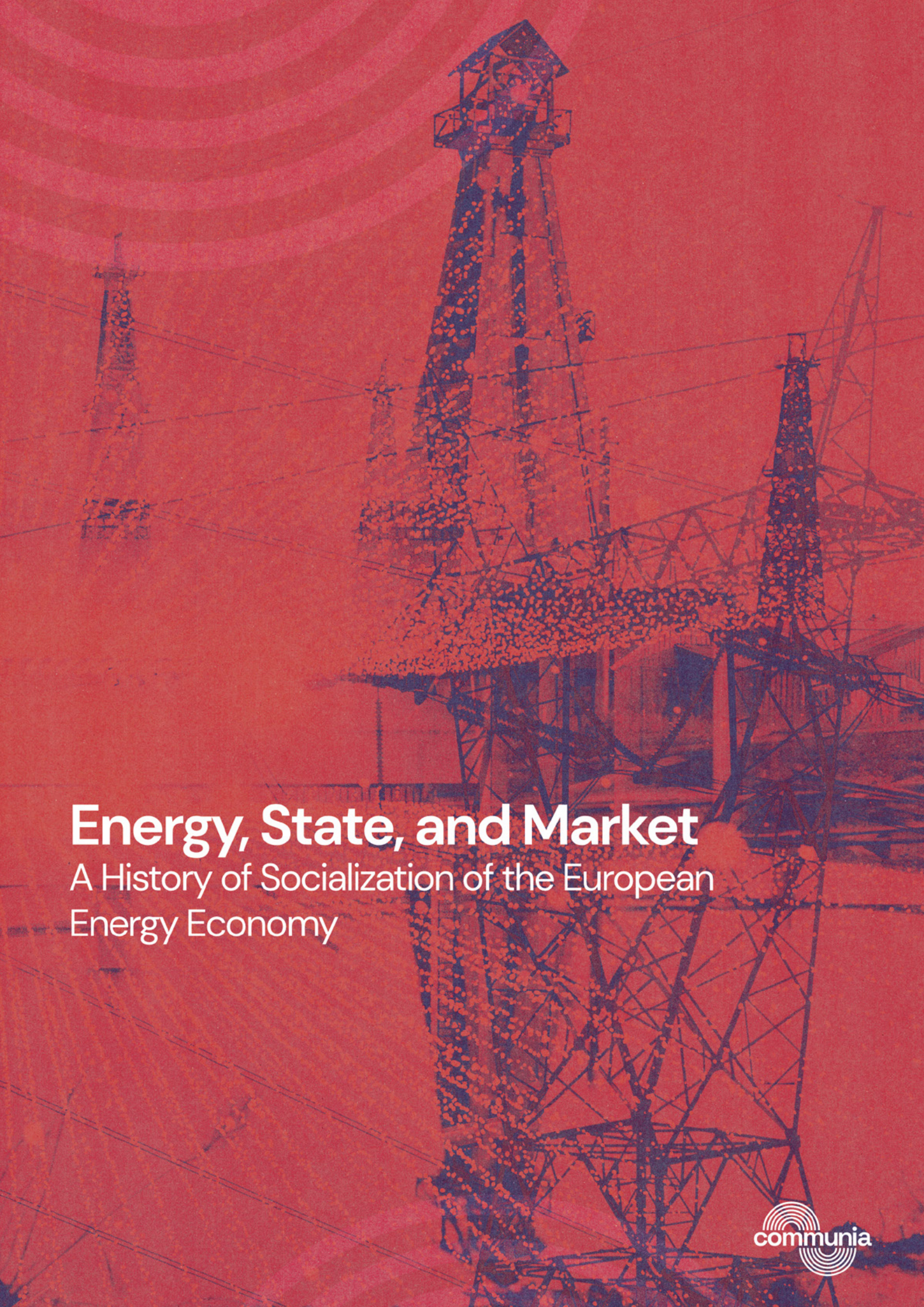




Energy, State, and Market

A History of Socialization of the European
Energy Economy

Impressum

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Published by:

communia e. V., 2026

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Supported by:



Supported in part by a grant from the Open Society Foundation gGmbH in cooperation with the Open Society Foundations.

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Foreword

The history of the energy economy in Germany and Western Europe is a history of capitalism. It is the story of the attempt to mold something intangible and multifaceted into the form of the commodity, thereby making it tradable. It is also a history of the need to coordinate complex systems, and of how this meaningful coordination is hampered by the prioritization of profit interests and market ideologies.

The history of the energy economy has been shaped by negotiations, resistance, and attempts at democratic control, all aimed at ensuring a supply that meets people's needs—whether through the activities of the early municipal utilities, the takeover of coal mines by workers in the Ruhr region in 1919, or the institutionalized, albeit reluctant, attempts in Hesse after 1945.

Since the dawn of capitalism, capital, the state, and the military have relied on the production, coordination, and control of the energy economy. However, ensuring a fair energy supply for all, as well as a socially just ecological transformation, has always stood—and remains—at odds with these interests. The history of the energy economy demonstrates the need for democratic coordination guided by clear objectives oriented towards the common good in order to transform this complex energy system into a common good for all.

The technology-fixated green-capitalist hegemonic project pursued by parts of the Traffic Light Coalition until 2024—defined by “attempts to save capitalism by transforming it ‘green’”—has been supplanted in an alarmingly short span of time by the growing “reactionary and nationalist forces,” which “defend the fossil-fuel status quo much more resolutely.”¹ Since our analysis in the publication “With Socialization Against Powerlessness” (communica, September 2024), the situation has taken a dangerous turn for the worse. The attempt to ‘green’ capitalism, which was always doomed to failure, is now itself a thing of the past. The current government under Merz and Reiche, driven by the AfD, is openly and actively blocking the expansion of renewables. An imperialis-

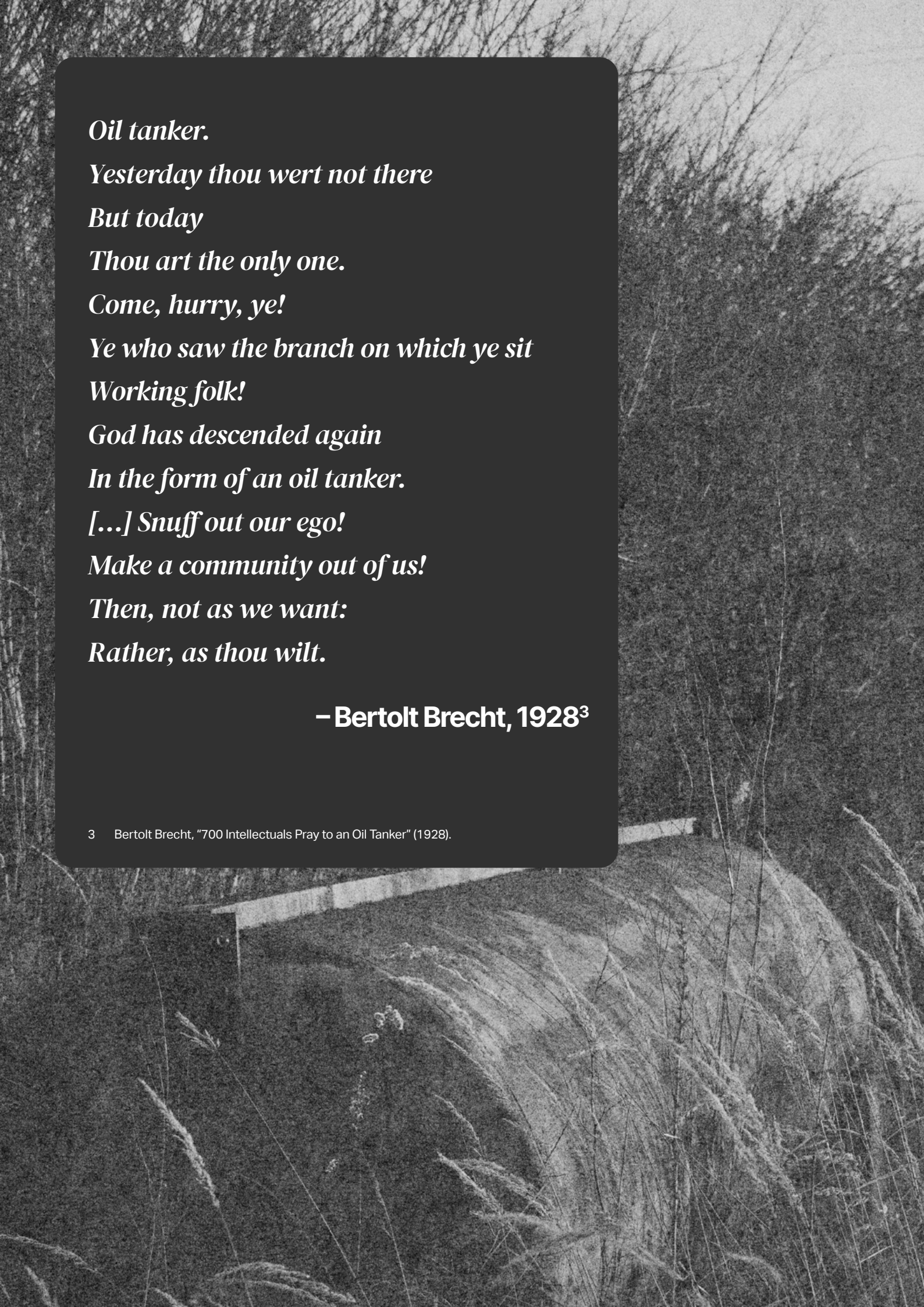
tically motivated “ever-stronger intertwining of energy policy and so-called security policy, that is, with armament and isolationism,”² characterizes the new militarization.

Following a period of polarization between green-capitalist and reactionary fossil-based projects vying for hegemony, the need for a clearly defined emancipatory project that offers a way forward has only increased. In the meantime, conceptual work has progressed to make an energy sector based on public service conceivable, plausible, and achievable. In June 2025, for example, communia presented a legal expert report demonstrating the feasibility of transferring energy companies into public ownership through socialization. Furthermore, in April 2026, we introduced “Energy as a Public Good”—a concrete proposal for the transfer and democratic structuring of an energy economy held under public hands.

The following study examines the history of the energy economy from the perspective of social negotiations and struggles for democratization. It highlights the movements worth building on and the initiatives deserving to be rediscovered. After all, democratically controlled, publicly owned energy, equitable supply, fair working conditions, and clean energy sources are by no means new demands. Against the backdrop of the climate crisis, the backlash from the fossil-fuel industry, and the tangible erosion of our democracy, the next step is clear: drawing upon more than a century of militant history, the time is finally ripe for a democratic energy economy oriented toward the common good. The time is ripe for socialization.

