.3% in the same period. Thus, when ALMP spending is divided by the unemployment rate, it increases from 0.059% to 0.077% of GDP for each percent of unemployment, which remains small compared to compensatory schemes (see also Szelewa and Polakowski 2022). With Poland’s social policy institutions being unable to help displaced workers adapt to the Green Economy, any deep-seated decarbonization industrial reforms will yield high social costs. Additionally, Poland has moderately low economic vulnerability currently. It has not suffered as much from the economic crisis or the pandemic in comparison to some other Member States. Public debt amounts to 45.6% of GDP, and unemployment was 3.3% in 2019. After the pandemic, public debt has grown to 57.4% of GDP, and unemployment remained stable at 3.2% in 2020.

Decarbonization reforms to industry have been limited. GHGs in Poland decreased by more than 15% since 1990. Poland also managed to improve the energy efficiency of industry significantly, reduce the consumption of hard coal and lignite, and increase the share of energy generated from renewable sources (Engel et al. 2020). However, consecutive governments refrained from setting any ambitious goals for decarbonization due to a long tradition of protests and strikes organized by trade unions from the coal mining industry. The unions repeatedly demanded extension of state aid and

longer time horizons for full decarbonization, as well as for generous compensatory measures for labor market costs arising from decarbonization. Likewise, although more than half of the power plants that existed since the 1990s have been closed, further green transformation has been repeatedly blocked by the coal mining industry and remains a politically difficult issue. These circumstances have contributed to a slow departure from dependence on carbon-polluting industries.

The Polish RRF has a budget of €36 billion, of which 57.36% is earmarked to finance the Green Transition, 13.61% on digital transformation, 13.07% on smart, sustainable, and inclusive growth, and 12.63% on health, economic, social, and institutional resilience (Bruegel 2021). The plan aims to reduce the consumption of natural resources, strengthen the science sector through improvements in science and innovation, develop renewable energy sources and zero-emissions transport, and improve smart mobility. Among others, the plan promises substantial support for developing the renewable energy industry through investment in the offshore wind industry: port infrastructure for offshore wind will be supported through grants (€437 million) and the development of offshore wind farms—through loans (€3,250 million). However, the RRF is predominantly focused on energy policy and less on decarbonization of industry. Hard coal mines will be phased out gradually only by 2049 (Ministerstwo Funduszy i Polityki Regionalnej 2021) because of a need for energy security and to limit the negative socioeconomic effects related to the decline in the number of jobs in the mining sector. Decarbonization of industries will require social security measures and changes to the economic structure. The changes are characterized as “evolutionary” that facilitate social and territorial cohesion in post-mining areas (Ministerstwo Funduszy i Polityki Regionalnej 2021).

Concurrently, the RRF acknowledges the need to adjust skills and qualifications to the requirements of the labor market with “effective” labor market policies, investment in child care services for children under the age of three, and supporting employment of persons who are aged 55 or more. It even devotes 12.63% of the RRF on health, economic, social, and institutional resilience. However, it stops short of a coherent plan to fund and improve social investment policies and enabling ALMPs to help displaced workers adapt to the Green Economy. While the RRF frequently refers to these existing policies, it does not offer concrete targets to improve availability levels or coverage of the policies that are required to avoid the worst

of the economic fallout that workers in affected sectors and regions would suffer.

Crucially, Poland’s RRF took a long time to be approved by the European Commission because of concerns about the rule of law in Poland and a series of political decisions that interpret the Polish legal system as superior to EU hard law. Regardless of these political circumstances, a critical appraisal indicates that Poland will only implement deep-seated, contentious decarbonization industrial reforms to a limited extent, even though the Polish macroeconomic situation would be able to absorb short-term macroeconomic shocks, increase substantial investment to fund decarbonization of industries, and develop social investment and ALMPs that can help displaced workers adapt to a green economy. Furthermore, the Polish RRF appears to “lack teeth,” as it does not emphasize strategic planning or benchmarking of key decarbonization goals. As such, implementation of more contentious aspects of the RRF could be lacking. Additionally, as decarbonization is only treated briefly as a domestic (regional) issue and framed around energy efficiency, the Polish government’s strategy seems to reflect a pursuit of low-hanging, uncontroversial reforms rather than deep-seated reforms to decarbonize industry.

