

# SUSTAINABILITY: ience, Practice and Polic,

Sustainability: Science, Practice and Policy

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/tsus20

### From carbon democracy to post-fossil capitalism? The German coal phase-out as a crossroads of sustainability politics

Tobias Haas, Jeremias Herberg & David Löw-Beer

To cite this article: Tobias Haas, Jeremias Herberg & David Löw-Beer (2022) From carbon democracy to post-fossil capitalism? The German coal phase-out as a crossroads of sustainability politics, Sustainability: Science, Practice and Policy, 18:1, 384-399, DOI: 10.1080/15487733.2022.2069542

To link to this article: <u>https://doi.org/10.1080/15487733.2022.2069542</u>

0

© 2022 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 17 May 2022.

C	
L	
L	67
-	

Submit your article to this journal 🖸



Article views: 188



View related articles 🖸



View Crossmark data 🗹

### **RESEARCH ARTICLE**

Taylor & Francis Taylor & Francis Group

OPEN ACCESS Check for updates

### From carbon democracy to post-fossil capitalism? The German coal phase-out as a crossroads of sustainability politics

### Tobias Haas<sup>a</sup> (), Jeremias Herberg<sup>a,b</sup> and David Löw-Beer<sup>a</sup>

<sup>a</sup>Democracy and Sustainability, Institute for Advanced Sustainability Studies, Potsdam, Germany; <sup>b</sup>Institute for Science in Society, Radbound University, Nijmegen, The Netherlands

### ABSTRACT

For a long time, Germany was regarded as a pioneer in climate policy. Recently, conflicts have intensified over the phase-out of coal from the energy sector. In 2020, the German Bundestag created the legal basis for a coal phase-out by 2038, subsequently revised to 2030 by the new coalition government of September 2021. This article analyzes the recent controversies from a political-economy perspective and shows the interrelationships and tensions between capitalism, democracy, and sustainability within Germany. In particular, the rise of right-wing populist attitudes opposing a coal phase-out, highlights the conflictual character and the social embeddedness of sustainability politics. The analysis of the conflicts surrounding the coal phase-out makes it possible to situate the future of energy supply in the overall societal context.

### **ARTICLE HISTORY** Received 24 August 2021

Accepted 20 April 2022

#### **KEYWORDS**

Capitalism; coal phase-out; decarbonization; democracy; Modell Deutschland

### Introduction

The coalition agreement of the new German "traffic-light government," consisting of the Social Democratic Party (SPD, red), the liberal Free Democratic Party (FDP, yellow) and the Greens, aims for a coal phase-out "ideally" by 2030 (SPD, Bündnis 90/Die Grünen, and FDP 2021, 5; in German *idealerweise*). This is remarkable, because in the previous legislative period (2017-2021), following great effort, the roadmap for phase-out had a significantly longer horizon of 2038. The struggle over the German coal phase-out shows that sustainability transformations are highly contested and by no means linear.

The coal phase-out plan of the previous government also illustrates a striking failure (so far) of German energy policy to meet the ambitions of the 2015 Paris Agreement: "The relatively poor decrease in the use of coal in Germany is a typical example of a phenomenon of 'carbon lock-in'" (Rentier, Lelieveldt, and Kramer 2019, 620). Despite Germany's ambitious rhetoric, its proposed solutions to the climate crisis and other ecological crises mostly fall far short of what is necessary (Oei, Hermann, et al. 2020). Even eight former members of the expert "Commission for Growth, Structural Change, and Employment" (henceforth "Coal Commission") who prepared the phase-out

legislation that was passed in 2020 have bemoaned these flaws in retrospect, arguing that the government undermined the commission's recommendations (Praetorius et al. 2020). Subsequently, on April 29, 2021, the German Federal Constitutional Court decided that the Federal Climate Change Act of 2019, which has served as the central climate policy point of reference for the coal phase-out, must be amended and tightened (Geinitz 2021).

Numerous studies have recently addressed various aspects of the German coal phase-out. Rindscheid and Wüstenhagen (2019) show, using a choice-based experiment, that German voters would support a phase-out by 2025. Oei, Brauers, et al. (2020) point out in their analysis of the phase out of "hard-coal" mining, which was achieved in Germany by 2018, and the associated structural changes in the Ruhr region and Saarland, that affected regions face major challenges that can be successfully overcome through proactive political support.<sup>1</sup> The fact that the phase-out of hard coal mining, which was primarily driven by economic motives, is now being followed by the phase-out of coal use as a whole is due not least to discourse networks and their success in delegitimizing coal as a climate-damaging energy source (Markard, Rindscheid, and Widdel 2021). In this article, we analyze the disputes around the coal phase-out in Germany and embed these within the historical

CONTACT Tobias Haas 🖾 tobias.haas@iass-potsdam.de 🝙 Democracy and Sustainability, Institute for Advanced Sustainability Studies, Potsdam, Germany

<sup>© 2022</sup> The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

dynamics in the field of tension between capitalism, democracy, and sustainability. Recent environmental policy failures largely derive from the political legacies of the fossil industries. We show that the constant and dynamic tension between capitalism and democracy leads to environmental policies that conform to a growth-oriented focus on sustainability. Utilizing regulation theory, which emphasizes that the reproduction of capitalist social relations is immanently crisis-prone and, accordingly, always requires compromise-mediated institutional arrangements, we show that this tension has led to different and Fordism post-Fordism compromises in throughout the history of German environmental policy. Those compromises are appropriate and enclose sustainability issues, thus presenting them as being compatible with capital accumulation. We will empirically substantiate this thesis through reference to the German model of capitalism, termed Modell Deutschland (Jessop 2014), Germany's Energiewende (energy transition), and the coal phase-out that was decided in 2019 and 2020. Our analysis shows that the tension between capitalism, democracy, and sustainability, which is articulated in concrete power relations, limits the possibilities for a rapid transition to a post-fossil future and for forms of collectively defined self-limitation within planetary boundaries (Brand et al. 2021; Newell 2019).

In addition to the historical and political-economic literature, we base our analysis on position papers from stakeholders in the recent coal phaseout negotiations as well as thirteen interviews with participants or their advisors (Sherpas) in the Coal Commission (and a written interview with a politician who was not directly involved in the commission's work). The commission consisted of 28 members (see Appendix 1) and we interviewed different groups of actors (business, civil society, politics, society). All interviews were conducted within six months of the conclusion of the commission in January 2019 (twelve in person and one by telephone). These interviews provide well-founded insights into the dynamics and interaction processes concerning the conflicts between - and reconciliation of - fossil industries, social policies, and environmental concerns. The interviews were recorded, transcribed, coded, and triangulated with primary and secondary sources to validate the findings. For a detailed analysis of this empirical study of the Coal Commission, see Löw Beer et al. (2021) and Gürtler, Löw Beer, and Herberg (2021).

The present article proposes an analytical perspective that helps to understand the possibilities and limits of climate and environmental policy in Germany and beyond. On one hand, there are numerous meta-analyses, such as the concept of the

Anthropocene (Crutzen 2006), the Capitalocene (Moore 2016), or the "imperial mode of living" (Brand and Wissen 2018), which refer in different ways to profound ecological crises. On the other hand, there is a large variety of environmental policy analysis (and German coal phase-out policies) with a rather narrow focus. With this article, we offer, in the tradition of regulation theory (Aglietta 1979), a mediating perspective by developing a historically and political-economically grounded analysis of the German model of capitalism with a focus on the coal phase-out and broader energy transition. We show that the persistence of corporatist power structures restricts the possibilities for ambitious climate policy. At the same time, they make it increasingly difficult to find a stable balance between accumulation, legitimation, and sustainability.

The article is structured as follows. In the next section, we develop theoretical reflections on the tensions between capitalism and democracy. We explore how these tensions have led to a compromise that often constrains environmental issues to a narrow understanding of sustainability as ecological modernization. Subsequently, in the third section, we show how this tension has developed in Germany and the challenges faced by the Modell Deutschland with regard to mediating capitalism, democracy, and society-nature relations. The fourth section analyzes the conflicts surrounding the Energiewende. The fifth section examines the struggle for the coal phase-out in the Coal Commission and beyond. Finally, we contextualize the implications for sustainability politics in general and the coal phase-out in Germany and outline further research needs.

### Capitalism and democracy in transition

Capitalism and democracy, contrary to the liberal narrative (Friedman 1962), always occupy a relationship of tension (Offe 2006; Merkel 2018). Since the global financial and economic crisis of 2007 and following and the more recent rise of authoritarian right-wing movements and parties, the liberal capitalist model has also been increasingly called into question in the core-capitalist countries (Bieling 2019). However, even prior to the global crisis in 2007, the thesis of post-democracy met with broad approval and resonance (Crouch 2004). That is, the increasing erosion and emptying of the institutions and processes of representative democracy both explain and intensify the strong rejection of the procedures of political decision making witnessed among the general public. In addition, various ecological problems, primarily climate change, have

become even more acute and the inadequacies of existing global governance regimes have become apparent (Park, Conca, and Finger 2008; Brand 2016). To what extent, therefore, must the relationship between capitalism and democracy be rethought, including against the background of the ecological crisis and the associated mandatory phase-out of fossil fuels?