2 Ibid.

1 communia, “With Socialization Against Powerlessness: The potential of an emancipatory hegemony project for the social-ecological transformation of the energy sector” (communica, 2024).



*Oil tanker.
Yesterday thou wert not there
But today
Thou art the only one.
Come, hurry, ye!
Ye who saw the branch on which ye sit
Working folk!
God has descended again
In the form of an oil tanker.
[...] Snuff out our ego!
Make a community out of us!
Then, not as we want:
Rather, as thou wilt.*

– Bertolt Brecht, 1928³

1

Introduction

by Solveig Degen and Daniela Russ

Energy is the physical capacity to change the world. When something “has energy,” this means, first and foremost, that it possesses the potential to shift itself or something else into an altered state: one gallon of gasoline is capable of moving a car several miles. However, the use of energy takes place within society, so it is never merely physical. In Bertolt Brecht’s poem “700 Intellectuals Pray to an Oil Tanker,” the oil tanker exerts not only energetic influence, but also symbolic and social. It shapes the workers into a new collective and socializes them in a new way by placing them within new global labor relations. At the same time—as we know today—the oil tanker further exacerbates the contradiction between social production and ecological living conditions. It brings the workers together as a collective, not in the way they want, but in the way it wants. It is no longer possible to distinguish whether the social power of this collectivization stems from the oil itself or from its idolization by the intellectuals.

At the heart of this brief history of the energy economy lies the question of the ways and means by which energy is organized within society. How has energy been socially organized up until today, and how might it be organized in the future? Framed in this way, the history of energy cannot rely primarily on physical metrics, such as the volume of energy produced and consumed, energy densities or calorific values. Whilst the physical capacity to bring about change does condition forms of social organization, it is not identical to them: there is no direct correlation between the calorific value of oil and the capacity of an oil tanker to socially organize labor differently. There is no common yardstick that allows for a direct comparison between the mutability of nature and so-

cial transformations, which are always linked to people’s hopes, desires, and needs. History does not advance in kilowatt-hours, even though this notion has shaped many visions of the energy economy. And yet every political project and every attempt to realize a different way of living together always entails an energy-related dimension. This is all the more true when the very way in which the socio-physical capacity for change is produced and organized becomes the subject of political struggles.

Political conflicts over the organization of energy have brought about dramatic social and political upheavals. Historically diverse struggles—such as the Peasants’ War, the global North-South conflict, and today’s climate movement—can thus be understood, at least in part, as conflicts over who has access to energy resources, who benefits from them, and who is permitted to manage them—and how, for what purpose, and at what environmental cost. The way in which society’s capacity for physical transformation is produced and organized has thus long been at the heart of political debates concerning economic systems and social reproduction. Similarly, a project of democratic socialization cannot rely solely on energy balances or a shift in energy sources; rather, it must focus on transforming the structures of ownership, decision-making, and organization underpinning energy reproduction. A look back at history can help us understand how the current energy economy came into being, the factors that shaped it, and the alternatives that have existed historically.

The emergence of the energy economy has influenced the development of modern modes of production, infrastructure, and ways of life more than al-

most any other factor.⁴ The exercise of state power, too, has depended on fossil fuels since at least the nineteenth century. Numerous geopolitical conflicts can be understood as struggles for access to energy resources or for control over their utilization.⁵ At the same time, recent developments demonstrate once again how directly energy policy dynamics impact social and political processes: Russia's attack on Ukraine in 2022 and the resulting energy crisis led to rising prices and inflationary shocks in Europe,⁶ with palpable political consequences. Rising energy and food costs have bolstered far-right forces in many parts of Europe.⁷ It is foreseeable that the attack on Iran by the United States and Israel will have similarly far-reaching consequences.⁸ Not least, the global energy economy, due to its heavy reliance on fossil fuels, is the primary cause of the escalating climate crisis—arguably the most profound challenge facing contemporary societies.

However, the term “energy economy” presupposes a specific historical context. For the vast majority of human history, the mutability of nature could not be commodified. By this is meant that the resources serving as fuel and power were not produced and thus

not subject to ownership: firewood, water, and wind did not circulate as commodities in the marketplace stalls, nor was their use organized along market lines (though this did not mean they were equally accessible to all). First machines, then large-scale infrastructure, made ownership of the means of energy production possible—and thereby created the framework in which such diverse phenomena as power, heat, and light could be understood as expressions of a general, quantifiable mutability. Unlike in the case of landed property, with the “originary accumulation of energy,” the unity and distinctiveness of the commodity are thus more strongly mediated by technology. Only in this way could a sphere emerge—the energy economy—in which a specific quantity of physical mutability is shaped into a specific form and circulates as a commodity that can become the object of consumption and investment.

Today, energy is a factor of production, that is so say, an indispensable prerequisite for economic production, state sovereignty, and social reproduction. It is a commodity unlike any other, rather the foundation of all social activities of production and reproduction. In this universal function, it is comparable to money. At the same time, the harnessing and utilization of energy remain more heavily constrained and conditioned by natural circumstances. Energy as a factor of production encompasses not merely a specific quantity, but also implies the quality or form of the energy source: to speak of energy as an abstract equivalence, which the concept has always done, obscures the fact that, in economic terms, it makes a significant difference whether firewood or electricity is used. Forms of energy are, after all, also technologies; they manifest themselves in machines and devices capable of concentrating, directing, and distributing the mutability of nature. Electricity is the best example—it is an artificially generated form of energy and, at the same time, a technology for the transmission and application of energy. Energy is therefore not only a key input factor in economic activity, but, through its technical form, spatial generation, and social distribution, it also determines social reproduction.

Historically, it was precisely this central importance that led to energy supply questions becoming the subject of state intervention, regulation, and strategic control at an early stage. Today, energy issues are so closely intertwined with questions of state sovereignty, capital interests, and the provision of public ser-

4 Vaclav Smil, *Energy and Civilization: A History* (Cambridge, MA: Massachusetts Institute of Technology Press, 2017); Daniela Russ, *Working Nature: A History of the Energy Economy* (London: Verso, 2026); Andreas Malm, *Fossil Capital: The Rise of Steam Power and the Roots of Global Warming* (London: Verso, 2016).

5 Vaclav Smil, “War and Energy,” *Encyclopedia of Energy*, vol. 6 (Amsterdam: Elsevier, 2004), 363–371; André Månsson, “Energy, Conflict and War: Towards a Conceptual Framework,” *Energy Research & Social Science* 4 (2014): 106–116.

6 Markus Nabernegg, Steffen Lange and Thomas Kopp, “Inflation in Germany: Energy Prices, Profit Shares, and Market Power in Different Sectors,” in: *International Journal of Political Economy* 53, no. 4 (2024): 344; see also: Isabella M. Weber and Evan Wasner, “Sellers’ Inflation, Profits and Conflict: Why Can Large Firms Hike Prices in an Emergency?,” in: *Review of Keynesian Economics* 11, no. 2 (2023): 1–21; Eckhard Hein, “Inflation Is Always and Everywhere a Conflict Phenomenon: Post-Keynesian Inflation Theory and Energy Price Driven Conflict Inflation,” in: *European Journal of Economics and Economic Policies* 21, no. 2 (2023): 202–231.

7 Annika Lindholm, Georg Lutz and Eva Green, “Life Dissatisfaction and the Right-Wing Populist Vote: Evidence from the European Social Survey,” in: *American Behavioral Scientist* (2024): 10.1177/00027642241240334; Simone Cremaschi, Paula Rettl, Marco Cappelluti and Catherine E. De Vries, “Geographies of Discontent: Public Service Deprivation and the Rise of the Far Right in Italy,” in: *American Journal of Political Science* (2024): 1–19.

8 Isabella Weber and Gregor Semieniuk, (2026) “The world energy shock is coming,” in: *The New Statesman*, 21 March 2026, <https://www.newstatesman.com/international-politics/geopolitics/2026/03/the-world-energy-shock-is-coming>.

vices, that debates over energy issues are inevitably also debates about the fundamental organization of society. The question is: how, for what purpose, and at what social and environmental cost should the mutability of nature be utilized and managed?

The history of the energy economy is characterized in particular by the tension between state sovereignty and control, on the one hand, and profit-driven, competing companies, on the other. This coexistence, and the recurring tensions between the market and state regulation, is fundamental to the sector's historical development. However, processes of negotiation extend beyond the market and the state: social struggles and movements have also played a decisive role in shaping the energy economy. Reconstructing the historical conditions and developmental trajectories of the energy economy is essential both for understanding its current form and for adequately responding to contemporary challenges.

The following study addresses precisely this area of tension. The aim of the analysis is to reconstruct the development of the energy economy as part of broader social processes of negotiation concerning the ownership of energy sources and control over their distribution and organization. It focuses on Europe, in particular Germany and other Western European countries. At the same time, it also takes into account the fact that European energy systems have always been, and remain, embedded in a global context, for example, through dependencies on external energy resources, international markets, and geopolitical dynamics. The study is based on the assumption that current energy policy challenges—particularly in the context of decarbonization and electrification—can only be adequately understood against the backdrop of their historical development.

Building on these assumptions, the study addresses the following questions: how did energy develop into a distinct economic sector in Europe? Which processes and conflicts shaped the current structures of the European energy industry? What role did workers' and trade union movements play in this process? What significance did different forms of ownership and energy sources have for the development of the energy economy? And what conclusions can be drawn from this historical analysis for current debates on forms of public ownership and democratic planning in the energy sector?

To address these questions, the study is structured as follows:

after this introduction, chapter 2 traces the use of fuels and mechanical propulsion systems up to the widespread adoption of steam power in the nineteenth century. Chapter 3 analyzes the emergence of modern energy sectors between 1880 and 1945. Chapters 4 and 5 explore this development in greater depth through selected excursions focusing on the labor movement within Germany's energy sector and the attempted socialization of the coal industry in the Weimar Republic. Chapter 6 examines the role of energy in the process of European integration between 1945 and 1980. Chapter 7 is devoted to the liberal restructuring of the European energy economy since the 1980s. A further excursus in chapter 8 addresses issues of energy planning, before chapter 9 summarizes the key findings and reflects on the implications of the analysis for current debates regarding socialization, forms of public ownership, and democratic planning.