Finally, there is a clear orientation toward compensation rather than social investment and enabling ALMPs to deal with the labor market fallout from the Green Transition. This focus on compensation is supported by the government’s orientation toward traditional “old” welfare policies, and is favored by key political actors who rely on the coal industry and who have thus mobilized to defend the status quo.

Discussion

This chapter provides a framework to understand the willingness of countries, but especially EU Member States, to pursue ‘deep-seated’ decarbonization industrial reforms. Such reforms are critical to avoid the worst effects of climate change and maintain environmental stability, but they frequently entail substantial costs that may threaten economic, social, and political stability. With the European Commission’s pledge toward a carbon-neutral EU by 2050 and the “Fridays for Future” climate marches, these reforms have become even more salient and are pushed onto the political agenda of Member States. We suggest that three constraints shape governments’ willingness to

take on such reforms: (a) their reliance on carbon-polluting industries, (b) the social investment orientation of social policy institutions to enable displaced workers to cope with the labor market demands of the Green Economy, and (c) their macroeconomic vulnerability. Based on these three constraints, we categorized Member States into four groups that faced these constraints to different degrees, and then compared whether the incidence of decarbonization industrial reforms of Member States' RRF plans varies across the four groups. Based on the Bruegel dataset, we indeed find that groups of Member States that are less restricted by the three constraints had a greater incidence of decarbonization industrial reforms in their RRF plans. Crucially, the European Commission's own breakdown of Member States' RRF plans regarding expenditure on the Green Transition also demonstrates the low incidence of such costly and difficult reforms. Most plans target improving energy efficiency and strengthening renewable energy and networks rather than tackling the most polluting industries (European Commission 2022, 15). Hence, both findings suggest that embarking on deep-seated decarbonization industrial reforms is less prevalent than "low-hanging fruit" reforms, even though both types of reform are equally necessary.

We then unpacked the RRF plans of four Member States from each group. We observe that these plans are additive in the sense that they generally build on prior national plans or strategies to address climate change. Corroborating findings from the comparative overview and the European Commission's report, the case studies show that Member States allocate more of their RRFs to easier and less contentious "low-hanging" reforms like energy efficiency. Reforms affecting industrial carbon-pollution tend to occur at the level of energy sources. However, Member States are more likely to decarbonize industry themselves if they are less limited by all three constraints, as in Denmark and Germany. Nevertheless, Member States still face resistance and political costs even when they are less limited by all three constraints, as shown in the case of Aalborg Portland in Denmark. Thus, if Member States like Denmark are compelled to make exceptions to decarbonization industrial reforms due to such political costs, Member States that are more constrained, like Poland, where coal mining is a major source of employment in several cities, may face even greater pressure to water down such reforms or sidestep them in favor of low-hanging and politically uncontroversial reforms.

When Member States are able and willing to reform carbon-polluting industries, they allocate funding to reform sectors with better economic

prospects and that can easily decarbonize, such as the automotive sector in Germany. Otherwise, they give leeway to such industries in terms of implementing green reforms, like the cement sector in Denmark. While this is an efficient allocation of scarce economic resources, it leaves workers with uncertain labor market futures in industrial sectors that cannot easily decarbonize. Sectors that will struggle without legislative or financial help to find ways to decarbonize are faced with the choice of spending heavily on their own behalf to decarbonize, or to wind down operations. These sectors will struggle to remain competitive and thus go into decline, which may reflect a deliberate strategy by governments to have them phased out gradually on their own accord, rather than forcing them out and then having to compensate them. Regardless of the motivation, these policy choices will have negative labor market consequences for workers employed in these sectors. For differing reasons, neither Denmark nor Germany have allocated substantial parts of their RRF to social investment policies that may help workers in these industrial sectors adapt to the Green Economy. Denmark did not do so because its social policy institutions are already better equipped to retrain such workers than Germany's. Hence, the labor market futures of such workers are more uncertain in Germany than Denmark.