Capitalism is based on the private ownership of the means of production, and on producing goods by wage labor for an anonymous market. Through competition between individual enterprises, capitalism has proved to be a highly dynamic system, permanently revolutionizing productive forces, showing enormous growth rates, and penetrating ever newer spaces (Harvey 2003; Rammelt 2020). However, as regulation theory reminds us, capitalism is not a self-regulating system: due to its inherent contradictions, it requires social, political, and cultural regulacompromise-based tion and institutional arrangements to bring about stable development on the basis of ongoing capital accumulation (Aglietta 1979). The field of tension between capital accumulation and the reproduction of social relations also permeates energy policy. From the perspective of regulation theory, the challenge is to find institutionalized compromises that pacify the different social interests and conflicts and at the same time guarantee a stable, cheap, and sustainable energy supply (Haas 2019). The concentration of economic power and the right to freely dispose of the means of production, which is associated with private ownership, leads to a situation in which economic power is always translated, to a high degree, into political power. In this respect, the liberal promise of political equality within the framework of democracy is in strong tension with the creation of economic inequality in the sphere of capitalist economies (Streeck 2014).

For our understanding of democracy, it is important to highlight that the tension between capitalism and democracy is also reflected in the fact that the perpetual acceleration of capitalist production goes hand in hand with the domination and appropriation of nature and the continuing destruction of the foundations of life (Brand and Wissen 2018). This connection is most evident in the use of fossil fuels, which has historically been the prerequisite for steady increases in labor productivity, and is currently a central component of the global energy system and will remain so for the foreseeable future (Altvater 2010; Newell 2019). In this respect, capitalist development is characterized by inequality and a destructive shaping of society-nature relations, which also entails far-reaching democratic implications.

Our understanding of democracy therefore endorses the concept of a "double materiality of democracy" (Pichler, Brand, and Görg 2020); this comprises its social dimension (i.e., its articulation with social conditions), on one hand, and the social appropriation of nature on the other (Mitchell 2011). Consequently, democracy is understood as a contested process whose core comprises the control and power of disposal over the shaping of societynature relations: "Apart from the introduction of democratic instruments and procedures (e.g., participation and dialogue), democratization therefore also means the politicization and control of the material conditions of (re-)production that include nature, natural resources and the international division of labor" (Pichler, Brand, and Görg 2020, 201).

Capitalist accumulation and the production of political legitimacy are interdependent and conflictladen. This relationship is shaped and supported by cultural values, organizational structures, political interests, and factual limitations (Friedland and Alford 1991). The tension is conveyed to a large extent by and through the state, which, in all its internal differentiation, has both economic and democratic responsibilities and stabilizing functions. Nation-states try to resolve differing interpretations of problems, and the discrepancy between problem solving and the generation of new problems in capitalism and democracy (Borchert and Lessenich 2016).

One general problem that for many years has challenged the legitimation and accumulation structures of Modell Deutschland - and many other economies - is the transformation away from Fordism. In the so-called "Golden Age of capitalism" (Hobsbawm 1994), highly stable economic development with strong economic growth was achieved through a specific, compromise-mediated mode of regulation. Strong trade unions were able to push through relatively high-wage settlements, the welfare state was steadily expanded, employment relationships were very stable, and wage labor had a predominantly male connotation (whereas the domestic and reproductive spheres were assigned to women). Through trade unions and popular parties, institutionalized political participation was secured for broad masses (Aglietta 1979; Hirsch and Roth 1986). Trade unions and employers' associations were the core actors in the corporatist mediation of interests, in Germany's case, particularly during the so-called "concerted action" German (in Konzertierte Aktion) of the late 1960s (Czada 2019, 402).

However, the Fordist development constellation was also based on a certain understanding of progress and prosperity, which was expressed in the intensified social appropriation of nature. The acquisition of standardized mass-consumer goods, such as refrigerators, washing machines, and cars, became the central promise of prosperity. A strongly individualistic consumer orientation emerged, which in this phase led to the universalization of an "imperial mode of living" (Brand and Wissen 2018), based on the appropriation of labor and natural resources from other parts of the world.

Within post-Fordism, the rising importance of the financial sphere (Foster 2007), the precarization of working conditions, the reduction of welfare benefits, and the "intellectual and moral turn" of the conservative-liberal government in Germany (CDU, CSU/FDP) that came to power in 1982 brought farreaching ruptures in the wider economy and in political culture: The new uncertainties and growing social inequalities were accompanied by a surge in social individualization. The traditional institutions (family, church, trade unions, and people's parties) lost much of their importance. In the last decade, fears of relegation and future uncertainty are increasingly authoritatively processed by the devaluation of other social groups such as immigrants countries (Demirovic from Muslim 2018; Nachtwey 2018).

Germany's recent plans to phase out coal have a critical position in this longer political history. One specific problem that Modell Deutschland is facing more recently is the need to build a post-fossil economy, while continuously facing post-Fordist disruptions. This implies a political dependency on the institutions of a fossil-based economy. More specifically, the fossil industries (e.g., Germany's strong car-manufacturing sector) have had a democratizing effect through strong labor representation and the associated achievements, as well as through new forms of social participation (for example through membership in the people's parties or in the growing trade unions), which were linked to the rapid expansion of the use of fossil-energy sources. These aspects of "carbon democracy" (Mitchell 2011) can also be observed with regard to the German model of capitalism. Coal played a prominent role in the German labor movement and is closely linked to the corporatist relationship between industry, labor, and the state in the Modell Deutschland (Raphael 2019).

*Modell Deutschland* has proven relatively stable while also capable of institutional and policy change (Czada 2019); nevertheless, the tripartite system now faces a historical challenge that may undermine the economic and even the political structure of *Modell Deutschland*. The political-cultural residues of the Fordist constellation are challenged and potentially terminated as a result of recent attempts to agree to a transformation beyond fossil fuels: Germany's last coal-fired power plant is to be shut down by 2038 at the latest (ideally by 2030, under the new trafficlight coalition). The ambition to phase-out coal by 2038 goes back to a proposal presented (with one dissenting vote) by the Coal Commission in spring 2019 (BMWi 2019) while making even further concessions to the interests of affected industries. Both the coal phase-out and the role of the commission were highly controversial among the German public and especially among environmental movements (Löw Beer et al. 2021). This brief theoretical and empirical illustration shows that the tension between accumulation and legitimation can be traced throughout the development of the coal industry and industrial struggles.

In summary, the spheres of accumulation and legitimation have undergone sweeping changes that are both interrelated and also raise questions of how the withdrawal from coal can be conducted. In other words, under what conditions can a coal phase-out lead to a revitalization of democracy against the backdrop of economic crisis dynamics, political disintegration processes, and destructive society-nature relations such as those manifested in climate change? While a coal phase-out implies the need for fundamental changes in Germany's approach to capitalism and democracy, the relationship to sustainability within Modell Deutschland is politically ambivalent and conceptually vague. Against this background, the following analysis helps explain how Modell Deutschland has both appropriated and constrained more ambitious visions of a sustainability transformation, thus lagging far behind the speed of change demanded by climate science.

## The dependency of *Modell Deutschland* on coal extraction and the weak sustainability paradigm

Looking back over the past seventy years, the relationship between capitalism and democracy in Germany is characterized by a certain continuity, despite the occurrence of several shifts (Reckwitz 2019). In the following discussion, we elaborate on the environmental and energy-policy side of these developments and argue that the socio-cultural and economic cleavages are increasingly entwined with the emergence of a growth-oriented conception of sustainability policy. The persistent reliance on fossil fuels and pursuit of consumerist lifestyles has exacerbated social inequities and cultural cleavages while destroying the natural foundations of life (Eversberg 2020). This is articulated most clearly in the continuous reliance on coal extraction: coal served as a basis for the socio-economic stratification, economic stability, and socio-cultural identity of industrial regions and policies in Germany (Herberg et al. 2020). The same regions, however, are struck by the more recent dismantling of welfare policies and democratic institutions.

In the 1950s and 1960s, the energy basis of West Germany's so-called economic miracle was provided by domestic coal, which was mined in Germany's Ruhr and Central regions. Up to 700,000 people were employed in coal mining in the late 1950s. The industry guaranteed the socio-economic welfare of entire regions, while fostering a specific workingclass culture (Raphael 2019). The identity of the wider Federal Republic of Germany was essentially based on its economic strength and strong export orientation (Wentland 2017). At that time, even the fundamental economic stability of West Germany was largely founded on coal, because the co-determination laws in the coal and steel industries of 1951 and 1976 provided for relatively far-reaching rights for workers. In East Germany (German Democratic Republic or GDR), too, coal mining was massively expanded in the Lusatian and Central German coalfields, especially in the 1950s and 1960s (Matthes 2000, 54-57). Coal regions in both former East and West Germany developed as hubs for worker culture and institutions of solidarity (Abrams 2002; Morton and Müller 2016).

The economic, financial, social, and labor policy orientations were fed by a mix of Keynesian and ordoliberal instruments that secured and constantly renewed the *Modell Deutschland*. In this way, the labor movement and its organizations were largely satisfied and integrated into the Fordist prosperity constellation (Haas 2017). That is, the material and social participation of broad sections of the population was continuously expanded. The export orientation of *Modell Deutschland* was continuously consolidated from the 1960s until the present, with domestic coal reserves playing a central role (Hirsch and Roth 1986). Environmental concerns or policies had a very subordinate status, while regions with a strong fossil-fuel industry blossomed economically.