2

Energy Use Before the Energy Economy until 1880

by Solveig Degen and Daniela Russ

Human use of natural resources, now referred to as energy sources, has a long history. Ever since the mastery of fire, humans have been burning wood and other forms of biomass. Fossil fuels were utilized thousands of years ago in places where coal seams reached the surface and oil seeped from the ground: coal mining in Fushan, China, dates back to 3000 BCE. Around the same time, the Babylonians used petroleum to caulk their ships. Even in antiquity, water wheels were placed in rivers to transfer the motion of water to tools. The inhabitants of Sistan, a region in contemporary Iran, used windmills for irrigation around 900 BCE. Shortly afterwards, the Chinese metallurgical industry began to use hard coal instead of charcoal, leading to the development of the largest coal industry to date in the thirteenth and fourteenth centuries. In Europe, too, the importance of windmills and water

wheels grew during the early modern period.

The available sources for this kind of “in-depth” energy history are extremely limited. However, there is at least no evidence to suggest that the amount of energy used by humans fluctuated significantly over the long term prior to the Industrial Revolution, and the use of fossil fuels also remained locally limited.⁹

Strictly speaking, the history of energy is anachronistic: it presupposes a connection between different modes of use that only emerged with indus-

⁹ Jochim Varchmin and Joachim Radkau, *Kraft, Energie und Arbeit: Energie und Gesellschaft* (Rowohlt, 1981); Vaclav Smil, *Energy and Civilization: a History* (The MIT Press, 2017); Terry S. Reynolds, *Stronger Than a Hundred Men: A History of the Vertical Water Wheel* (JHU Press, 1983); Alfred W. Crosby, *Children of the Sun: A History of Humanity's Unappeasable Appetite for Energy*, (W.W. Norton, 2006); Edmund Burke, “The Big Story: Human History, Energy Regimes, and the Environment,” in: *The Environment and World History*, eds. Edmund Burke and Kenneth Pomeranz (University of California Press, 2009).

trialization. Before the nineteenth century, there was no concept—let alone any measurement practices—under which all these technologies could be regarded as modes of use of the same resource. The measurement of work capacity—what would later be termed ‘energy’—began with the mechanization of power transmission in early-capitalist industry. For factory owners and engineers, anything capable of serving as a power source now became commensurable: the machine tools of the eighteenth century could be set in motion by various means of propulsion, such as horse gins, water wheels, or steam engines. The concepts of work and energy emerged through practical experimentation, engineering improvements, and the economic comparison of these power sources. To market his steam engines, for example, James Watt standardized the long-established unit of *horse-power*, which enabled a comparison between horses and mechanical drives. British engineers examined engines in terms of their *duty*, their efficiency, whilst around 1800 French engineers used the term *travail* to group together human, animal, and mechanical activity in production under a single denominator.¹⁰ The water wheel served as an experimental system where engineers first defined “mechanical work,” while scientists such as Sadi Carnot and James Joule developed the laws of thermodynamics using the steam engine.¹¹

The practical use of fuels and sources of power transmission thus preceded, and indeed made possible, their scientific formalization, economic evaluation, and political regulation as “forms of energy.” This does not, however, mean that a history of the energy economy could dispense with a contrasting perspective on preindustrial resource use.

10 François Vatin, “Le ‘travail physique’ comme valeur mécanique (xviii^e-xix^e siècles),” in: *Cahiers d’histoire. Revue d’histoire critique*, no. 110 (October 2009): 2–3, 110, <https://doi.org/10.4000/chrhc.1994>; Harry L. Smith, “The Origin of the Horsepower Unit,” in: *American Journal of Physics* 4, no. 3 (1936): 120.

11 D. S. L. Cardwell, “Some Factors in the Early Development of the Concepts of Power, Work and Energy,” in: *The British Journal for the History of Science* 3, no. 03 (1967): 209, <https://doi.org/10.1017/S0007087400002661>; M. Norton Wise, “Mediating Machines,” in: *Science in Context* 2, no. 1 (1988): 77–113, <https://doi.org/10.1017/S0269889700000508>; Crosbie Smith, *The Science of Energy: A Cultural History of Energy Physics in Victorian Britain* (University of Chicago Press, 1998); Thomas S. Kuhn, “Energy Conservation as an Example of Simultaneous Discovery,” in: *Critical Problems in the History of Science*, ed. Marshall Claggett (The University of Wisconsin Press, 1959); Reynolds, *Stronger Than a Hundred Men*, ch. 4.

2.1 The Origins of the Timber Industry

Wood was the most important resource of the Middle Ages and the early modern period. Every household required firewood for heating and cooking. Wood was used to construct houses and furniture, to make craft tools, means of transport such as wheels and ships, and sacred objects. Scarcely any trade or activity could manage without wood: wherever heat was required—particularly in brewing, as well as in the production of salt and glass—large quantities were burnt. The example of wood also illustrates how difficult it was at that time to distinguish “energetic” characteristics from other properties: although it was known that burning coal could produce greater heat, wood was preferred over coal for a very long time. This was because wood produced less smoke when burnt and gave off a more pleasant light. Many medieval trades also regarded wood as a higher-quality fuel, as it burned more cleanly and did not emit gases that could damage the handcrafted product.¹²

The central importance of wood is also evident in the conflicts surrounding forests and their access. For a long time, forests were regarded as common property or were subject to customary law. However, during the Middle Ages and the early modern period, feudal lords and estates gradually restricted access to these woodlands. When the revolting peasants set out their demands in the “Twelve Articles” of the six-

teenth century, one of the issues was the restrictions imposed by the lords on the use of “woods,” which “should revert again to the community,” so that every member can “help himself to such fire-wood as he needs in his home.”¹³ From the perspective of the feudal lords, however, the forests had to be protected in order to secure resources for metallurgy—which consumed vast quantities of charcoal—and for mining, which required a great deal of pit timber. It was in the context of this early modern forest management that the concept of sustainability emerged: state control over future forest yields was frequently justified by the aim of averting an impending lumber shortage, a “wood crisis.”¹⁴

12 Franz-Josef Brüggemeier, *Grubengold: Das Zeitalter der Kohle von 1750 bis heute* (C. H. Beck, 2018), 19–20.

13 An English translation of The Twelve Articles of the Peasants can be found at <https://germanhistorydocs.org/en/from-the-reformations-to-the-thirty-years-war-1500-1648/ghdi:document-4323>. On the peasants’ representation of value and the concept of “Hausnotdurft,” which was intended to ensure a comfortable life for every “household,” see Peter Blickle, *Unruhen in der ständischen Gesellschaft 1300–1800* (Oldenbourg, 2011), 104–105.

14 Paul Warde, *Ecology, Economy and State Formation in Early Modern Germany* (Cambridge University Press, 2006); Joachim Radkau, “Holzverknappung und Krisenbewußtsein im 18. Jahrhundert,” in: *Geschichte und Gesellschaft* 9, no. 4 (1983): 513–43; Joachim Radkau, “Zur angeblichen Energiekrise des 18. Jahrhunderts: Revisionistische Betrachtungen über die ‘Holznot’,” in: *VSWG: Vierteljahrschrift für Sozial- und Wirtschaftsgeschichte* 73, no. 1 (1986): 1–37; Jean-Baptiste Fressoz, *More and More and More: An All-Consuming History of Energy* (Allen Lane, 2024), 44–46.

2.2. The Origins of Mining

Today, historians no longer assume that there was a general shortage of timber that would have necessitated a transition to coal. Biomass—be it wood, peat, or coal—was laborious and expensive to transport, so it was usually only used locally. As a result, crises and shortages also remained predominantly localized.

Nevertheless, long before the nineteenth century, there were regions and towns—such as Liège in Belgium and Newcastle in England—where coal played a major role. Because the *British coal* deposits along rivers and the coast, coal could be transported further afield. In England and Belgium, ownership of underground mineral resources lay with the landowner, who also competed with others for the productive use of the land. London, supplied by sea from Newcastle and possessing fewer local timber resources, had been using coal in large quantities since the sixteenth century. As a result, the city was notorious for its poor air quality.

Across much of the European continent, ownership of mineral resources traditionally rested with the lord, a right enshrined in what was known as the *Bergregal*. The more fragmented the political entities and territorial sovereignties, the more varied the practices of mining. The situation was even more complex when it came to coal mining, as coal was often extracted above ground and, for a long time, was not considered part of the mining industry. Small coal pits also sprang up across the continent during the Middle Ages, of-

ten operated for only a few months a year to meet local needs. As coal could only be transported a few miles, its market was very limited. Depending on the legal framework, these pits might belong to the lord or landowner. As mining was capital-intensive, it could not be an individual enterprise and was usually operated by so-called *Gewerkschaften*—cooperatives established for the extraction and production of mining products. The members of the association, known as *Gewerke*, employed wage miners or “leased” the pit to fiefdoms and tenant miners. They received a share of the “yield,” but had to pay a financial “levy.” In addition, they could sell shares in the mines—known as *Kuxen*, which made it possible to ensure the long-term operation of the mines by tapping into capital from investors who were not physically present.¹⁵ In contrast to the predominantly private-sector nature of British mining, state intervention played a greater role in Central Europe. This ranged from mere police supervision in France and economic management in Saxony, to state-run enterprises in the Saarland.

Alongside developments in forestry, states under late absolutism began, from the second half of the eighteenth century onwards, to intervene more extensively in mining within their territories. In Saxony and Austria in particular, a cameralist economic mo-

15 Franziska Neumann, *Die Ordnung des Berges: Formalisierung und Systemvertrauen in der sächsischen Bergverwaltung (1470–1600)* (Böhlau Köln, 2021).

del emerged which sought to promote mining in the interest of the “common good” (by which was meant, not least, the stabilization of state finances for the purposes of warfare). This gave rise to a complex administrative apparatus comprising mining councilors, mining masters, and machinery directors, as well as a state-run technical training institution, the *Bergakademie*.¹⁶ The focus of cameralist interest lay on silver and ore mining, though measures also partly extended to coal mining, for example in the Saarland.¹⁷ Whereas post-revolutionary France granted more rights to mine owners, state regulation elsewhere could also encompass the technical development of mines, for example through the mandatory introduction of steam power and the creation of a market for hard coal. However, it is difficult to make generalizations due to the fragmentation of sovereignty: it was only within the *German Confederation*, the *German Customs Union* and the founding of the German Reich in the nineteenth century that conditions in the mining industry gradually began to converge.