Beyond spending allocations, the case studies also show that the four cases vary in their approaches to deal with labor market challenges from industrial decarbonization for the Green Transition. Denmark is committed to using social investment-oriented ALMPs like training and reeducation to help its current workforce adapt, whereas Germany focuses on easing the fallout by compensating them with early retirement, even if it has adequately functioning social investment instruments. With its weaker social investment starting point, Spain uses the RRF to lay the groundwork for a social investment-oriented approach that may help affected workers transit into new green jobs in the future. Separately, Poland remains wedded to a compensatory approach rather than one that enables affected workers to adapt. In short, Member States differ both in their greening and adjustment strategies. In the long run, however, Member States that have robust social investment-oriented social policy institutions may encounter less political resistance if they pursue more difficult decarbonization industrial reforms. If displaced workers can be offered better economic prospects, there may be less political resistance to such reforms. Member States that face less resistance are better able to adapt to the Green Economy and benefit from it. Since the social investment orientation of Member States' social policy institutions

often reflects the North–South and East–West divide, there is a concern that the Green Transition may lead to a two-speed Europe. In this context, the European Commission launched the Just Transition Mechanism (JTM) alongside the European Green Deal that aims to “promote economic renewal, new skills and new job opportunities . . . [so that] no one is left behind and all regions and all Europeans are able to tap the benefits of a greener, fairer more digital future” (European Commission 2020, 1). However, its funding is only a fifth of the sum dedicated to the climate and environment earmarked in the EU’s budget. While the JTM is an important signal from the European Commission, it remains to be seen if it is sufficient to overcome social instability that may limit Member States’ willingness to pursue deep-seated decarbonization industrial reforms that will be needed to bring about a European-wide Green Economy.

This chapter contributes by bridging social policy and comparative political economy to environmental reform. Until now, the nexus between social policy and environmental reforms remains underexplored (for exceptions, see Kaasch and Schulze Waltrup 2021). As the salience and need for comprehensive environmental reforms grows with the climate emergency, policymakers will increasingly face severe opportunity costs when they adopt structural reforms to decarbonize and green their economies. We offer a conceptual framework to understand some of the key considerations and challenges that will need to be overcome before policymakers will be incentivized to embark on such reforms. Concurrently, we highlight the role that social policy institutions will play, especially social investment and enabling ALMPs, in ensuring that these structural reforms will not adversely compromise social stability among European welfare states. Although compensating displaced workers mitigates short-term economic loss from structural reforms associated with decarbonization and the Green Transition, it does not offer them a means of improving their long-term economic prospects. When such prospects stagnate, displaced workers may feel left behind and politically disillusioned. Since political disillusionment and feelings of stagnation drive protests and support for radical parties (Ballard-Rosa et al. 2021; Im et al. 2021; Kurer 2021), social policy is critical to ensure that solidarity is maintained in European welfare states while painful but necessary reforms are made to avert the worst of the climate emergency. Future studies could explore which combinations of social policies—both compensation and social investment—ensure a fairer Green Transition by dampening unequal distributive effects from green-related

structural transformations. Additionally, while we focus on how these conditions constrain Member States’ RRF plans regarding decarbonization industrial reforms, future studies could also explore how they affect other green reforms. Finally, future studies could examine the impact of geopolitical shocks like the Ukrainian war on Member States’ move away from fossil fuels as well as industrial decarbonization.