In the 1970s, however, against the backdrop of rising unemployment and declining social cohesion (Röttger 2012), industrial relations became increasingly precarious (Lux 2017). Although the coal industries remain today a stronghold of the trade unions, their general bargaining position has weakened. The environmental consequences of German industrial policies could be raised with increasing plausibility and political legitimacy. Greenhouse-gas emissions increased massively with economic growth, the steady expansion of coal use, and the onset of mass motorization. Local environmental problems such as acid rain, air pollution, and forest dieback also became more prevalent. Western German coal regions in particular became known for their poor air quality (Haas 2017, 148).

However, it was not until the emergence of the environmental movement that the various effects associated with the worsening destruction of the natural foundations of life were discussed publicly. In particular, conflicts emerged around nuclear energy, which had previously been venerated as a technology that would overcome all energy barriers and scarcities (Sander 2016). These disputes contributed to the rise and increasing acceptability of nature protection and energy efficiency as political terms. Consequently, an environmental bureaucracy was established (the Federal Environment Agency, founded in 1974), followed - in the wake of the 1986 Chernobyl nuclear disaster - by the establishment of the Federal Environment Ministry. In this way, the ecological conflict dimension of the advancing accumulation of capital became an inherent part of a deeply contradictory energy-policy regime: While the German government tried to appease and subsume environmental politics within the tradition of industrial policy, it continuously relied on coal and nuclear energy. Challenging this regime, the anti-nuclear movement endorsed a clearly antagonistic position against the government as the promoter of the nuclear project. While some environmental concerns were partially contained and some environmental indicators significantly improved, the anti-nuclear movement developed alternatives to the fossil-nuclear energy regime and coined the term Energiewende (energy transition) (Bossel, Krause, and Müller-Reißmann 1980).

The 1990s further developed as the decade of increasingly progressive energy policies, while socioeconomic inequality and cultural cleavages worsened. This interplay began with a prominent social and environmental movement in the GDR, which led up to the completion of German reunification in 1990. After a brief discussion about potentially reforming West German policy traditions, or even writing a newly reunified constitution, German reunification ultimately played out as a broad takeover by the West German model (Quint 1997). The increasingly stratified social structures of the West expanded to the regions of the former GDR, subsequently overruling East German elites in industry, cultural institutions, and science while forcing many skilled workers to migrate westward or else lose their jobs (Böick 2020; Mau 2019; Schmalz et al. 2021).

Notwithstanding the raison d'être of promoting their members' interests, trade unions played their role in the *Modell Deutschland* triumvirate by making lower wage and pension demands in eastern regions, thereby contributing to financing the unequal reunification process. Social cushioning, through job-creation measures or early retirement programs, buffered some social hardships, but could not compensate for the widespread impotence felt throughout former East Germany as vital pillars of its society and economy were either discarded or else (where profitable) hastily reformed to suit takeover by the West German capitalist economy (Kollmorgen 2013; Kollmorgen, Merkel, and Wagener 2015; Bose et al. 2019).

The electricity supply of the former GDR was also strongly transformed. The East's nuclear reactors were shut down and the electricity grids, coal mining, and power-generation plants were divided between West German companies. The number of employees in this sector also fell massively in the former East, while regions of the former West maintained much greater stability in coal-related employment (Matthes 2000; Becker 2011). Socially and culturally, the takeover by West German regulations explains the rift between Eastern and Western regions concerning income inequality, demographic change, and international connectivity. With regard to environmental aspects, the reductions in carbon emissions to date can be attributed in large part to the deindustrialization processes of the former GDR (Sander 2016; Haas 2017). Following the integration of the East German energy-supply structures, the liberalization of the German electricity market was completed in 1998 with the amendment of the Energy Industry Act (in German Energiewirtschaftsgesetz). This legislation also laid the foundation for challenging the traditional corporatist structures in the energy sector, which had remained largely intact until then (Haas 2017, 152).

During the 1990s, a more intentional focus on emissions reduction gained prominence as a consequence of the 1987 Brundtland Report and the associated Agenda 21 for sustainable development (Lafferty 1996). German environmental policies were dominated by the idea of reconciling environmental risks and damage, on one hand, with the continuous orientation toward economic growth on the other. Eventually, the term "energy transition" and its ideological backdrop in the sustainability discussion was appropriated as a policy label by the red-green government in the late 1990s. The government was closely informed by the notion of the precautionary principle and the academic school of ecological modernization when it supported both renewable energy and the development of environmentally efficient consumer products (Mez 2003; Jänicke 2008).

Yet, recent studies show that the energy transition is connected to socio-economic inequity in reunified Germany, especially with regard to increasing energy prices. Households that were struck by the dismantling of labor and social welfare in the early 2000s cannot benefit to the same extent from the energy transition (Frondel, Sommer, and Vance 2015). These distributional effects of energy policies have taken effect since the early 2000s when "Hartz IV" labor laws and other policies were introduced to regulate labor, welfare, education, and regional development based on the ethos of market competition. While socio-economic inequities have increased during this phase, cosmopolitan values such as social diversity or environmentally friendly forms of consumption and lifestyle also gained in popularity (Reckwitz 2019). This conjunction of cultural and social cleavages, as well as the resulting political uncertainties, were not recognized at the beginning of the German energy transition. Consequently, what are today acknowledged as essential drivers in the current strengthening of right-wing populism (Rucht 2017) had very little influence on environmental policies until the late 2000s.

The following section outlines the disputes surrounding the energy transition and argues that the coal phase-out is the next step toward full supply of renewable energies – a step with far-reaching implications for the relationship between capitalism, democracy, and sustainability in Germany.

## The German *Energiewende* – a contested modernization project

Following the German economic miracle of Fordist prosperity based on massive expansion of coal mining, recent decades have brought decisive shifts in environmental policy. Technical developments, combined with the increasing delegitimization of the fossil-nuclear energy regime through campaigns against nuclear power and the growing threat of climate change, opened up a window of opportunity for the institutional promotion of renewable energy sources in the eyes of the public (Neukirch 2018).

Nonetheless, the energy transition still bears the mark of the longer-term conventions and path dependencies of the *Modell Deutschland* because successive governments sought to continuously legit-imize the transition toward renewables with a focus on capitalist accumulation. This can also be seen in the so-called Renewable Energies Act (EEG) that was passed in 2000 under the red-green coalition government after the liberalization of the German electricity market. This laid the foundation for a boom in renewable energies, in particular biomass,

wind, and photovoltaics (PV) (Hirschl 2008). At the same time, the expansion of renewable energy sources had a strong industrial policy dimension. By anchoring the "Special Compensation Scheme," which largely exempted energy-intensive industries from the EEG levy, it was ensured that the expansion of renewable energies would not impair the competitiveness of German industry.

At the same time, Germany was a leader in the development and manufacture of solar technologies. Already in 2002, the Renewable Energies Export Initiative was launched by the Federal Ministry of Economics and Technology (BMWi) in order to leverage emerging renewable energy technologies to perpetuate the export-oriented German model (Haas 2017). In that sense, EEG can be seen as the operationalization of a weak conception of sustainability, thus binding environmental policies to strong economic growth.

The 2000s saw the introduction of the European Emissions Trading Scheme (EU ETS), together with numerous amendments to the EEG and mergers between energy companies. Four large energy groups (E.ON, RWE, Vattenfall, and EnBW) dominated the electricity market; only the predominantly decentralized expansion of renewable energies led to declining market shares for these big four (Becker 2011; Kungl and Geels 2018). The decentralized energy-transition project had a strong impact: various private individuals, cooperatives, and municipal utilities invested in renewable energies (Paul 2018). Nevertheless, the big four were also able to further increase profitability via windfall profits (i.e., unproductive incomes) generated through the newly introduced EU ETS, while their consumption-intensive activities profited from numerous exemptions and ever-greater added value was gained through renewable energies (Hirschl 2008). A few years later, the switch to tendering and direct marketing made the expansion of renewables less attractive for smaller suppliers, and the number of newly established energy cooperatives fell significantly (Yildiz et al. 2019). To this extent, those social forces that are rather skeptical about the energy transition succeeded in significantly slowing the expansion of renewables during the 2010s, even though there was no fundamental departure from the stated policy orientation toward a regenerative energy regime.

All in all, the expansion of renewable energies in the 2000s was based on a compromise-mediated constellation. While renewables were strongly expanded, the big four were able to continue operating their fossil and nuclear power plants very profitably for the most part and preserved the corporatist power structures in the energy sector. However, this compromise became fragile in the late 2000s due to developments in the fields of nuclear and wind, as well as photovoltaic energy. First, the profitability of the large energy groups declined and they abandoned the nuclear compromise of 2001 (at that time, the German government and nuclear companies had agreed on a phase-out resolution in which each nuclear power plant was granted certain residual electricity quantities). A campaign in favor of nuclear power was launched in the late 2000s, and as a means of extending their lifespan some existing nuclear power plants were not fully utilized. In 2009, there was speculation that the election would return a conservative-liberal (CDU/CSU and FDP) coalition government. In 2010, the government gave in to pressure from the nuclear energy sector and extended the term of Germany's nuclear power plants. Nevertheless, following the nuclear accident at Fukushima in Japan in Spring 2011, the government again changed course in response to massive public pressure and election successes by the Greens. A commission was set up to establish legitimacy for a premature shutdown of nuclear power plants by 2022 (Sander 2016).