A major technical challenge of mining was water drainage. The deeper the shafts and tunnels were driven into the ground, the more infiltrating groundwater had to be kept at bay through pumps. These required strong motive power. Although the use of animals and people as “pumpers” persisted in some mining regions until the second half of the nineteenth century, mining provided a key context for the development of large-scale mechanical systems. In Wales, Newcomen steam engines were already deployed in coal mines as early as the beginning of the eighteenth century, while large-scale hydroelectric power stations were built in the Harz Mountains a century later. Other early modern industries also harnessed water and wind power through the use of machines that converted their motion into steady mechanical work. As early as the sixteenth century, the Dutch shipbuilding industry was already using wind-powered sawmills. The use of water power was far more widespread in artisanal trades and early industries, though this required joint coordination of resource utilization.¹⁸ If,

for example, water power was to be increased and made permanently available through reservoirs, there arose a growing need “to coordinate their energy consumption, submit to planning, and contribute to collective funding of construction work.”¹⁹ Despite this drawback, water power—and, to some extent, wind power—remained profitable in certain regions well into the nineteenth century.²⁰

16 Jakob Vogel, “Reform unter staatlicher Aufsicht. Wirtschafts- und Sozialgeschichte des deutschen Bergbaus und des Salzwesens in der frühen Industrialisierung,” in: *Geschichte des deutschen Bergbaus*, ed. Klaus Tenfelde et al. (Aschendorff, 2012), 14, 24.

17 Ibid., 83.

18 Patrick M. Malone, *Waterpower in Lowell: Engineering and Industry in Nineteenth-Century America* (JHU Press, 2009).

19 Andreas Malm, “Fleeing the Flowing Commons: Robert Thom, Water Reservoir Schemes, and the Shift to Steam Power in Early Nineteenth-Century Britain,” in: *Environmental History* 19, no. 1 (2014): 56, <https://doi.org/10.1093/envhis/emt106>.

20 Jos Bazelmans, “The Demise of Windmills in the Netherlands from 1850 to 1950: A Quantitative and Geographical Approach,” in: *The International Journal for the History of Engineering & Technology* 95, no. 2 (2025): 197–220, <https://doi.org/10.1080/17581206.2025.2458583>; Malone, *Waterpower in Lowell*.

2.3 The Rise of the Steam Engine

The steam engine is the first means of generating mechanical power that can be deployed regardless of geographical conditions. Its only natural requirement is access to water and fuel, which, as a product of photosynthesis, is available almost everywhere on the planet. The steam engine, wrote Marx, is a motor “that begot its own force.”²¹ However, the early Newcomen steam engines used in British mining were only capable of pumping, that is, performing a vertical motion. It was not until James Watt’s rotary steam engine of 1781 that the horizontal motion of water wheels was replaced, thus becoming the “universal engine” (Sadi Carnot) in industry. For the first time, this allowed industrial motor power to be selected primarily on the basis of economic considerations, that is, based on investment costs, the costs of fuel and water power, spatial and temporal availability, and the impact on the costs of human labor.²²

The Watt steam engine made it possible to own the means of production for generating a general source of power. James Watt and his business partner Matthew Boulton jointly marketed Watt’s patents under the name Boulton & Watt. Their business model involved selling machines to mine and factory owners that were tailored to their specific production systems. Initially, the machines were not sold outright; instead, an annual payment was made for the duration of the patent, calculated on the amount of fuel saved. Buyers were not exclusively large factory owners; on the continent, public institutions were also among the clientele, and it was not uncommon for smaller industrial or craft businesses to share a steam engine within a factory.²³ It was not until 1795 that Boulton & Watt began manufacturing and selling complete steam engines. These were produced at their engineering works in Soho, London. By 1825, several hundred of these machines had been sold in Great Britain, with just over a hundred abroad. Although Boulton & Watt attempted to enforce their patents worldwide, they were unable to prevent the machines from being

21 Karl Marx, *Capital* Vol. 1, in: Marx and Engels Collected Works, vol. 35 (Progress Publishers, 1996) 380.

22 Andreas Malm, *Fossil Capital: The Rise of Steam Power and the Roots of Global Warming* (Verso, 2016); Andreas Malm, “The Origins of Fossil Capital: From Water to Steam in the British Cotton Industry,” in: *Historical Materialism* 21, no. 1 (2013): 15–68, <https://doi.org/10.1163/1569206X-12341279>.

23 Joshua B. Freeman, *Behemoth: A History of the Factory and the Making of the Modern World* (WW Norton, 2018), 10.

widely replicated: after the patent expired, steam engine manufacturers emerged in France, Belgium, Russia, the German states, and the United States, which were able to produce Watt's machines at a lower cost. In the nineteenth century, the steam engine market was thus diverse and regional.²⁴

During the nineteenth century, a relationship of mutual interdependence developed between coal mining, steam power, and the metallurgical industry, vastly increasing the strategic and economic importance of coal. Railways—essentially mobile steam engines—expanded the geographical scope of the coal trade. As a result, coal became cheaper along transport routes, enabling it to compete with charcoal as a fuel in the metallurgical sector, or with hydropower in the form of coal-fired steam power. Sectors such as ocean shipping and military steam navigation also emerged, which relied on the use of coal as fuel. However, this iron-coal complex did not render other energy sources irrelevant: well into the second half of the nineteenth century, coal was still transported by sailing ships; steam power was also generated using wood where forests were available; and some industrial hydropower stations were electrified directly.

Two competing approaches have emerged in the historiography of the development of the energy economy. Environmental historians emphasize the significance of coal as an energy source that enabled growth beyond the "organic energy system"—limited to wind, water, and the products of solar photosynthesis. These studies take the energetic materiality of coal seriously, identifying fossil fuels as a prerequisite for sustained economic growth.²⁵ However, they pre-

suppose a social tendency toward growth and thus tend to naturalize it. Historical-materialist and some economic-historical studies, by contrast, historicize the social tendency towards growth by pointing to the conditions under which increases in productivity become necessary for producers.²⁶ Robert Allen notes that in seventeenth-century England, high wages coincided with comparatively low energy costs, making the mechanization of the labor process profitable for producers.²⁷ These studies are united by the conviction that the dynamics of the energy economy cannot be understood in isolation from the development of capitalism. Rather than attributing an inherent value to energy resources, one must understand why they acquired such social significance at a particular point in time.²⁸ However, these two approaches need not be regarded as entirely opposed in their interpretation of the Industrial Revolution: both assume that there is a compulsion towards growth, which is also reflected in energy expansion—whether as an ecological law of nature or a historically developed law of capitalist "second nature."

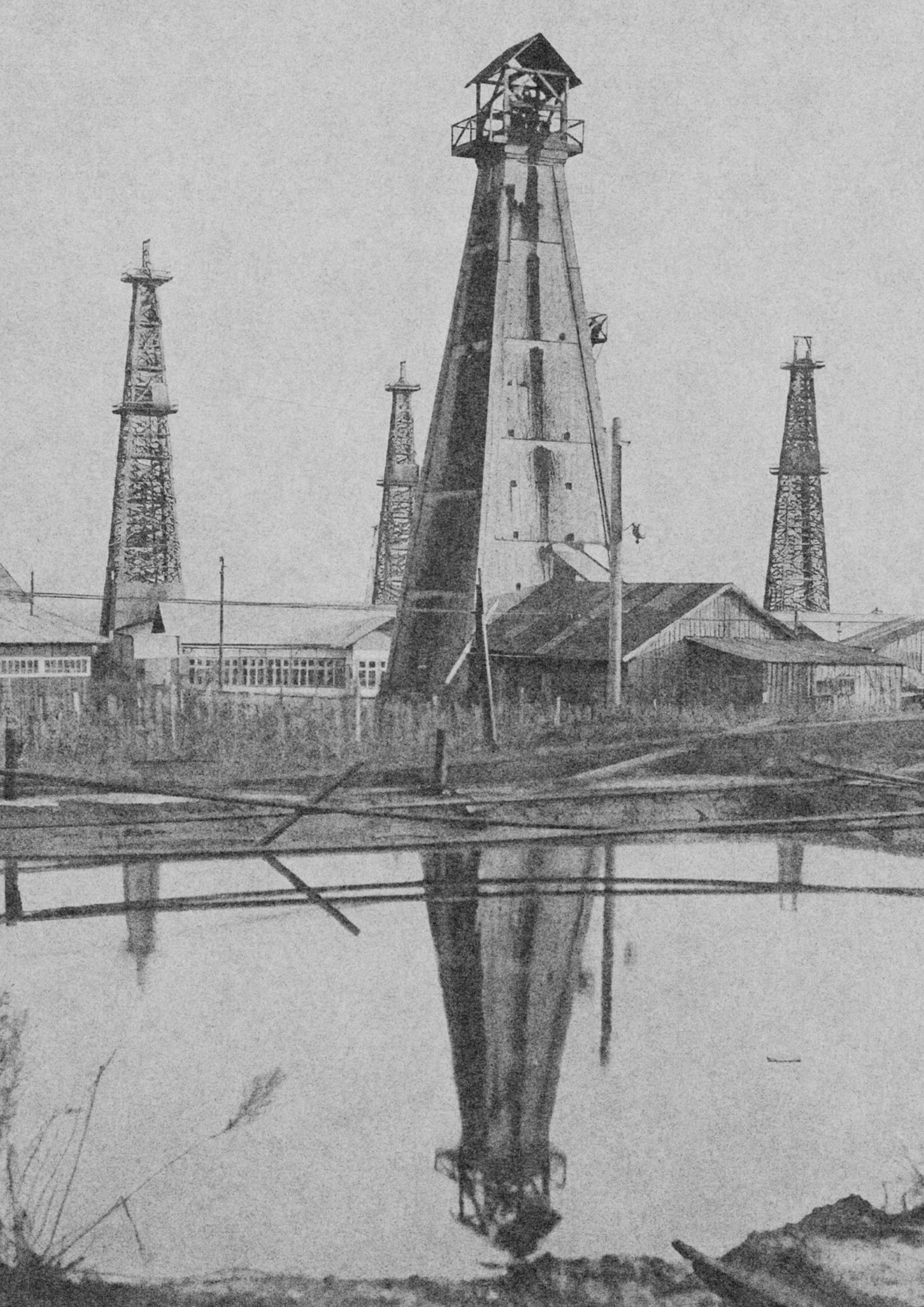
24 Jennifer Tann, "Marketing Methods in the International Steam Engine Market: The Case of Boulton and Watt," in: *The Journal of Economic History* 38, no. 02 (1978): 364, <https://doi.org/10.1017/S0022050700105133>; Richard L. Hills, *Power from Steam: A History of the Stationary Steam Engine* (Cambridge University Press, 1993), 88–90, <https://doi.org/10.1017/CBO9780511565038>; Wolfhard Weber, "Erschließen, Gewinnen, Fördern. Bergbautechnik und Montanwissenschaften von den Anfängen bis zur Gründung Technischer Universitäten in Deutschland," in: *Geschichte des deutschen Bergbaus*, ed. Klaus Tenfelde et al. (Aschendorff, 2012), 286–288.