References

- Armingeon, Klaus, Caroline De La Porte, Elke Heins, and Stefano Sacchi. 2022. “Voices from the Past: Economic and political vulnerabilities in the making of Next Generation EU.” *Comparative European Politics* 20 (2): 144–65. <https://doi.org/10.1057/s41295-022-00277-6>.
- Ballard-Rosa, Cameron, Mashail A. Malik, Stephanie J. Rickard, and Kenneth Scheve. 2021. “The economic origins of authoritarian values: Evidence from local trade shocks in the United Kingdom.” *Comparative Political Studies* 54 (13): 2321–53. <https://doi.org/10.1177/001041402111024296>.
- Barreira, Ana., and Carlota Ruiz-Bautista. 2020. *El Comité De Cambio Climático De Reino Unido, ¿Un Modelo Para España?* IDMA (Madrid: 2020). https://www.iidma.org/attachments/Publicaciones/Informe_IIDMA_CCC.pdf.
- Bundesamt für die Sicherheit der nuklearen Entsorgung. 2021. “Der Atomausstieg in Deutschland.” (June 29). https://www.base.bund.de/DE/themen/kt/ausstieg-atomkraft/ausstieg_node.html.
- Bengtsson, Mattias, Caroline de la Porte, and Kerstin Jacobsson. 2017. “Labour market policy under conditions of permanent austerity: Any sign of social investment?” *Social Policy & Administration* 51 (2): 367–88. <https://doi.org/10.1111/spol.12292>.
- Bundesumweltministerium. 2021. “Dekarbonisierung in Der Industrie.” (April 27). <https://www.bmu.de/programm/dekarbonisierung-in-der-industrie>.
- Bundesministerium für Wirtschaft und Klimaschutz. 2020. “Strukturstärkungsgesetz Kohleregionen.” (September 24). <https://www.bmwj.de/Redaktion/DE/Textsammlungen/Wirtschaft/strukturstaerkungsgesetz-kohleregionen.html>.
- Bundesministerium der Finanzen. 2021. “Deutscher Aufbau- Und Resilienzplan (Darp).” (April 27). <https://www.bundesfinanzministerium.de/Content/DE/Standardartikel/Themen/Europa/DARP/deutscher-aufbau-und-resilienzplan.html>.
- Bundesministerium der Justiz. 2020. “Gesetz Zur Reduzierung Und Zur Beendigung Der Kohleverstromung Und Zur Änderung Weiterer Gesetze (Kohleausstiegsgesetz).” *Bundesministerium der Justiz und für Verbraucherschutz* 37: 1818–1867. <https://www.gesetze-im-internet.de/kohleausg/BJNR181800020.html>.
- Burns, Steven. 2008. “Environmental policy and politics: Trends in public debate.” *Natural Resources & Environment* 23 (2): 8–12.
- Četković, Stefan, Aron Buzogány, and Miranda Schreurs. 2017. “Varieties of Clean Energy Transitions in Europe: Political-Economic Foundations of Onshore and Offshore Wind Development.” In *The Political Economy of Clean Energy Transitions*, edited by Douglas Arent, Channing Arndt, Mackay Miller, Finn Tarp, Owen Zinaman, 103–122. Oxford: Oxford University Press.