Second, the strong cost reductions of wind and, above all, PV energy led to a strong boom in renewable energies. Between 2010 and 2012, more than seven gigawatts (GW) of new PV capacity were installed annually. Driven also by a change in the rolling mechanism, the EEG levy rose sharply and became the target of a campaign aimed at slowing down the renewable energy add-on.

In the late 2010s, pressure to abandon coal increased considerably, above all by the actions of the protest group Ende Gelände that include entering coal mines as a form of civil disobedience. The negotiations under the United Nations Framework Convention on Climate Change (UNFCCC), the increasing publicity generated by various non-governmental organizations (NGOs) and citizens' initiatives, and the acceleration of global warming and carbon emissions amounted to considerable political pressure on the German government (Bosse 2017). However, as Czada (2019) points out, the German energy transition was not developed through institutional innovations. Instead, the process lacks a coherent governance framework and a clear longterm perspective. This weakness of the previous energy-transition governance was also reflected in the negotiations on the coal phase-out.

## The coal phase-out – the latest articulation of a corporatist transition process

The most recent articulation of the corporatist conception of environmental policy in Germany is seen in the plan to phase out coal. While extraction of hard coal in Germany already ended in 2018 (Oei, Brauers, et al. 2020), demands for a rapid cessation of coal use have become increasingly emphatic in recent years. In 2018, the conflict over coal escalated massively, especially with regard to the future of the ancient Hambach Forest in the Rhineland, the remnants of which were still threatened by further surface mining (Brock and Dunlap 2018). However, the radicalization of the conflicts over coal, and the broad popular support for a relatively rapid coal phase-out, met with fierce resistance. There was fairly widespread opposition within German industry to a rapid phase-out, as coal is a pillar of the German export model and thus crucial for capital accumulation within the *Modell Deutschland*.

The long history of German corporatism and coal extraction was broadly mobilized as a counterargument by trade unions, industrialists, and policy makers in the affected regions. Cultural and socioeconomic legacies, in particular, served as an argumentative repertoire in the coal conflict. Indeed, social scientific studies confirm that coal is a source of identity for entire regions, the degree of unionization within the coal sector is very high, and jobs are secured by comparatively good collective bargaining agreements (Brüggemeier 2018). The IG BCE trade union (Industriegewerkschaft Bergbau Chemie und Energie or Mining, Chemical, and Energy Industries Union), which has far more members involved in coal than in renewable energy, has mobilized strongly against the phase-out of coal. The rightwing populist and climate-skeptical political party AfD (Alternative für Deutschland or Alternative for Germany), which was gaining strength at the time, also opposed the coal phase-out by alluding to worker identities, elite politics, and the purportedly homogeneous regional mining communities (Haas 2020). Particularly in the Lusatian lignite mining region, which is located in the east of Germany, the rejection of the coal phase-out and a fundamental skepticism toward the energy transition is very pronounced (Teune et al. 2021, 17). In interviews with workers in the Lusatian lignite industry, Bose et al. (2019, 106-107) found that they have experienced multiple devaluations and that some are quite receptive to right-wing populist interpretations (including the rejection of the coal phase-out).

In 2018, the so-called Coal Commission was established under the auspices of the BMWi with a remit to make recommendations for resolving this multi-faceted conflict.<sup>2</sup> The members thus faced the challenge of ensuring ecological sustainability, capital accumulation, and political stability, thus tackling the tension between capitalism, democracy, and sustainability from a strategic angle (Pichler, Brand, and Görg 2020). As one interviewee put it, the Coal

Commission had the task to transfer "these contradictory and opposing conflicts of interests – and it was not one, but several – into a compromise that can be implemented politically." The commission was under pressure to develop a pathway for exiting coal in accordance with the requirements of climate science, which was opposed by established power structures largely dating back to the Fordist phase.

Although the Coal Commission does not correspond to a classic corporatist setting, the following four observations indicate that within the body a corporatist conception of sustainability was dominant. First, the selection of commission members illustrates how corporatist traditions of policy making dominate the political process. The increasing concessions to environmental and local voices in no way rebalance this political legacy: The 28 members with voting rights were chaired by Matthias Platzeck (SPD, Social Democratic Party) and Stanislaw Tillich (CDU, Christian Democratic Party), two former Prime Ministers of Brandenburg and Saxony, respectively, who were previously responsible for continued government support for coal industries in their federal states. The environmental economist Barbara Praetorius, and the former Minister of the Chancellor's Office, Ronald Pofalla, joined as additional chairs. So-called "expert" commission members were also drawn from various business associations, trade unions, environmental NGOs, and research institutions. In addition, Antje Grothus from the Rhine region and Hannelore Wodtke from Lusatia were present as citizen representatives of the coal-mining districts and anti-coal activists. In this respect, some residents of the coal regions were represented on the commission, while the governments of the affected federal states were not directly involved. In order to achieve the broadest and most viable compromise possible, employers, trade unions, and environmental NGOs were represented within the commission by their respective umbrella organizations, but the coal companies were not directly involved (for a detailed list of commission members, see Appendix 1). Our data show that the traditional corporatist actors dominated the commission, while environmental interests were sidelined. As one interviewee put it, "Trade unions and capital have lain in a bed and have played the balls to each other."

Despite a lack of formal involvement, the federal states succeeded in achieving a central role in the negotiations as there were several interventions by representatives of the federal governments, in which prime ministers have played a custodial role in protecting the interests of fossil industries and coal workers. In their comments or interventions in the commission process, they broadly left aside ethical questions concerning compensating for environmental damage or the loss of entire villages to coal mining, which were clearly disproportionate to the limited economic benefits of the remaining coal reserves (Oei et al. 2020). The governments of the eastern German federated states (Länder) in particular played a decisive role, being under considerable pressure from upcoming elections and voter polls that showed strong support for the AfD. At the end of November 2018, shortly before the commission should have presented its final report, the state premiers of three eastern states, Brandenburg (Dietmar Woidke, SPD), Saxony (Michael Kretschmer, CDU), and Saxony-Anhalt (Reiner Haseloff, CDU), spoke about the Coalition Committee. The prime ministers of these three eastern Länder obtained an extension of the commission's work into the year 2019, citing insufficient consideration of questions concerning support for structural change in the federated states. It is mainly due to this industry-oriented intervention by the federated governments that the balance of intersectoral representatives in the commission was curbed in favor of industrial voices. As a direct consequence of this interjection, the German government was unable to present an exit plan at the United Nations climate-change conference in Katowice in December 2018 (Interview with representative of the **BDI/Federation** of German Industries).

Second, the three main questions in the course of the commission's negotiations dealt with the protection of industrial structures in the affected regions: (1) How quickly should the coal phase-out proceed? (2) How much funding (from which budgets) would be allocated to the affected regions to deal with the resulting structural changes? (3) What compensation should be provided to affected companies? This also raises the question of compensation for rising electricity prices, which has been a recurring theme since the start of the Energiewende (Lauber and Jacobsson 2016). In this respect, the commission was primarily concerned with perpetuating the role of energy security as an economic foundation of Modell Deutschland. On the part of German industry, it was clear that it would not agree to any exit path that could be portrayed as potentially endangering the security of energy supply or price competitiveness (interviews with representatives of BDI, BDEW/ Association of Energy German and Water Industries). In this respect, compensation for the affected energy providers and industrial companies was a central demand, which was also approved by the environmental representatives early on in the commission's negotiations (interviews with BDI, BDEW, DGB/German Trade Union Confederation,

DNR/German League for Nature and Environment, ver.di/United Services Union).

Third, the commission process and its main outcomes illustrate a corporatist power dynamic that iteratively restricted the scope for environmentally ambitious outcomes. Several respondents criticized the lengthy process and the often chaotic and nontransparent leadership of the commission (interviews with representatives of DNR, BDI, DGB), and ultimately very few participants were involved in the final small-group overnight-negotiating sessions of January 25-26, 2019. One interviewee described the whole process as a form of "fake participation" (in German Scheinbeteiligung). Another respondent from an environmental NGO described the power asymmetries within the Coal Commission and argued that some participants were unaccustomed to the "political spectacle and are now hanging out here with lobbyists and in part also political professionals. And I think it's then really hard to assert oneself."

Finally, the commission agreed on the following key points (with one vote against): First, that the coal phase-out should be completed by 2035 (if possible) and in any event by the end of 2038. Powerplant capacity of 12.5 GW is to be taken off-grid by 2022 (current coal-based capacity is 42.6 GW). Further interim targets were also defined, but remained relatively vague. Forms of compensation were also planned for rising electricity prices. The affected federal states are to receive structural change aid amounting to 40 billion euros over the next twenty years. In addition, power-plant operators were promised compensation payments, an adjustment allowance for affected employees aged 58 and over was proposed, and the preservation of the Hambach Forest was declared "desirable" (BMWi 2019). While all interviewees emphasized that every actor had to make concessions, it is also undisputed that the environmental NGOs were least supportive of the outcomes, justifying their approval of the result with statements like "better a bad climate protection than no climate protection at all," which reflects their perception that no significant progress has been made on climate-change legislation in recent decades.