25 E. A. Wrigley, *Energy and the English Industrial Revolution* (Cambridge University Press, 2010); Fredrik Albritton Jonsson, "The Industrial Revolution in the Anthropocene," in: *The Journal of Modern History* 84, no. 3 (2012): 679–696, <https://doi.org/10.1086/666049>; Kenneth Pomeranz, "Political Economy and Ecology on the Eve of Industrialization: Europe, China, and the Global Conjecture," in: *The American Historical Review* 107, no. 2 (2002): 425–446, <https://doi.org/10.1086/532293>; Kenneth Pomeranz, *The Great Divergence: China, Europe, and the Making of the Modern World Economy* (Princeton University Press, 2000).

26 T. H. Aston and C. H. E. Philpin, *The Brenner Debate: Agrarian Class Structure and Economic Development in Pre-Industrial Europe* (Cambridge University Press, 1987), <https://doi.org/10.1017/CBO9780511562358>; Ellen Meiksins Wood, "The Question of Market Dependence," in: *Journal of Agrarian Change* 2, no. 1 (2002): 50–87, <https://doi.org/10.1111/14710366.00024>.

27 Robert C. Allen, *The British Industrial Revolution in Global Perspective* (Cambridge University Press, 2009).

28 Matthew T. Huber, "Energizing Historical Materialism: Fossil Fuels, Space and the Capitalist Mode of Production," in: *Geoforum* 40, no. 1 (2009): 105–15, <https://doi.org/10.1016/j.geoforum.2008.08.004>; Malm, *Fossil Capital*; Daniela Russ, *Working Nature*.



3

The Emergence of the “Energy Economy” (1880–1945)

by Solveig Degen and Daniela Russ

To speak of an “energy economy” implies more than the mere sum of individual sectors. It signifies that individual industries—such as the coal, oil, or electricity industries—can no longer be described independently of one another, and that their development can only be understood in terms of their interdependence. It was not until the interwar period that engineers and economists began to refer to the “energy economy” as a unified whole that required planning and regulation as such. This shift in terminology reflects an actual vertical and horizontal integration between formerly independent industries. Central to this development were the electricity and oil industries, with their new corporate structures and the diversification of uses for their products, as well as the wartime economies of the First and Second World Wars. A close link also emerged in Germany between the steel and coal industries, though this is not discussed here in detail. At that time, widely diverse forms of energy came to be viewed as a general factor of production and an indispensable prerequisite for economic development and national sovereignty. Virtually all of the major Western energy companies that remain influential today—including ExxonMobil, Shell, BP, Vattenfall, RWE, Sie-

mens, and General Electric, to name but a few—have their roots in this period. In both the petroleum and electricity industries, control over the infrastructure of production, processing, and distribution became increasingly crucial. In both sectors, a contradiction grew between individual production and economic efficiency, since more efficient production requires economic coordination—for example, to exploit an oil field efficiently or to generate electricity profitably and distribute it over long distances. Vertically integrated companies emerged, combining production, processing, and sales—or electricity generation and distribution—within a single economic entity, thereby forming large geographical monopolies. In opposition to these monopolies, a debate arose concerning socialization and an alternative, “public sector” organization of the energy economy.

3.1. The Emergence of the Oil Industry

The first commercial oil industries emerged in the Russian Empire, Canada, and in Pennsylvania. They supplied the raw material for the production of kerosene, an affordable and efficient lamp oil. From the outset, the US and Canadian industries were highly profitable and attracted thousands of speculators and small entrepreneurs hoping to capitalize on the boom. In the Russian Empire, by contrast, property rights were more restrictive until 1872, preventing the same momentum from developing there. Initially, the oil industry focused on the global lighting market and machine oil. It was not until the 1890s that petroleum began to be processed increasingly into heating oil, serving as an alternative to coal, and from the early twentieth century onwards it was also used as fuel for automobiles.²⁹

The oil business was profitable, but highly risky. This uncertainty not only reflected the fact that the success of drilling operations was unpredictable, but was further exacerbated by a specific form of ownership of mineral resources in the United States: unlike in many European countries, mineral resources in the US were the property of the landowner. However, as oil is a liquid resource, unlike coal or other minerals, the question arose as to who owned the resource when it flowed underground under pressure towards the borehole. In 1889, the Supreme Court ruled that oil should be treated like wild game: according to the so-called *rule of capture*, the right to the resource belonged to whoever managed to capture it first. This ruling gave every producer an incentive to pump the oil out as quickly as possible, since any hesitation could mean that a neighbor might literally snatch the oil out from beneath one's very feet. This structural tendency towards overproduction explains the *booms* and *busts* cycles characterized by the early oil industry. By the early twentieth century, this uncoordinated oil extraction by competing companies came to be seen as a material and economic waste, resulting in the loss of a benefit that belonged to the general public, which

necessitated a regulation of production.³⁰

The backdrop of these structural problems witnesses the rise of *Standard Oil*—the company founded by John D. Rockefeller and Henry Flagler, from which many of today's oil companies emerged. Initially, Standard Oil did not focus on owning oil, but rather on controlling the infrastructure through which crude oil was transported for further processing and delivered to the end consumer. The strategy involved buying up railways, pipelines, refineries, and storage facilities. By the 1880s, Standard Oil already controlled almost the entire US refining sector and nearly 90 percent of the pipelines, enabling the company to dictate prices to producers. This gave rise to the first "vertically integrated" oil company, which combined both oil extraction (*upstream*) and further processing, transport, and marketing (*downstream*) into a single economic entity. This entity took the form of a trust that held controlling stakes in numerous smaller companies—a corporate structure that was initially legalized as a *holding company* under the Sherman Antitrust Acts.³¹ It was not until 1911 that Standard Oil was broken up into 34 smaller companies, although the former trustees, including Rockefeller, continued to wield significant influence.

In the early twentieth century, there were only seven major multinational oil companies worldwide, also known as the *Seven Sisters*, which exploited resources outside their home countries or even operated exclusively abroad.³² Three of the seven—Exxon, Mobil, and Chevron—emerged from Standard Oil.

29 Vaclav Smil, *Energy and Civilization: A History* (Cambridge, MA: The MIT Press, 2017), 246–248.

30 Matthew T. Huber, *Lifeflood: Oil, Freedom, and the Forces of Capital* (University of Minnesota Press, 2013), 45; Matthew T. Huber, "Energizing Historical Materialism: Fossil Fuels, Space and the Capitalist Mode of Production"; Mazen Labban, *Space, Oil and Capital* (London: Routledge, 2008), 7; Adam Hanieh, *Crude Capitalism: Oil, Corporate Power, and the Making of the World Market* (London: Verso, 2024), 27–30; William R. Childs, *The Texas Railroad Commission: Understanding Regulation in America to the Mid-Twentieth Century* (Texas A&M University Press, 2005), 153.

31 Hanieh, *Crude Capitalism*, 30–33.

32 Anthony Sampson, *The Seven Sisters: The Great Oil Companies and the World They Made* (Coronet, 1976).

Two others—Gulf Oil and Texaco—were founded following the discovery of oil in Texas.³³ The *Anglo-Persian Oil Company* (today *British Petroleum*) and *Royal Dutch Shell*, a joint venture between the British and the Dutch, extracted oil in what was then Persia and Burma respectively. In addition, numerous other small companies competed, with varying degrees of success, against the oligopoly. In Germany, for example, Deutsche Bank tried in vain to break Standard Oil's sales monopoly by founding the *European Petroleum Union*, which was intended to market Galician and Russian petroleum. Deutsche Bank's call for a Reich petroleum monopoly was equally unsuccessful. In an attempt to build its own "petroleum empire," it founded the *Turkish Petroleum Company* in 1912, together with Royal Dutch Shell and the Anglo-Persian Oil Company.³⁴

The First World War strengthened the power of multinational oil companies, as oil became a strategically and militarily vital resource under their control. With the advent of tanks, oil-fueled battleships, and later aircraft, a state's capacity to wage war became dependent, for the first time, on access to oil. The shift to oil-based technologies must thus be viewed primarily in the context of the world wars.³⁵ Before the war, European states had already negotiated concessions in the Middle East: while Deutsche Bank lost its shares in the Turkish Petroleum Company following Germany's defeat, the US, the UK, and France expanded their control over the oil fields of the Middle East. Under the so-called *Red Line Agreement*, these states agreed to jointly exploit the oil reserves of the former Ottoman Empire, in proportion to the investment shares of the stakeholders in the Turkish Petroleum Company. The agreement culminated in the founding of the *Arabian-American Oil Company* (Aramco, now Saudi Aramco) in 1948, in which only US companies held stakes. As late as 1952, a secret agreement remained in place between the largest

multinational oil companies, which they had entered into the 1920s and under which they had divided up the global oil reserves and markets amongst themselves.³⁶ The geopolitical scramble for access to oil reserves was less about averting an anticipated shortage than about gaining control over price-setting.

In the first half of the twentieth century, the oil industry was dominated by large, vertically integrated companies. In 1938, just eight firms owned 50 percent of US oil assets. However, concentration in production was lower than in transport, refining, and marketing: the twenty largest companies controlled only 24 percent of production, but 72 percent of the pipelines and up to 87 percent of the tanker fleets.³⁷ Internationally, this dominance was even more pronounced: the seven major oil companies "controlled over 90 per cent of oil reserves outside of the United States, Mexico, and the Communist countries; accounted for almost 90 per cent of world [...] oil production; owned almost 75 per cent of world oil refining capacity; and provided about 90 per cent of the oil traded in international markets."³⁸ Ownership of the resource itself was less important than control of the channels through which it reached the market. This applied to both domestic and international markets: when the Soviet Union (1917) and Mexico (1938) nationalized their oil industries and expropriated foreign capital, the multinational oil companies organized a boycott against the transport and marketing of Mexican and Soviet oil.³⁹ Although oil-producing states gradually secured sovereignty over the resource in the mid-twentieth century—and, in particular, exercised global price-setting power in the 1970s—their influence in the downstream sector remains significantly less to this day.

33 However, new oil discoveries challenged Standard Oil's dominance. Consequently, two additional "majors" emerged in the Texas oil industry, which had developed at the start of the twentieth century, particularly following the discovery of a large oil field in eastern Texas. In Texas, oil production was also regulated by the state: the Texas Railroad Commission set production quotas to stabilize prices. (Childs, Samsoon 92). (California and Oklahoma also regulated the industry.)

34 Dietrich Eichholtz, *Deutsche Ölpolitik im Zeitalter der Weltkriege: Studien und Dokumente* (Leipziger Universitätsverlag, 2010), 38.