- Crnčec, Danijel. 2021. "Covid-19 crisis: More EU integration and a step forward for EU energy policy and climate action?" *Teorija in Praksa* 57: 1105–23.
- De La Porte, Caroline, and Elke Heins. 2016. "Introduction: Is the European Union More Involved in Welfare State Reform Following the Sovereign Debt Crisis?" In *The Sovereign Debt Crisis, the EU and Welfare State Reform*, edited by Caroline De La Porte and Elke Heins, 1–13. London: Palgrave Macmillan.
- Dechezleprêtre, Antoine., and Tobias Kruse. 2018. *A Review of the Empirical Literature Combining Economic and Environmental Performance Data at the Micro-Level*. Paris: OECD. <https://www.oecd-ilibrary.org/content/paper/45d269b2-en>.
- Engel, Hauke, Marcin Purta, Eveline Speelman, Gustaw Szarek, and Po van der Pluijm. 2020. *Neutralna Emisyjnie Polska 2050. Jak Wyzwanie Zmienić W Szansę*. McKinsey & Company. <https://www.mckinsey.com/pl/our-insights/carbon-neutral-poland-2050>. McKinsey & Company w Polsce.
- European Commission. 2019. Communication from the Commission to the European Parliament, the European Council. The Council, the European Economic and Social Committee and the Committee of the Regions. The European Green Deal. European Commission. Brussels. https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea-8c1f-01aa75ed71a1.0002.02/DOC_1&format=PDF.
- European Commission. 2020. The European Green Deal Investment Plan and Just Transition Mechanism Explained. European Commission. Brussels.
- European Commission. 2021. European Green Deal. Delivering on Our Targets. European Commission. (Luxembourg: Publications Office of the European Union). https://ec.europa.eu/commission/presscorner/detail/en/fs_21_3688.
- European Commission. 2021a. A Socially Fair Transition. European Commission. Brussels. https://ec.europa.eu/commission/presscorner/detail/en/fs_21_3677.
- European Commission. 2021b. Commission Staff Working Document Guidance to Member States. Recovery and Resilience Plans. Part 1/2. European Commission. Brussels. https://commission.europa.eu/system/files/2021-01/document_travail_service_part2_v3_en.pdf.
- European Commission. 2021c. "Regulation (EU) 2021/241 of the European Parliament and of the Council of 12 February 2021 Establishing the Recovery and Resilience Facility." *Regulation. Official Journal of the European Union* 2021, 241.
- European Commission. 2021d. Analysis of the Recovery and Resilience Plan of Spain. Brussels.
- European Commission. 2022. Report from the Commission to the European Parliament and the Council on the Implementation of the Recovery and Resilience Facility. European Commission.
- European Environment Agency. 2020. "Industrial Pollution." In *The European Environment—State and Outlook 2020. Knowledge for Transition to a Sustainable Europe*, 268–87. Luxembourg: Publications Office of the European Union.
- Intergovernmental Panel on Climate Change. 2015. "Industry." In *Climate Change 2014: Mitigation of Climate Change: Working Group III Contribution to the IPCC Fifth Assessment Report*, edited by IPCC, 739–810. Cambridge: Cambridge University Press.
- Fischer, Carolyn, and Garth Heutel. 2013. "Environmental macroeconomics: Environmental policy, business cycles, and directed technical change." *Annual Review of Resource Economics* 5 (1): 197–210. <https://doi.org/10.1146/annurev-resour-rce-091912-151819>.