The Coal Commission was followed by several legislative processes that concluded in July 2020 with two laws that use the remaining leeway, by postponing the coal phase-out for the most part until 2030 and providing high compensation for companies directly affected and electricity-price compensation for industry. These laws were heavily criticized by environmental groups, even by former commission members (Praetorius et al. 2020).

	Capitalism	Democracy	Sustainability
Fordism	High economic growth; stability	Entering of the masses into politics; corporatism	Intensive destruction of nature
Post-Fordism	Slowing economic growth rates; prone to crises	Post-democracy; weakening of classic corporatism (neo-corporatism); rise of right-wing populism	Upgrading and institutionalization of environmental policy, but subordinated to capital accumulation
Era of sustainability?	Green growth or degrowth?	Renewal of post-corporatism or new forms of democracy?	Further intensification of ecological crisis or subordination of capital accumulation?

Table 1. Capitalism, democracy, and sustainability in historical perspective.

Moreover, our interviews with the commission

members indicate that the withdrawal from coal requires a shift in focus toward democratic legitimacy in environmental decision making. According to some respondents, the appointment of the commission was an expression of public mistrust toward the German government at that time (interviews with representatives of BDI, DNR), which in turn is mediated by deeper crises of democracy (Crouch 2004; Streeck 2014). One interviewee pointed out that this commission, like all others, had acted at the expense of third parties that were not involved in the process (interview with representative of BDI). While this likely alluded to the publicly financed and relatively high levels of structural change aid offered by the commission, others raised criticisms that future generations - for example, as exemplified by the concurrent emergence of the movement "Fridays for Future" - were not involved in the commission (interview with representative of DNR). Interestingly, a central criticism of the Climate Protection Act (CPA) by the Federal Constitutional Court was that it disproportionately restricts the rights of future/young generations (Geinitz 2021). The ruling can be interpreted to mean that the CPA does not meet the criterion of generational justice. Furthermore, the commission itself, in contrast to elected political representatives, is not accountable to voters. In this respect, the legitimacy of the commission's decisions is quite controversial and, against the background of the strengthening AfD on one side and a strong climate-justice movement on the other, casts doubt on the stability of the compromise-mediated Modell Deutschland (Streeck 2014).<sup>3</sup>

Altogether, the process of planning the coal phase-out in Germany shows considerable stability among the political legacies of the coal and fossil industries in Germany. The selection of commission members implied considerable add-ons to the traditional set of corporatist players, but its internal processes, along with external governmental interventions, undermined a broader discussion and commitment regarding environmental priorities or the ethical scope of the questions under discussion. Moreover, the process would have needed further clarification of the commission's mandate and the implied governmental roles (interview with representative of DNR). However, the European Union's increased climate ambition for 2030, combined with the partially successful lawsuit against the Federal CPA of 2019, and especially the post-September 2021 coalition agreement of the traffic-light government, which targets a coal phase-out by 2030 and much faster expansion of renewables, suggests that the coal phase-out might in fact proceed much more rapidly than foreseen under the 2020 legislation. These developments raise the question of how to balance the relationship between capitalism, democracy, and sustainability under the conditions of an escalating climate crisis.

In Table 1, we outline this relationship recurring in the Fordist and post-Fordist development constellations. The 2021 ruling by the Federal Constitutional Court (demanding greater ambition of the 2019 Federal Climate Change Act) might mark the beginning of a new phase in Germany, in which the sustainability dimension is more strongly revalued.

### Conclusion

This article first discussed the tensions between capitalism and democracy and took up an understanding of democracy that is fundamentally oriented toward the distribution of environmental resources, risks, and damage (Pichler, Brand, and Görg 2020). We argued that the mediation of capitalism, democracy, and sustainability is increasingly prone to crises, such that, although environmental concerns are increasing, the dominant political constellation between industry, trade unions, and governments nevertheless persistently hinders an appropriately ambitious policy agenda. This general argument is inspired by the regulation-theoretical assumption that capital accumulation is inherently crisis-prone and must always be secured through political compromises. It is based on an empirical analysis of the coal phase-out in the context of Modell Deutschland.

The delegation of a coal-exit plan to a commission undermined the apparent opportunity to implement a more ambitious coal phase-out and to reconfigure the political-economic and cultural legacies of Germany's fossil-based economy. We showed that this is an iteration of a longer genealogy that gave rise to a modernist and (post-)corporatist conception of sustainability in German politics. Against the background of the ambitious (but often vague) energy-policy agenda of the recent 2021 traffic-light coalition, it is too early for a final assessment of the withdrawal from coal, but we can draw two conclusions that concern the political possibility of a postfossil transition in Germany.

First, the legacy of corporatist politics is geared toward a conciliatory model that seeks balance between accumulation, legitimation, and sustainability. Striking this balance, however, becomes increasingly impossible. This can be seen most clearly in the connection between socio-economic and political ruptures. Like many other right-wing populist parties in Europe, AfD, which has gained strength since being founded in 2013 in Germany, denies anthropogenic climate change and accordingly opposes the phase-out of coal (Schaller and Carius 2019; Lockwood 2018).

Against this background and the additional pressure from climate activists, the Coal Commission attempted to broaden the legitimacy of the energy transition and coal phase-out through generous aid packages for affected regions to negotiate structural change. Nonetheless, this had little to no effect on subsequent election outcomes, where AfD achieved very good results in the 2019 local and European elections (Haas 2020) as well as in the 2021 federal elections. Growing inequality and polarization of income and wealth can be observed in Germany, thus expanding the breeding ground for authoritarian populism (Nachtwey 2018). Against this background and the spatially unequal development between former East and West Germany and between industrial peripheries versus urban centers, the phase-out of coal will remain a major challenge unless socio-economic inequities and cultural cleavages can be overcome.

Second, the energy transition and its most recent outcomes clearly indicate that the sustainability dimension is subordinated in the context of the legally enshrined coal phase-out, while the established power relations associated with the fossilbased model of Germany have largely prevailed. The commission process led to an asymmetrical compromise, the robustness of which, however, remains uncertain because capitalist accumulation is continuously prioritized over achieving democratic legitimation and addressing environmental damage. Our analysis shows that these environmental policies and transition plans have been greatly overshadowed by the political economy in general (Svensson and Nikoleris 2018) and by the national model of capitalism in particular (Newell 2019), and not only by institutional designs (Rentier et al. 2019). In Germany's strongly export-oriented model, the energy transition was designed in such a way that it does not endanger the competitiveness of German industry, and in fact contributes to renewal of the export model through the development of German renewable energy technologies. Consequently, even if coal or other fossil-based industries are successfully phased out, Model Deutschland is unlikely to shift into an economy that is not based on massive social and environmental inequalities. However, the formation of the 2021 governing traffic-light coalition indicates that, at least in the field of energy policy, a forced ecological modernization is envisaged and thus the sustainability dimension is strengthened. Nevertheless, it remains to be seen to what extent these more ambitious goals will actually be met and what compromise-mediated arrangements will be forged.

We see at least a fourfold need for further research. First, there is a need to determine the development dynamics in the national context more strongly, through the analysis of mediation with international regimes. Particularly in the European context, climate policy is broadly integrated and there are endeavors to largely complete decarbonization in the coming decades (Samper, Schockling, and Islar 2021). The "Coal Regions in Transition" platform, which links various (post-)mining regions, is an interesting player that connects different actors. Second, while we focused on the German case, by comparing coal-exit pathways in different countries and regions, knowledge should be generated about how the tensions between capitalism and democracy are reconfigured within the framework of a coal exit in different spatial contexts. Of particular importance is probably the extent to which a connection can be established between crises of democracy - expressed, among other ways, through stronger support for right-wing populism - and conflicts over the coal phase-out, and how this can be specifically articulated. Third, environmental policy analyses should take greater account of the historical deep structures (e.g., corporatist political forms) and power relations. These legacies restrict the window of opportunity for progressive environmental policies that would provide adequate answers to global problems, and thus forms of collective selflimitation in accordance with planetary boundaries (Brand et al. 2021). Finally, there are indeed findings that AfD voters are the most skeptical of the energy transition and coal phase-out (Teune et al. 2021). Nevertheless, more research is needed on how those directly affected, i.e., coal workers, but

also those in other fields identified for transformation (such as the automotive industry), perceive the change and to what extent they follow right-wing populist patterns of interpretation (Sommer et al. 2021). Without a doubt, the urgency of a transformation toward sustainability will continue to grow. Inspired by a regulation-theoretical perspective, we propose an understanding of these transformation processes that are more closely framed by the tension between capitalism and democracy. The rise of right-wing populism in recent decades challenges established democratic parties and academia to seek "just transitions" to a post-fossil society.