35 Timothy C. Winegard, *The First World Oil War* (University of Toronto Press, 2016), <https://doi.org/10.3138/9781487511708>; Anand Toprani, *Oil and the Great Powers: Britain and Germany, 1914 to 1945* (Oxford University Press, 2019).

36 Sampson, *The Seven Sisters*, 88–91; Hanieh, *Crude Capitalism*, 65–66.

37 Hanieh, *Crude Capitalism*, 69.

38 David S. Painter, "The Marshall Plan and Oil," in: *Cold War History* 9, no. 2 (2009): 161, <https://doi.org/10.1080/14682740902871851>.

39 Jonathan Sicotte, "Oil after the Revolution: Contextualizing the Development of the Soviet Oil Industry with Mexican Nationalization, 1918–1938," in: *The Extractive Industries and Society* 15 (September 2023): 101332, <https://doi.org/10.1016/j.exis.2023.101332>; Jeronim Perović, *Rohstoffmacht Russland: eine globale Energiegeschichte* (Böhlau, 2022); Fidel Pérez Flores and Clayton M. Cunha Filho, "The Oil Nationalizations in Bolivia (1937) and Mexico (1938): A Comparative Study of Asymmetric Confrontations with the United States," in: *Latin American Research Review* 55, no. 4 (2020): 676–690, <https://doi.org/10.25222/larr.514>.

3.2. The Origins of the Electricity Industry

The commercial use of electricity also began in the lighting industry.⁴⁰ Unlike the coal and oil industries, however, electricity companies must first generate the resource they manage—electricity. The term ‘electricity companies’ thus here initially refers to engineering firms that produced electricity using steam engines, turbines, and generators powered by coal combustion or the movement of water. In addition, they manufactured coordinated components designed for electrical systems, such as devices in which this electricity causes a material to glow or produce sparks (electric lamps), as well as cables, switches, transformers, electricity meters, and the like.⁴¹ While Siemens expanded from turbine manufacturing into plant engineering, the *Allgemeine Deutsche Elektrizitätsgesellschaft* began by constructing electric lighting systems and only later developed its own generators. The electricity supply business can be described as vertically integrated from the outset, insofar as the generation, transmission, and sale of electricity took place within a single technical system (it was not until the restructuring of the sector in the 1990s that these areas were economically decoupled; see chapter 7). Furthermore, manufacturers of electrical equipment began to expand into coal mining and into the construction and operation of electrical systems in order to secure access to their most important raw material and sales market. Large holding companies emerged in the electricity industry, which were heavily interlinked internationally and worked closely with banks. To counter criticism of this influence of private capital, a large number of “mixed-economy” enterprises—early public-private partnerships—were established, in which local authorities, federal states, and companies jointly held shares.

The generation of electric light was a risky business, as the capital costs involved in constructing and operating such a system (boiler, steam engine, turbine, power cables, etc.) were extremely high. This was

all the more true given that the product—light—could already be generated from various sources. The use of kerosene, wax, or gas for lighting also had the advantage over electric light that it could be controlled individually. Since electricity flows only within an electrical system, in early lighting systems all the electric lights were lit simultaneously. For these reasons, the early electricity industry remained confined to the public luxury market—electric light was a spectacle that illuminated theaters, promenades, large public squares, and boulevards.

Unlike the oil industry, the business of supplying of electricity was therefore not immediately profitable. The electricity industry could only survive if it managed to tap into further customer groups. However, this was only possible if a technical solution could be found to “divide” electric light and sell it in smaller portions. Thomas Edison and his Menlo Park engineers developed an electrical system modelled on the gas industry, which made it possible to control lamps individually. This paved the way for the electricity supply industry as we know it today, that is, the centralized generation and distribution of electricity to independent consumers.⁴² Edison’s system was not the only one of its kind; in the late 1880s, various technical variations emerged—based on alternating or direct current, powered by water or steam, and using different types of lamps—all of which enabled individual control of usage. These systems gained prominence through international world fairs and exhibitions, while patent agreements led to their adoption worldwide. In the 1890s, companies emerged in many countries that exploited Edison’s or Westinghouse’s patents locally—such as the *Allgemeine Elektrizitätsgesellschaft* in Germany, which, utilizing Edison’s patent, played a key role in the electrification of Berlin.

However, this flexibility of individual usage presented a new problem for the operators of electricity supply companies: capital for the installations had to be advanced, yet there was no way of ensuring users would actually utilize capacity to an extent that made

40 At the same time, however, there was also low-voltage technology (telegraphy, radio, etc.), the development of which is not covered here.

41 Harold C. Passer, *The Electrical Manufacturers, 1875–1900: A Study in Competition, Entrepreneurship, Technical Change, and Economic Growth* (Harvard University Press, 1953).

42 Passer, *The Electrical Manufacturers, 1875–1900: A Study in Competition, Entrepreneurship, Technical Change, and Economic Growth*; William S. Pretzer, *Working at Inventing: Thomas A. Edison and the Menlo Park Experience* (JHU Press, 2002).

the investment worthwhile. Early electricity systems operated at only a fraction of their potential capacity.⁴³ Consequently, power stations remained a speculative and risky business venture. During the 1880s and 1890s, there was lively debate in the specialist electricity trade press regarding the conditions under which electricity could be profitably managed.⁴⁴ The strategy that prevailed over the following decades involved expansion, the diversification of user groups, and the interconnection of various power stations: by integrating smaller power stations into a single system and connecting ever-new groups of urban consumers—trams and suburban railways, as well as various businesses and households—capacity utilization could be significantly improved. At the same time, this gave rise to a geographically extensive technical system that was largely privately owned and reached deep into broad sections of society. The increase in power station capacity, the formation of large interconnected grids, and the diversification of user groups thus became a paradigm of electricity development in many countries, though not one that went unchallenged.⁴⁵ Even among engineers who accepted the benchmark of energy efficiency, questions arose as to whether the long-distance transmission of electricity (implied by the interconnection of large power stations) was ultimately more efficient than the local utilization of all forms of energy through combined heat and power generation.

The emergence of central power stations gave rise to a new business sector: the planning and financing of electrical systems. Electricity companies not only produced technical equipment for generating

electricity and equipment for its use, but also designed and financed electrical systems for entire cities and regions, thereby investing directly in the expansion of their own market. Such enterprises posed organizational and financial challenges that the electricity companies—originally manufacturers of electrical machinery—could not manage on their own. For this reason, the electricity companies sought the support of banks:⁴⁶ from the 1890s onwards, major electricity companies collaborated with financial institutions, and banks were established specifically for enterprises in the electricity industry, such as the *Elektrobank*, the *Gesellschaft für Elektrische Unternehmungen* (Gesfürel), or the *Continental Gesellschaft für elektrische Unternehmungen*. The purpose of these businesses was to finance, construct, and, in some cases, operate electrical systems and thus, ultimately, to market the products manufactured by the electricity companies.⁴⁷

Since this also involved the control of suppliers (of machinery) through their market, the situation can be described as vertical integration, even though the power stations were not, as a rule, operated directly by the electricity companies. In what was known as the 'entrepreneurial business,' numerous ties existed between the manufacturer of electrical equipment, the financing company (or holding company), and the electricity supply company (which operated the built systems): representatives of the electricity companies and banks sat on the board of the holding company, while representatives of the holding company, in turn, sat on the boards of the electricity supply companies.⁴⁸

Much as in the oil industry, at the beginning of the twentieth century there were a handful of firms that held stakes in electrical enterprises worldwide in one form or another—whether through patent agreements, shareholdings, or machinery. Although this involvement did not reach the same scale as in the oil sector, the level of concentration was considerable: in 1911, AEG and Siemens together held stakes in ent-

43 Helga Nussbaum, "Versuche zur reichsgesetzlichen Regelung der deutschen Elektrizitätswirtschaft und zu ihrer Überführung in Reichseigentum 1909 bis 1914," in: *Jahrbuch für Wirtschaftsgeschichte / Economic History Yearbook* 9, no. 2 (1968): 134, <https://doi.org/10.1524/jbwg.1968.9.2.117>.

44 Daniela Russ, *Working Nature*, 135–146.

45 Norbert Gilson, "Der Irrtum als Basis für Erfolg: Das RWE und die Durchsetzung des ökonomischen Kalküls der Verbundwirtschaft bis in die 1930er Jahre," in: *Elektrizitätswirtschaft zwischen Umwelt, Technik, und Politik*, ed. Helmut Maier (Technische Universität, 1999), 77. Norbert Gilson, for example, argues that the large-scale integrated electricity system of the 1920s did not improve systemic utilization but instead produced excess capacity that could only be absorbed through expansion in the 1930, see p. 88. Norbert Gilson, *Konzepte von Elektrizitätsversorgung und Elektrizitätswirtschaft: die Entstehung eines neuen Fachgebietes der Technikwissenschaften zwischen 1880 und 1945* (GNT-Verlag, 1994); T. P. Hughes, "Technology and public policy: The failure of giant power," in: *Proceedings of the IEEE* 64, no. 9 (1976): 1361–1371, <https://doi.org/10.1109/PROC.1976.10327>.

46 Luciano Segreto, "Financing the Electric Industry Worldwide: Strategy and Structure of the Swiss Electric Holding Companies, 1895–1945," in: *Business and Economic History* 23, no. 1 (1994): 163–164, JSTOR.

47 Thomas P. Hughes, "The Electrification of America: The System Builders," *Technology and Culture* 20, no. 1 (1979): 153–160, <https://doi.org/10.2307/3103115>; Segreto, "Financing the Electric Industry Worldwide."