- Goos, Maarten, Alan Manning, and Anna Salomons. 2014. “Explaining job polarization: routine-biased technological change and offshoring.” *American Economic Review* 104 (8): 2509–26. <https://doi.org/10.1257/aer.104.8.2509>.
- Green Recovery Tracker. Spain. 2021. <https://www.greenrecoverytracker.org/country-reports/spain>.
- Hall, Peter A., and Daniel W. Gingerich. 2009. “Varieties of capitalism and institutional complementarities in the political economy: An empirical analysis.” *British Journal of Political Science* 39 (3): 449–82. <https://doi.org/10.1017/S0007123409000672>.
- Hemerijck, Anton. 2017. “Social Investment and Its Critics.” In *The Uses of Social Investment*, edited by Anton. Hemerijck, 3–40. Oxford: Oxford University Press.
- Im, Zhen Jie, Nonna Mayer, Bruno Palier, and Jan Rovny. 2019. “The ‘losers of automation’: A reservoir of votes for the radical right?” *Research & Politics* 6 (1): 1–7. <https://doi.org/10.1177/2053168018822395>.
- IPCC. 2021. “Summary for Policymakers.” In *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by V. Masson-Delmotte, P. Zhai, S.L. Pirani, C. Connors, S. Péan, N. Berger, Y. Caud, et al., 3–34. Cambridge: Cambridge University Press.
- Joint Research Centre. 2018. *EU Coal Regions: Opportunities and Challenges Ahead*. Joint Research Centre, Brussels.
- Kaasch, Alexandra, and Robin Schulze Waltrup. 2021. “Introduction: Global eco-social policy: Contestation within an emerging policy era?” *Global Social Policy* 21 (2): 319–22. <https://doi.org/10.1177/14680181211019152>.
- Kurer, Thomas. 2020. “The declining middle: Occupational change, social status, and the populist right.” *Comparative Political Studies* 53 (10–11): 1798–835. <https://doi.org/10.1177/0010414020912283>.
- Lindblom-Ylänne, Sari, Anna Parpala, and Liisa Postareff. 2019. “What constitutes the surface approach to learning in the light of new empirical evidence?” *Studies in Higher Education* 44 (12): 2183–95. <https://doi.org/10.1080/03075079.2018.1482267>.
- Lionello, Luca. 2020. “Next Generation EU: Has the Hamiltonian moment come for Europe?” *EUROJUS* 4: 22–42.
- MacNeil, Robert. 2016. “Death and environmental taxes: Why market environmentalism fails in liberal market economies.” *Global Environmental Politics* 16 (1): 21–37. https://doi.org/10.1162/GLEP_a_00336.
- Mandelli, Matteo, and Sebastiano Sabato. 2018. *The EU’s Potential for Promoting an Eco-Social Agenda*. European Social Observatory, Brussels.
- Manow, Philip. 2020. *Social Protection, Capitalist Production: The Bismarckian Welfare State in the German Political Economy, 1880–2015*. Oxford: Oxford University Press.
- Meckling, Jonas, Nina Kelsey, Eric Biber, and John Zysman. 2015. “Winning coalitions for climate policy?” *Science* 349 (6253): 1170–71. <https://doi.org/10.1126/science.aab1336>.
- Mildenberger, M. Carbon 2020. *Captured: How Business and Labor Control Climate Politics*. Cambridge, MA: MIT Press.
- Ministerstwo Klimatu i Środowiska. 2021. *Polityka Energetyczna Polski Do 2040 R*. Ministerstwo Klimatu i Środowiska, Warsaw.
- Ministwo Funduszy I Polityki Regionalnej. 2021. “Krajowy Plan Odbudowy I Zwiększenia Odporności.” <https://www.gov.pl/web/planodbudowy/kpo-wyslany-do-komisji-europejskiej>. Warsaw: Ministerstwo Funduszy I Polityki Regionalnej.