### Notes

- 1. Broadly, "hard coal" (including anthracite) has comparatively high caloric value while "soft" or brown coals (including lignite) are lighter in color and have lower energy content.
- 2. The Coal Commission met ten times between June 26, 2018 and January 25, 2019, and conducted three field trips to the mining areas. During the process, 67 expert testimonies were heard. As it became clear from the interviews, the entire commission process was dominated by non-transparent responsibilities and privileged members with greater political experience and/or representing better-resourced organizations. Both the commission's mandate and its discussion and working methods only contributed to a very limited extent to bringing the various interests present in the commission to a "pacifying" and just balance (Löw Beer et al. 2021).
- 3. The AfD suffered losses in the *Bundestag* election of autumn 2021. Its share of the vote fell from 12.6% to 10.3%, within which significant losses in the western *lander* were somewhat stabilized by support in the eastern *lander*. It remains to be seen whether this result and the party's strong internal disputes will lead to a permanent decline in its fortunes.

### Acknowledgements

We are grateful to two anonymous reviewers for lucid and very helpful comments on earlier versions of this article and Lena Eyerich, Dave Morris and Aleksandra Waliszewska for editorial assistance. Moreover, we would like to thank Maurie Cohen, editor of SSPP, for his comments and careful editing of the text.

### **Disclosure statement**

No potential conflict of interest was reported by the authors.

### ORCID

Tobias Haas (b) http://orcid.org/0000-0002-3363-3440

### References

- Abrams, L. 2002. Workers' Culture in Imperial Germany: Leisure and Recreation in the Rhineland and Westphalia. London: Routledge.
- Aglietta, M. 1979. A Theory of Capitalist Regulation: The US Experience. London: Verso.
- Altvater, E. 2010. Der große Krach: oder die Jahrhundertkrise von Wirtschaft und Finanzen, von Politik und Natur (The Big Crash: Or the Crisis of the Century in the Economy and Finance, in Politics and Nature). Münster: Westfälisches Dampfboot.
- Becker, P. 2011. Aufstieg und Krise der deutschen Stromkonzerne: zugleich ein Beitrag zur Entwicklung des Energierechts (Rise and Crisis of the German Electricity Companies: At the Same Time a Contribution to the Development of Energy Law). Bochum: Ponte Press.
- Bieling, H.-J. 2019. "Globalisierungskonflikte. Die strategische Positionierung und Rolle der EU in der neuen Triade-Konkurrenz (Globalization Conflicts: The Strategic Positioning and Role of the EU in the New Triad-Competition)." *PROKLA: Zeitschrift für kritische Sozialwissenschaft* 49 (194): 384–78. doi:10.32387/prokla.v49i194.1769.
- Böick, M. 2020. "In from the Socialist 'Cold,' but Burned by the Capitalist 'Heat'? The Dynamics of Political Revolution and Economic Transformation in Eastern Germany after 1990." Sustainability: Science, Practice, and Policy 16 (1): 143–153. doi:10.1080/15487733.2020. 1792619.
- Borchert, J., and S. Lessenich. 2016. Claus Offe and the Critical Theory of the Capitalist State. London: Routledge.
- Bosse, J. 2017. "Analyse: Zurück in der Grube. Ende Gelände 2!' – Die anti-Kohlebewegung in der Lausitz im Mai 2016 (Analysis: 'Back to the Pit: Ende Gelände 2!' – The Anti-Coal Movement in Lusatia in May 2016)." Forschungsjournal Soziale Bewegungen 30 (1): 88–92. doi:10.1515/fjsb-2017-0011.
- Bossel, H., F. Krause, and K.-F. Müller-Reißmann. 1980. Energiewende: Wachstum und Wohlstand ohne Erdöl und Uran. Ein Alternativ-Bericht des Öko Instituts Freiburg (Energiewende: Growth and Welfare without Oil and Uranium. An Alternative Report of the Öko Institute, Freiburg). Frankfurt am Main: S. Fischer.
- Bose, S., K. Dörre, J. Köster, J. Lütten, N. Dörre, and A. Szauer. 2019. "Braunkohleausstieg im Lausitzer Revier. Sichtweisen Von Beschäftigten. Nach Der Kohle. Alternativen Für Einen Strukturwandel in Der Lausitz (Lignite Phase-out in the Lusatian Coalfield. Views of Employees. After Coal. Alternatives for Structural Change in Lusatia)." In Nach Der Kohle: Alternativen Für Einen Strukturwandel in Der Lausitz (after the Coal: Alternatives for Structural Change in Lusatia), edited by Rosa-Luxemburg-Stiftung, 89–112. Berlin: Rosa-Luxemburg-Stiftung.
- Brand, U. 2016. "'Transformation' as a New Critical Orthodoxy: The Strategic Use of the Term 'Transformation' Does Not Prevent Multiple Crises." *GAIA* 25 (1): 23–27. doi:10.14512/gaia.25.1.7.
- Brand, U., and M. Wissen. 2018. *The Limits to Capitalist Nature: Theorizing and Overcoming the Imperial Mode of Living.* Lanham, MD: Rowman and Littlefield.
- Brand, U., B. Muraca, E. Pineault, M. Sahakian, A. Schaffartzik, A. Novy, C. Streissler, et al. 2021. "From Planetary to Societal Boundaries: An Argument for

Collectively Defined Self-Limitation." *Sustainability: Science, Practice and Policy* 17: 265–292.

- Brock, A., and A. Dunlap. 2018. "Normalising Corporate Counterinsurgency: Engineering Consent, Managing Resistance and Greening Destruction around the Hambach Coal Mine and beyond." *Political Geography* 62: 33–47. doi:10.1016/j.polgeo.2017.09.018.
- Brüggemeier, F. 2018. Grubengold: das Zeitalter der Kohle von 1750 bis heute (Pitgold: The Age of Coal from 1750 until Today). München: CH Beck.
- Bundesminesterium für Wirtschaft und Energie (BMWi). 2019. Kommission, Wachstum, Srukturwandel und Beschäftigun: Abschlussbericht (Commission, Growth, Structural Transformation and Employment: Final Report). Berlin: BMWi.
- Crutzen, P. 2006. "The 'Anthropocene': Earth System Science in the Anthropocene." In *Earth System Science in the Anthropocene*, edited by E. Ehlers and T. Krafft, 13–18. Heidelberg: Springer.
- Crouch, C. 2004. *Post-Democracy*. Cambridge: Polity Press.
- Czada, R. 2019. "Politikwenden und transformative Politik in Deutschland (Policy Turns and Transformative Politics in Germany)." *der moderne staat – Zeitschrift für Public Policy, Recht und Management* 12 (2): 400–417. doi:10.3224/dms.v12i2. 12.
- Demirovic, A. 2018. "Autoritärer Populismus als neoliberale Krisenbewältigungsstrategie (Authoritarian Populism as a Neoliberal Crisis Management Strategy)." PROKLA: Zeitschrift für kritische Sozialwissenschaft 48 (190): 27–42. doi:10.32387/prokla. v48i190.30.
- Eversberg, D. 2020. "Who Can Challenge the Imperial Mode of Living? The Terrain of Struggles for Social-Ecological Transformation in the German Population." *Innovation: The European Journal of Social Science Research* 33 (2): 233–256. doi:10.1080/13511610.2019. 1674129.
- Foster, J. 2007. "The Financialization of Capitalism." *Monthly Review* 58 (11): 1–12. doi:10.14452/MR-058-11-2007-04\_1.
- Friedland, R., and R. Alford. 1991. "Bringing Society Back in: Symbols, Practices and Institutional Contradictions." In *The New Institutionalism in Organizational Analysis*, edited by P. DiMaggio and W. Powell, 232–267. Chicago: University of Chicago Pess.
- Friedman, M. 1962. *Capitalism and Freedom*. Chicago: Chicago University Press.
- Frondel, M., S. Sommer, and C. Vance. 2015. "The Burden of Germany's Energy Transition: An Empirical Analysis of Distributional Effects." *Economic Analysis* and Policy 45: 89–99. doi:10.1016/j.eap.2015.01.004.
- Geinitz, C. 2021. "Das Klima entzweit die Koalition (The Climate Divides the Coalition)." *FAZ Online*, April 29.
- Gürtler, K., D. Löw Beer, and J. Herberg. 2021. "Scaling Just Transitions: Legitimation Strategies in Coal Phaseout Commissions in Canada and Germany." *Political Geography* 88: 102406. doi:10.1016/j.polgeo.2021. 102406.
- Haas, T. 2017. Die politische Ökonomie der Energiewende: Deutschland und Spanien im Kontext multipler Krisendynamiken in Europa (The Political Economy of the Energy Transition: Germany and Spain in the Context of Multiple Crisis Dynamics in Europe). Wiesbaden: Springer VS.