48 Segreto, "Financing the Electric Industry Worldwide," 165.

erprises that accounted for 37 percent of Germany's electricity generation; by 1936, this figure had risen to 51 percent.⁴⁹ In an article entitled "Der Weg des Elektrotrusts [The Path of the Electrical Trust]," published in *Neue Zeit* in 1912, Kurt Heinig highlighted the interdependence of the German and US electrical industries, as well as their global activities.⁵⁰ Through mechanisms such as the 'entrepreneurial business,' the share of German companies in the global market for electrical engineering products rose to 46 percent in 1913 (although this share fell again after the First World War); German, US, and British companies together accounted for well over 70 percent.⁵¹ The links between US and German industry were very close: several agreements were concluded between General Electric (which itself had emerged from a merger between Edison and Thomson-Houston) and AEG, in which global sales territories were divided up.⁵² Similar arrangements were also in place with Siemens & Halske. After German companies lost the bulk of their foreign direct investments during the First World War, the relative importance of US, Canadian, and Belgian holding companies on the global market increased.⁵³

The structure of the electricity industry and the rise of German electricity companies can be illustrated by the example of *Rheinisch-Westfälisches Elektrizitätswerk AG*, now known as RWE. In the early 1880s, the city of Essen negotiated with various electricity companies (including AEG and Siemens & Halske) regarding the construction of a municipal power station. In 1898, the city signed a contract with the *Elektrizitäts-Aktiengesellschaft* (EAG) and the *Deut-*

sche Gesellschaft für elektrische Unternehmungen (Gesfürel, a holding company). Under this contract, the city granted the company the right, for a period of forty years, to "use the city's streets and public spaces for electric lighting, power transmission, heating, electrochemistry and other purposes."⁵⁴ The city granted the newly founded company—RWE—the exclusive right to generate and supply electricity and, in return, had a share in the revenue and in setting the electricity rates.⁵⁵ The power station was built on land owned by Hugo Stinnes, an industrialist who had already promoted cooperation in the coal mining sector and who supplied RWE with raw materials from coal mining.⁵⁶

The economic crisis of 1901-1902 led to many small businesses in the electricity industry being sold off and to greater concentration within the sector. At that time, Hugo Stinnes took over the ailing RWE, thereby creating a vertically integrated electricity company whose development was increasingly shaped by industrialists in the coal and steel sectors.⁵⁷ Stinnes pursued a policy of expansion: he lowered prices to attract new customers, bought up smaller power stations and thus built up a larger interconnected grid stretching from the Ruhr to Westphalia and the Rhineland.⁵⁸ He countered the growing calls for a state electricity monopoly with the prospect of "mixed-economy" enterprises. He offered local authorities and the Prussian state the opportunity to become shareholders in RWE in order to secure public influence (from 1905, several cities were represented as shareholders; from 1924, the Prussian state was also a shareholder).⁵⁹ To reduce competition within its "own" supply area, RWE repeatedly negotiated with

49 Helga Nussbaum, "Versuche zur reichsgesetzlichen Regelung der deutschen Elektrizitätswirtschaft und zu ihrer Überführung in Reichseigentum 1909 bis 1914," 137–138; Peter Czada, "Die Berliner Elektroindustrie in der Weimarer Zeit: eine regionalstatistisch-wirtschaftshistorische Untersuchung," in: *Die Berliner Elektroindustrie in der Weimarer Zeit: eine regionalstatistisch-wirtschaftshistorische Untersuchung*, Einzelveröffentlichungen der Historischen Kommission zu Berlin beim Friedrich-Meinecke-Institut der Freien Universität Berlin 4, Colloquium-Verl., 1969, 279, https://digitale-objekte.hbz-nrw.de/storage2/2014/10/08/file_6/5817320.pdf.

50 Kurt Heinig, "Der Weg des Elektrotrusts," in: *Die Neue Zeit* 2, no. 39 (1912): 474–485.

51 Peter Hertner, "L'industrie électrotechnique allemande entre les deux guerres: à la recherche d'une position internationale perdue," in: *Relations Internationales* 43 (1985): 304.

52 Thomas P. Hughes, *Networks of Power: Electrification in Western Society, 1880–1930* (Johns Hopkins University Press, 1993), 179.

53 Harm G. Schröter, "Globalization and Reliability. The Fate of Foreign Direct Investment in Electric Power-Supply during the World Economic Crisis, 1929–1939," in: *Annales Historiques de l'électricité*, no. 4 (March 2014): 101–124; Hertner, "L'industrie électrotechnique allemande entre les deux guerres: à la recherche d'une position internationale perdue," 290.

54 Hans Pohl, "Vom Stadtwerk zum Elektrizitätsgrossunternehmen: Gründung, Aufbau und Ausbau der Rheinisch-Westfälischen Elektrizitätswerk AG (RWE) 1898–1918," in: *Zeitschrift für Unternehmensgeschichte* 73 (F. Steiner, 1992), 11.

55 Furthermore, upon expiry of the concession, the power lines reverted to the city; the city also held the right to purchase the generation facilities.

56 In order to circumvent the provisions of the Rhenish-Westphalian Coal Syndicate, it was not the coal itself but the steam generated from it that was sold to the power station; see "Vom Stadtwerk zum Elektrizitätsgrossunternehmen," 13.

57 Pohl, "Vom Stadtwerk zum Elektrizitätsgrossunternehmen," 15.

58 For a similar strategy adopted by Samuel Insull, a manager at Chicago Edison, see Jeremiah D. Lambert, *The Power Brokers: The Struggle to Shape and Control the Electric Power Industry* (MIT Press, 2015), ch. 1.

59 Edmund N. Todd, "Von Essen zur regionalen Stromversorgung, 1886 bis 1920. Das Rheinisch-Westfälische Elektrizitätswerk," in: *Elektrizitätswirtschaft zwischen Umwelt, Technik, und Politik*, ed. Helmut Maier (Technische Universität, 1999), 29–32.

other electricity suppliers, including AEG and Siemens & Halske. Although a fundamental agreement failed to materialize, individual arrangements were reached; for example, the decision to forgo electricity generation in the "RWE area," with the purchase of AEG machinery as compensation.⁶⁰ Before and during the First World War, RWE was able to significantly expand its grid system and capacity, and benefited from its "mixed-economy" status, which, for example, secured it access to favorable municipal loans and granted it a right of expropriation. By 1916, it was already supplying 57 percent of all electricity in the Rhineland and Westphalia. Although RWE, too, was increasingly developing into a "major electricity corporation" with investments in many other firms, its interests—unlike those of AEG, for instance—remained domestically confined.

In Germany, the supply areas of the utility companies were defined in the late 1920s under the so-called *Elektrofrieden*.⁶¹ Even before that, however, due to numerous patent alliances, mutual non-competitive agreements and the consolidation of the industry into a few large companies, "free competition [...] had become nothing more than a free-market delusion."⁶² In the first decades of the twentieth century, electricity supply companies received increasing state support in their efforts to eliminate competition. This state intervention was rationally justified on technical and economic grounds, but also by fiscal policy considerations—as electricity was being tapped as a source of revenue for the state—as well as political considerations: young states in particular, such as the German Reich and the Soviet Union, sought to harness the state-building power of a centralized electricity infrastructure.⁶³

In Europe and North America, the first half of the twentieth century witnessed the emergence of large electricity supply companies that effectively held a monopoly over a region or even an entire state ter-

ritory. A consensus had developed that competition in the electricity supply sector was detrimental to the public interest and that the industry should be regulated as a "natural monopoly."⁶⁴ The newly introduced concept of a "natural monopoly" referred to sectors where competition undermined the sector's own economic viability and where economies of scale were evident—that is, where each additional unit could be produced more cheaply rather than at a higher cost. Contrary to the prevailing economic literature at the time, there were "fully legitimate, good monopolies," as a contemporary academic report argued: "These exist when the nature of a branch of production demands the highest degree of centralization or, from the outset, requires the exclusivity of the enterprise for it to survive and thrive."⁶⁵

The narrative of a "natural monopoly" made regulation acceptable to industrial and political elites. This, however, raised the question of at which political level regulation should take place—local, state, or imperial—and what form it should take in practice. Local electricity works, according to the Prussian district administrator Otto von Dewitz in 1909, "are profitable in a certain sense, but not in terms of the *national* economy; rather, at least as far as the municipalities are concerned, only in terms of the more or less arbitrarily set electricity price, which is usually determined by municipal tax requirements."⁶⁶ In an integrated system, by contrast, different types of power stations were linked and operated in parallel, allowing the total load to be distributed amongst the stations according to economic criteria—that is, from a macroeconomic or business management perspective. The alternative model—municipal combined heat and power plants supplying both electricity and heat—managed to establish itself only in Denmark. As in many other countries, the principle of integrated grid operation, which required a supra-municipal organization, also prevailed in Germany. Unlike in France and England, however, regulation in Germany remained for a long time the responsibility of the individual states of the

60 Pohl, "Vom Stadtwerk zum Elektrizitätsgrossunternehmen," 24–33; Todd, "Von Essen zur regionalen Stromversorgung, 1886 bis 1920. Das Rheinisch-Westfälische Elektrizitätswerk," 37.

61 Gilson, "Der Irrtum als Basis für Erfolg: Das RWE und die Durchsetzung des ökonomischen Kalküls der Verbundwirtschaft bis in die 1930er Jahre," 82–83.

62 Bernhard Stier, "Staat und Strom: die politische Steuerung des Elektrizitätssystems in Deutschland 1890–1950," in: Technik + Arbeit 10 (Verlag Regionalkultur, 1999), 68.

63 Stier, "Staat und Strom," 69–72; Daniela Russ, "Energetika: Gleb Krzhizhanovskii's Conception of the Nature–Society Metabolism," *Historical Materialism* 29, no. 2 (2021): 188–218.

64 Richard F. Hirsh, *Power Loss: The Origins of Deregulation and Restructuring in the American Electric Utility System* (MIT Press, 1999), 11–30; Stier, "Staat und Strom," 63.

65 Stier, "Staat und Strom," 63.

66 Cited from Stier, "Staat und Strom," 60.

Reich.⁶⁷ In the early twentieth century, proposals ranged from the light regulation of private monopolies, through the promotion of mixed-economy enterprises such as RWE, to calls for non-profit state-owned enterprises that were to provide energy free of charge. Debates on socialization and the establishment of a Reich- or state-level “high-voltage monopoly” began prior to the First World War, but reached their peak immediately afterwards, when the German Reich had already acquired economic policy powers as a result of the war.⁶⁸

These debates were reflected in the Energy Industry Act of 1935. Under the National Socialists, the first nationwide regulation of the energy industry—already understood here as comprising the electricity and gas industries—was introduced. However, this was aimed less at changing ownership than at aligning the energy industry with a common purpose, for example through reporting and licensing obligations.⁶⁹ In the face of opposition from within its own ranks—where some who favored small, village-based hydroelectric power stations over “big business”—the Energy Industry Act continued the trend towards grid integration and a “large-scale economy.”⁷⁰ It sought to achieve a level of “production that was as economical as possible,” alongside a level of “distribution that was as socially equitable as possible,” thereby committing energy companies, for the first time on a national scale, to the common good. Even before 1935, rearmament fell under this concept of the “common good”: as early as before the First World War, national economic objectives—which occasionally conflicted with the private interests of entrepreneurs—were also regarded as part of the militarized “nation’s” self-assertion.