- Morel, N., and B. Palier. 2011. *Towards a Social Investment Welfare State?: Ideas, Policies and Challenges*. Bristol: Policy Press.
- Nowak, Kamil. 2015. "Polska Po 1989 R. Doświadczyla Katastrofy Przemysłowej. Czy Możemy Odbudować Nasz Potencjał?" *Forsal*. <https://forsal.pl/artykuly/888899,soroka-polska-po-1989-r-doswiadczyla-katastrofy-przemyslowej-musimy-odbudowac-nasz-potencjal.html>.
- Nylund-Gibson, Karen, and Andrew Choi. 2018. "Ten frequently asked questions about latent class analysis." *Translational Issues in Psychological Science* 4 (4): 440–61. <https://doi.org/10.1037/tps0000176>.
- Pierson, Paul. 1996. "The new politics of the welfare state." *World Politics* 48 (2): 143–79. <https://doi.org/10.1353/wp.1996.0004>.
- Politiken. 2022. "Danmarks Største Udleder Af Drivhusgasser: »Det Er Ikke Sådan, at Vi Elsker at Være Sorte«." *Politiken*. <http://politiken.dk/8615584>.
- Politiken. 2021. "»Det Er En Rigtig God Nyhed«, Siger Klimarådet Om Ny Aftale." *Politiken*. <http://politiken.dk/8409313>.
- Pontusson, Jonas. 2006. *Inequality and Prosperity: Social Europe vs. Liberal America*. Ithaca: Cornell University Press.
- Porter, Michael E., and Claas van der Linde. 1995. "Toward a new conception of the environment-competitiveness relationship." *The Journal of Economic Perspectives* 9 (4): 97–118. <http://www.jstor.org/stable/2138392>.
- 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* 41: 210–19. <https://doi.org/https://doi.org/10.1016/j.erss.2018.04.010>.
- Reuters. 2020. "Factbox: Spain's \$4.2 billion aid plan to support the auto industry." *Coronavirus explainers*. <https://www.reuters.com/article/us-health-coronavirus-spain-autos-factbo-idUSKBN23M2EZ>.
- Rykowski, Rafal, and Francesca Canali. 2021. *Assessment of Poland's Recovery and Resilience Plan*. CEE Bankwatch Network, Prague.
- Schmidt, Vivien A. 2009. "Putting the political back into political economy by bringing the state back in yet again." *World Politics* 61 (3): 516–46. <https://doi.org/10.1017/S0043887109000173>.
- Schulz, Florence. 2020. "Meps warn of insufficient control over EU climate spending." *Euractiv* (Online), <https://www.euractiv.com/section/energy-environment/news/meps-warn-of-insufficient-control-over-eu-climate-spending/>.
- Seeleib-Kaiser, Martin. 2002. "A dual transformation of the German welfare state?" *West European Politics* 25 (4): 25–48. <https://doi.org/10.1080/713601641>.
- Sokolowski, Jakub, Frankowski, Jan, Mazurkiewicz, Joanna, Antosiewicz, Marek, Lewandowski, Piotr. 2021. *Dekarbonizacja a Zatrudnienie W Górnictwie Węgla Kamiennego W Polsce*. Institute for Structural Research (Warsaw: 2021).
- Szelewa, Dorota, and M. Polakowski. 2022. "Explaining the Weakness of Social Investment Policies in the Visegrád Countries: The Cases of Childcare and Active Labor Market Policies." In *The World Politics of Social Investment, Volume II*, edited by Julian L. Garritzmann, Silja. Häusermann and B. Palier, 185–208. Oxford: Oxford University Press.
- Turin, Dustin R. 2014. "Environmental problems and American politics: Why is protecting the environment so difficult?" *Inquiries Journal/Student Pulse* 6 (11): 1.

- Walter, S., A. Ray, and N. Redeker. 2020. *The Politics of Bad Options: Why the Eurozone's Problems Have Been So Hard to Resolve*. Oxford: Oxford University Press.
- Wood, Geoffrey, Jared J. Finnegan, Maria L. Allen, Matthew M. C. Allen, Douglas Cumming, Sofia Johan, et al. 2019. “The Comparative Institutional Analysis of Energy Transitions.” *Socio-Economic Review* 18 (1): 257–94. <https://doi.org/10.1093/ser/mwz026>.
- Wuppertal Institut. 2021. *Green Recovery Tracker: Poland*. https://assets.website-files.com/602e4a891047f739eaf5dfad/60dee83d7aecbee61dedf0c_Poland_Green%20Recovery%20Tracker%20Analysis_updated.pdf.
- Żukowski, Maciej. 2011. “Ekonomiczne Uwarunkowania Zmian W Polskim Systemie Emerytalnym W Latach 1989-2011.” In *Ewolucja Ubezpieczeń Społecznych W Okresie Transformacji Ustrojowe*, edited by Wagner Barbary and Malaki Antoniego. Bydgoszcz: Polskie Stowarzyszenie Ubezpieczenia Społecznego.