- Haas, T. 2020. "Die Lausitz im Strukturwandel: Der Kohleaussteig im Spannungsfeld zwischen autoritärem Populismus und progressiver Erneuerung (Lusatia in Structural Transformation: The Coal Phase Out in Tension between Populism and Progressive Restoration)." *PROKLA: Zeitschrift für kritische Sozialwissenschaft* 50 (198): 151–169. doi:10.32387/prokla.v50i198.1853.
- Haas, T. 2019. "Comparing Energy Transitions in Germany and Spain Using a Political Economy Perspective." *Environmental Innovation and Societal Transitions* 9 (31): 200–210. doi:10.1016/j.eist.2018.11. 004.
- Harvey, D. 2003. *The New Imperialism*. Oxford: Oxford University Press.
- Hirsch, J., and R. Roth. 1986. Das neue Gesicht des Kapitalismus: vom Fordismus zum Post-Fordismus (The New Face of Capitalism: From Fordism to Post-Fordism). Hamburg: VSA-Verlag.
- Hirschl, B. 2008. Erneuerbare Energien-Politik: Eine Multi-Level Policy-Analyse mit Fokus auf den deutschen Strommarkt (Renewable Energy Policy: Multi-level Analysis with Focus on the German Electricity Market). Wiesbaden: Springer VS.
- Hobsbawm, E. 1994. The Age of Extremes: A History of the World, 1914–1991. New York: Pantheon Books.
- Herberg, J., J.-H. Kamlage, J. Gabler, U. Goerke, K. Gürtler, T. Haas, D. Löw Beer, et al. 2020. Partizipative Governance und nachhaltiger Strukturwandel: Zwischenstand und Handlungsmöglichkeiten in der Lausitz und im Rheinischen Revier (Participative Governance and Sustainable Structural Transformation: Interim Status and Possibilities for Action in Lusatia and in the Rheinland Area). Potsdam: Institute for Advanced Studies in Sustainability.
- Jänicke, M. 2008. "Ecological Modernisation: New Perspectives." *Journal of Cleaner Production* 16 (5): 557–565. doi:10.1016/j.jclepro.2007.02.011.
- Jessop, B. 2014. "Variegated Capitalism, Das Modell Deutschland, and the Eurozone Crisis." *Journal of Contemporary European Studies* 22 (3): 248–260. doi: 10.1080/14782804.2014.937410.
- Kollmorgen, R. 2013. "Theories of Postcommunist Transformation: Approaches, Debates, and Problems of Theory Building in the Second Decade of Research." *Studies of Transition States and Societies* 5: 88–105.
- Kollmorgen, R., W. Merkel, and H.-J. Wagener. 2015. "Transformation Und Transformationsforschung: Zur Einführung (Transformation and Transformative Research: Towards an Introduction)." In *Handbuch Transformationsforschung (Handbook of Transformative Research)*, edited by R. Kollmorgen, W. Merkel, and H.-J. Wagener, 11–27. Wiesbaden: Springer VS.
- Kungl, G., and F. Geels. 2018. "Sequence and Alignment of External Pressures in Industry Destabilisation: Understanding the Downfall of Incumbent Utilities in the German Energy Transition (1998–2015)." *Environmental Innovation and Societal Transitions* 26: 78–100. doi:10.1016/j.eist.2017.05.003.
- Lafferty, W. 1996. "The Politics of Sustainable Development: Global Norms for National Implementation." *Environmental Politics* 5 (2): 185–208. doi:10.1080/09644019608414261.
- Lauber, V., and S. Jacobsson. 2016. "The Politics and Economics of Constructing, Contesting and Restricting Socio-Political Space for Renewables – The German Renewable Energy Act." *Environmental Innovation and*

Societal Transitions 18: 147–163. doi:10.1016/j.eist.2015. 06.005.

- Lockwood, M. 2018. "Right-Wing Populism and the Climate Change Agenda: Exploring the Linkages." *Environmental Politics* 27 (4): 712–732. doi:10.1080/ 09644016.2018.1458411.
- Löw-Beer, D., K. Gürtler, J. Herberg, and T. Haas. 2021. "Wie legitim ist der Kohlekompromiss? Spannungsfelder und Verhandlungsdynamiken im Prozess der Kohlekommission (How Legitimate Is the Coal Compromise? Conflict Areas and Negotiation Dynamics in the Coal Commission's Process)." Zeitschrift für Politikwissenschaft 31 (3): 393–416. doi: 10.1007/s41358-021-00261-8.
- Lux, J. 2017. Krisendiskurse und kapitalistische Entwicklungspfade: Arbeits-und sozialpolitische Projekte in Deutschland und Frankreich (Crisis Discourses and Capitalist Development Paths: Labour and Social Policy Projects in Germany and France). Wiesbaden: Springer VS.
- Markard, J., A. Rindscheid, and L. Widdel. 2021. "Analysing Transitions Through the Lens of Discourse Networks: Coal Phase-out in Germany." *Environmental Innovation and Societal Transitions* 40: 315–331. doi:10. 1016/j.eist.2021.08.001.
- Matthes, F. 2000. Stromwirtschaft und deutsche Einheit: eine Fallstudie zur Transformation der Elektrizitätswirtschaft in Ost-Deutschland (The Power Industry and German Unity: A Case Study on the Power Sector Transformation). Norderstedt: BoD – Books on Demand.
- Mau, S. 2019. Lütten Klein: Leben in der ostdeutschen Transformationsgesellschaft (Lütten Klein: Living in the East German Transformation Society). Berlin: Suhrkamp.
- Merkel, W. 2018. "Is Capitalism Compatible with Democracy?" In *Democracy and Crisis: Challenges in Turbulent Times*, edited by W. Merkel and S. Knei, 253–271. Basel: Springer.
- Mez, L. 2003. "Ökologische Modernisierung und Vorreiterrolle in der Energie- und Umweltpolitik? Eine vorläufige Bilanz (Ecological Modernization and Its Leading Role in Energy and Environmental Politics? A Provisional Assessment)." In Das rot-grüne Projekt: Eine Bilanz der Regierung Schröder 1998–2002 (The Red-Green Project: An Assessment of Schöder's Government 1998–2002), edited by C. Egle, T. Ostheim, and R. Zohlnhöfer, 329–350. Opladen: Westdeutscher Verlag.
- Mitchell, T. 2011. Carbon Democracy: Political Power in the Age of Oil. London: Verso.
- Moore, J. 2016. "Introduction." In Anthropocene or Capitalocene? Nature, History, and the Crisis of Capitalism, edited by J. Moore, 1–11. Oakland: PM Press.
- Morton, T., and K. Müller. 2016. "Lusatia and the Coal Conundrum: The Lived Experience of the German Energiewende." *Energy Policy* 99: 277–287. doi:10.1016/ j.enpol.2016.05.024.
- Nachtwey, O. 2018. Germany's Hidden Crisis: Social Decline in the Heart of Europe. London: Verso.
- Neukirch, M. 2018. "Die Energiewende in der Bundesrepublik Deutschland (1974–2017) – Reform, Revolution, oder Restauration? (The Energy Transfromation in the Federal Republic of Germany (1974–2017) – Reformation, Revolution or Restauration?)." sozialpolitik.ch 1: 1–31.

- Newell, P. 2019. "Trasformismo or Transformation? The Global Political Economy of Energy Transitions." *Review of International Political Economy* 26 (1): 25–48. doi:10.1080/09692290.2018.1511448.
- Oei, P.-Y., H. Hermann, P. Herpich, O. Holtemöller, B. Lünenbürger, and C. Schult. 2020. "Coal Phase-out in Germany Implications and Policies for Affected Regions." *Energy* 196: 117004–117019. doi:10.1016/j. energy.2020.117004.
- Oei, P.-Y., H. Brauers, and P. Herpich. 2020. "Lessons from Germany's Hard Coal Mining Phase-out: Policies and Transition from 1950 to 2018." *Climate Policy* 20 (8): 963–979. doi:10.1080/14693062.2019.1688636.
- Offe, C. 2006. Strukturprobleme des kapitalistischen Staates: Aufsätze zur politischen Soziologie (Structural Problems of the Capitalist State: Essays on Political Sociology). Frankfurt am Main: Campus-Verlag.
- Park, J., K. Conca, and M. Finger. 2008. *The Death of Rio Environmentalism*. London: Routledge.
- Paul, F. 2018. "Deep Entanglements: History, Space and (Energy) Struggle in the German Energiewende." *Geoforum* 91: 1–9. doi:10.1016/j.geoforum.2018.02.017.
- Pichler, M., U. Brand, and C. Görg. 2020. "The Double Materiality of Democracy in Capitalist Societies: Challenges for Social-Ecological Transformations." *Environmental Politics* 29 (2): 193–213. doi:10.1080/ 09644016.2018.1547260.
- Praetorius, B., O. Brandt, A. Grothus, M. Kaiser, F. Matthes, K. Niebert, R. Priggen, and H.-J. Schellnhuber. 2020. "Stellungnahme der ehemaligen Mitglieder der Kommission Wachstum, Strukturwandel und Beschäftigung (KWSB) (Statement of the Former Members of the Growth, Structural Transformation and Employment Commission (KWSB)). Berlin: Öko-Institut.
- Quint, P. 1997. *The Imperfect Union: Constitutional Structures of German Unification*. Princeton, NJ: Princeton University Press.
- Rammelt, C. 2020. "The Spiralling Economy: Connecting Marxian Theory with Ecological Economics." *Environmental Values* 29 (4): 417–442. doi:10.3197/ 096327119X15747870303881.
- Raphael, L. 2019. Jenseits von Kohle und Stahl: Eine Gesellschaftsgeschichte Westeuropas nach dem Boom (Beyond Coal and Steel: A Social History of Eastern Europe after the Boom). Berlin: Suhrkamp.
- Rentier, G., H. Lelieveldt, and G.-J. Kramer. 2019. "Varieties of Coal-Fired Power Phase-out across Europe." *Energy Policy* 132: 620–632. doi:10.1016/j. enpol.2019.05.042.
- Rindscheid, A., and R. Wüstenhagen. 2019. "Germany's Decision to Phase Out Coal by 2038 Lags Behind Citizens' Timing Preferences." *Nature Energy* 4 (10): 856–863. doi:10.1038/s41560-019-0460-9.
- Röttger, B. 2012. "Noch immer 'Modell Deutschland?" (Still 'Model Germany?')." PROKLA: Zeitschrift für kritische Sozialwissenschaft 42 (166): 29–48. doi:10.32387/ prokla.v42i166.16.
- Rucht, D. 2017. "Rechtspopulismus als soziale Bewegung (Right-Wing Populism as a Social Movement)." *Forschungsjournal Soziale Bewegungen* 30 (2): 34–50. doi:10.1515/fjsb-2017-0024.
- Samper, J., A. Schockling, and M. Islar. 2021. "Climate Politics in Green Deals: Exposing the Political Frontiers of the European Green Deal." *Politics and Governance* 9 (2): 8–16. doi:10.17645/pag.v9i2.3853.

- Sander, H. 2016. Auf dem Weg zum grünen Kapitalismus? Die Energiewende nach Fukushima (On the Road to Green Capitalism? The Energy Transition after Fukushima). Berlin: Bertz + Fischer.
- SPD, Bündnis 90/Die Grünen, and FDP. 2021. Koalitionsvertrag zwischen SPD, Bündnis 90/Die Grünen und FDP: Mehr Fortschritt wagen. Bündnis für Freiheit, Gerechtigkeit und Nachhaltigkeit (Coalition Agreement between SPD, Bündnis 90/Die Grünen and FDP: Dare More Progress. Alliance for Freedom, Justice and Sustainability). Berlin: Bundesregierung.
- Schaller, S., and A. Carius. 2019. "Convenient Truths." Mapping Climate Agendas of Right-Wing Populist Parties in Europe. Berlin: adelphi.
- Schmalz, S., S. Hinz, I. Singe, and A. Hasenohr. 2021. Abgehängt im Aufschwung: Demographie: Arbeit und rechter Protest in Ostdeutschland (Suspended in an Upturn: Democracy and Right-Wing Protest in Eastern Germany). Frankfurt: Campus.
- Sommer, B., M. Schad, C. Möstl, F. Humpert, and P. Kadelke. 2021. "Rechtspopulismus als Desiderat der sozial-ökologischen (Right-Wing Populism as the Desideratum of the Socio-Ecological." *GAIA* 30 (1): 62–64. doi:10.14512/gaia.30.1.14.
- Streeck, W. 2014. Buying Time: The Delayed Crisis of Democratic Capitalism. London: Verso.

- Svensson, O., and A. Nikoleris. 2018. "Structure Reconsidered: Towards New Foundations of Explanatory Transitions Theory." *Research Policy* 47 (2): 462–473. doi:10.1016/j.respol.2017.12.007.
- Teune, S., M. Rump, B. Küpper, J. Schatzschneider, F. Reußwig, W. Lass. 2021. Energiewende? – ja! Aber...: Kritik und Konflikte um die Energiewende im Spiegel einer Bevölkerungsbefragung (Energy Transition? – Yes! ut...: Criticism and Conflicts around the Energy Transition According to a Public Opinion Survey). Potsdam: Institute for Advanced Studies in Sustainability.
- Wentland, A. 2017. "An Automobile Nation at the Crossroads: reimagining Germany's Car Society through the Electrification of Transportation." In *Imagined Futures in Science, Technology and Society*, edited by G. Verschraegen, F. Vandermoere, L. Braeckmans, and B. Segaert, 137–165. London: Routledge.
- Yildiz, O., B. Gotchev, L. Holstenkamp, J. Müller, J. Radtke, and L. Welle. 2019. "Consumer (Co-) Ownership in Renewables in Germany." In *Energy Transition*, edited by J. Lowitzsch. 271–293. Basel: Springer.

commission
coal
the
of
Members
-
Appendix

Member	Position	Region/federal state	Category	Party-affiliation	Institution
Matthias Platzeck	Chair	Brandenburg	Politics	SPD	SPD – Social Democratic Party of Germany (Sozialdemokratische Partei Deutschlands)
Ronald Pofalla	Chair		Economy	CDU	Member of the Chair, Deutsche Bahn AG
Barbara Praetorius	Chair		Science		HTW Berlin – University of Applied Science (Hochschule für Technik und Wirtschaft)
Stanislaw Tillich	Chair	Saxony	Politics	CDU	CDU – Christian Democratic Union of Germany (Christlich Demokratische Union Duetschlands)
Gerda Hasselfeldt Prof. Dr. h.c. Jutta Allmendinger	Member Member		Civil Society Science	CSU	President, DRK – German Red Cross (Deutsches Rotes Kreuz e.V.) President, WZB – Berlin Social Science Center (Wissenschaftszentrum Berlin für Societierennen
Antje Grothus	Member	Rhenish Mining District	Civil Society		Coordinator/Citizens' Initiative Buirer for Buir (Bürgerinitiative Buirer für Buir)
Christine Herntier Martin Kaiser	Member Member	Lusatian District	Politics Environmental Association		Mayor, Spremberg/ Spokesperson, Lausitzrunde CEO, Greenpeace Germany
Steffen Kampeter	Member		Economy	CDU	CEO, BDA – Confederation of German Employers' Associations (Bundesvereinigung der Deutschen Arbeitgeberverbände)
Stefan Kapferer	Member		Economy	FDP	CEO, BDEW – German Association of Energy and Water Industries (Bundesverband der Deutschen Energie- und Wasserwirtschaft)
Prof. Dieter Kempf	Member		Economy		President, BDI – Federation of German Industries (Bundesverband der Deutschen Industrie)
Stefan Körzell	Member		Trade Union	SPD	Member of the Board, DGB – German Trade Union Confederation (Deutscher Gewerkschaftsbund)
Michael Kreuzberg	Member	Rhenish Mining District	Politics	CDU	District Administrator Rhein-Erft-Kreis (Landrat)
Dr. Felix Matthes	Member		Science		Kesearch Coordinator, IFUE – Energy and Climate Politics at Institute of Applied Ecology e.V. (Institut für Angewandte Okologie e.V.)
Claudia Nemat	Member		Economy		Member of the Chair, The German Telekom AG (Deutsche Telekom AG)
Prof. Dr. Kai Niebert	Member		Environmental Association	SPD	President, DNR – German League for Nature and Environment (Deutscher Naturschutzring)
Prof. Dr. Annekatrin Niebuhr	Member		Science		Professor of Employment and Regional Science, CAU – Christian Albrecht University of Kiel (Christian-Albrechts-Universitä'r zu Kiel)
Reiner Priggen	Member	North Rhine-Westfalia	Environmental Association	The Green Party	CEO, LEE NRW – North Rhine-Westphalia Renewable Energies Association (Landesverband Erneuerbare Energien Nord-Rhein-Westfalen)
Katherina Reiche	Member		Economy	CDU	CEO, VKU – German Association of Local Public Utilities (Verband kommunaler
Gunda Röstel Andreas Scheidt	Member Member		Economy Trade Union	The Green Party SPD	Unternehmen) CEO – Dresden Municipal Drainage (Stadtentwässerung Dresden) Member of the Board, ver.di – United Services Union (Vereinte
Prof. Dr. Hans Joachim Schellnhuber	Member		Science		Uenstleistungsgewerkschart) Director, PIK – Potsdam Institute for Climate Impact Research (Potsdamer Institut für
D. Fris Cahunaitana.	Manhar				Klimafolgenforschung) Duritare Durit Comme Indicate and Doned of Tanda (Done de andre andre
ur. Eric Schweitzer	Member		Есопотну		rresident, Jihk – German Industry and Board of Irage (Jeutschen Industrie- und Handelskammertag)
Michael Vassiliadis	Member		Trade Union	SPD	Chair, IGBCE – Mining, Chemical and Energy Industrial Union (Industriegewerkschaft Bergbau, Chemie, Energie)
Prof. Dr. Ralf B. Wehrspohn	Member		Science		Director, IMWS – Fraunhofer-Institute for Microstructure of Materials and Systems (Fraunhofer-Institut für Mikrostruktur von Materialien und Systemen)
Hubert Weiger	Member		Environmental Association		President, BUND – Friends of the Earth (Bund fur Umwelt und Naturschutz)
Hannelore Wodtke	Member	Lusatian District	Civil Society		Member – Alliance Welzow (Grune Zukunft Welzow)
Andreas G. Lammel	Member without vote	Saxony	Politics		Member – German Bundestag (Deutscher Bundestag) Mombor – German Bundestag (Deutscher Bundestag)
Matthias Miersch	Member without vote		Politics	SPD	Member – German Bundestag (Deutscher Bundestag) Member – German Bundestag (Deutscher Bundestag)