The turn of the century was the era of cartels and trusts, and these were not limited to the electricity and oil sectors. Following the abolition of the ‘Executive Principle’ in the General Mining Act of 1865, German mining—much like the oil industry—experienced a rapid upswing and expansion of produc-

tion capacity, leading to a sharp drop in prices. The industry responded by forming an association of coal mines designed to control prices and output; this private-sector coordination culminated with the *Rheinisch-Westfälisches Kohle-Syndikat* (in which the aforementioned Stinnes also held a stake). As in the electricity industry, cartelization in the coal industry also received state support: the Coal Industry Act of 1919 made syndicate membership compulsory.⁷¹

The oligopolies in the oil and electricity industries, which had formed at the turn of the century, survived despite debates over a state-run electricity monopoly and several antitrust laws, and persisted into the postwar period. In both industries, holding companies developed which did not produce anything themselves but were established to control shareholdings in other companies. In the oil industry, vertical integration thus refers to a corporate structure in which companies across the entire value chain—in production, processing, and marketing—are controlled by an overarching economic entity. The electricity industry achieved integration in various ways: vertical integration was present when a company—with RWE no exception here—also held controlling stakes in coal mines, or where manufacturers of electrical equipment and machinery were involved in electricity supply companies. Furthermore, electricity supply companies controlled the generation and distribution of electricity as regional monopolies. As a result of cartel formation and vertical integration, ownership of the means of production for the generation and distribution of energy became concentrated in the hands of a relatively small number of companies.

67 Stier, “Staat und Strom,” 72; Leslie Hannah, *Electricity Before Nationalisation: A Study of the Development of the Electricity Supply Industry in Britain to 1948* (MacMillan, 1979); Jean-François Picard et al., *Histoires de l’EDF: comment se sont prises les décisions de 1946 à nos jours, L’dbil économique* (Dunod, 1985); Robert L. Frost, *Alternating Currents: Nationalized Power in France, 1946–1970* (Cornell University Press, 1991).

68 Stier, “Staat und Strom,” 57–72.

69 Ibid., 455.

70 Ibid., 448.

71 Helmut Lüthgen, *Das Rheinisch-Westfälische Kohlensyndikat in der Vorkriegs-, Kriegs- und Nachkriegszeit und seine Hauptprobleme* (Deichert, 1926), 8.



4

Socialization and Energy: Demands of the German Workers' Movement 1848–1930

by Ralf Hoffrogge, in collaboration with Solveig Degen

With the onset of industrialization, the workers' movement countered capitalism with the idea of industrial common ownership—drawing on older, agrarian concepts of the commons.⁷² The establishment of common ownership was sometimes referred to as 'socialisation,' although this concept only gained popularity in 1919. During the first half of the nineteenth century, utopian visions and model projects instead dominated: associations, workers' cooperatives, and communes were intended to gradually overcome capitalism. However, neither the savings of the working class nor donations from wealthy philanthropists were sufficient to counter capitalist accumulation. In the *Communist Manifesto* of 1848, Marx and Engels therefore called for strikes and trade union organiza-

tions as a precursor to a "workers' revolution" designed to carry forward the democratic revolutions of the bourgeoisie. They spoke of a "centralization" of various sectors of the economy "in the hands of the State"—mentioning, alongside industry, the socialization of schools and education, the finance, and land, though notably omitting energy supply.⁷³ Ferdinand Lassalle, both a disciple and rival of Marx, adhered to the idea of cooperative socialism in 1863 when founding the *General German Workers' Association*, which is considered the first German workers' party. This was to be established with state support once the working class had secured a majority through uni-

72 Ralf Hoffrogge, "Nie wirklich weg. Fünf Formen von Gemeineigentum in der Geschichte und ihre Bedeutung für das Ringen um Vergesellschaftung heute," in: *Arbeit – Bewegung – Geschichte: Zeitschrift für Historische Studien I* (2024), 10–34.

73 Karl Marx and Friedrich Engels, "Manifesto of the Communist Party," in: *Marx and Engels Collected Works*, vol. 6, 477–519, 504.

versal suffrage.⁷⁴ A reading of the programs of German workers' parties between 1869 and 1891 reveals a mixture of Lassallean and Marxist elements. The focus was on achieving political democracy—*The Erfurt Program* of 1891 called for "self-determination and self-government of the people in Reich, state, province, and municipality" and even advocated elements of direct democracy through the right to submit proposals.⁷⁵ Without democracy, the new form of communal ownership was inconceivable. Where socialist programs mentioned concrete steps towards socialization, these concerned "producers' cooperatives,"⁷⁶ "universal and equal popular education,"⁷⁷ or the "takeover by the Reich government of the entire system of workers' insurance,"⁷⁸ referring to the contribution-funded health, accident, and pension insurance schemes established in the 1880s. The Social Democrats' Erfurt Program of 1891 listed "land and soil, pits and mines, raw materials, tools, machines, means of transportation" as to be transferred to "social property." Energy was not mentioned; coal production was still regarded as part of the mining sector. The dominant demand was for a "transfer of the means of production into the possession of the community."⁷⁹ Despite the vague wording, this insistence on democratization distinguished socialist demands from the nationalization measures practiced by conservatives—such as the establishment of the *Reichspost* in 1871.

There are two reasons why no concrete attempts were made to socialize specific industries or the energy sector: firstly, an interconnected energy industry only developed with the advent of electrification. Secondly, until 1918, the German workers' movement remained largely outside the political system. Only

men were allowed to vote, and in most constituent states, this was tiered according to tax revenue. Socialization through reform was therefore impossible. The political struggles of the nineteenth-century workers' movement thus focused on universal suffrage, which had not yet been fully established even in older democracies like France and England. Economic struggles, by contrast, centered on improvements to wages, working hours, and working conditions.

Electricity: Between Utopia and War Socialism

The widespread adoption of electric motors at the end of the nineteenth century fired up the socialist imagination. August Bebel, co-founder of Social Democracy, waxed lyrical in 1910, in a new edition of his treatise *Women Under Socialism*, about the "decisive" role of electricity, whilst at the same time calling for sustainable energy generation: "Our water courses, the ebb and tide of the sea, the winds, the sun-light—all furnish innumerable horse-powers, the moment we know how to utilize them in full. [...] But mineral coal is hard to get and its supply decreases daily. Attention must be turned towards utilizing the heat of the sun and of the earth's crust. [...] Add water to that, and all imaginable machinery may be put in perpetual operation on earth: the source of this power would experience hardly any diminution in hundreds of years."⁸⁰

As early as 1898, socialist Bruno Borchardt reflected on "Electricity and Cultural Progress" in the *Sozialistische Monatshefte* and highlighted the potential of hydropower: "This utilization of water energy will become of the utmost importance in the future, particularly when coal reserves [sic] begin to approach the point of depletion; the immense work of water flowing back and forth with the tides [sic] will probably also be harnessed in this way later on."⁸¹ He noted, however, with a touch of sobriety, that in Berlin, barges were still being poled up the Spree by human muscle right in front of the headquarters of the leading electrical company AEG. The "poor boatmen" were "quite pleased that they could undercut the electric accumula-

74 Ralf Hoffrogge, *Sozialismus und Arbeiterbewegung in Deutschland und Österreich: von den Anfängen bis 1914* (Stuttgart, 2017), 57–70.

75 "The Erfurt Program (1891)," published in: German History in Documents and Images, <<https://germanhistorydocs.org/en/wilhelmine-germany-and-the-first-world-war-1890-1918/ghdi:document-766>>.

76 "The Eisenach Program (1869)," published in: German History in Documents and Images, <<https://germanhistorydocs.org/en/forging-an-empire-bismarckian-germany-1866-1890/ghdi:document-688>>; "The Gotha Program (1875)," in: German History in Documents and Images, <<https://germanhistorydocs.org/en/forging-an-empire-bismarckian-germany-1866-1890/ghdi:document-1844>>.

77 "The Gotha Program (1875)," *ibid.*

78 "The Erfurt Program (1891)," *ibid.*

79 *Ibid.*

80 August Bebel, *Women Under Socialism*, trans. Daniel de Leon (Schocken Books, 1971), 286–287. The first edition of 1879 does not yet contain any reflections on electricity.

81 Bruno Borchardt, "Elektrizität und Kulturfortschritt," in: *Sozialistische Monatshefte*, Year. 2, Vol. 11/1898, 507–514, "Zum Ende der Kohle," 512, otherwise 513–514, online at www.fes.de.

tors and thus still find employment.”⁸² For Borchardt, this contradiction between technical and social progress pointed to a society in which the “question of profit is no longer raised.” He reiterated a criticism previously levelled at the coal-fired steam engine: new energy sources did not result in shorter working hours, but longer ones; the wealth generated only benefited an elite.

However, there were no attempts by the Social Democrats—who were excluded from power—to socialize the electricity sector; it remained a matter of theoretical debate. Thus, in 1915–1916, Joseph Kurth and Edmund Fischer discussed the question of a state monopoly on electricity in the *Sozialistische Monatshefte*.⁸³ The authors were responding to state intervention during the First World War and advocated for the nationalization of electricity generation. Fischer emphasized cost savings and the growing demand for electricity, as well as the good working conditions in municipal electricity companies. Using the railway system as an example, Kurth praised “our technical and organizational successes”⁸⁴ in Germany during the war on two fronts. He argued for the widespread use of lignite and peat, since hydropower could not meet the rising demand for electricity. Kurth and Fischer replaced the condemnation of poverty despite progress—a central theme in the writings of Bebel and Borchardt—with a German “we.” These articles must be read in the context of “war socialism”: from 1914 onwards, a section of the German Social Democrats, in alliance with the Kaiser, endorsed Germany’s war aims. The state-directed war economy was glorified as a precursor to socialism.

The Conflict Over the Socialization of German Coal Mining in 1919/1920

In many countries at war, dissenting voices within the Social Democrats rose up against the party’s pro-war stance, leading to wildcat strikes by segments of the labor unions. These strikes gave rise in 1917–18 to a new approach to public ownership: the council

movement.⁸⁵ It challenged state-centered concepts of socialism and advocated for self-management.⁸⁶ The councils were a global phenomenon; they emerged independently of one another from strike assemblies. They were particularly strong in the defeated nations. In Germany, unlike in Russia’s collapsing society, the councils made only a few attempts at self-management of production and everyday life. One such exception was the strike movement in the Ruhr coal mining industry in 1919–1920.⁸⁷ It was the first mass movement aimed at the socialization of an energy source.

As early as December 1918, the First Reich Council Congress in Berlin had instructed the government to “immediately begin the socialization of all industries ripe for it, especially mining.”⁸⁸ SPD economic expert Rudolf Hilferding, who presented the rationale for the motion, considered mining ready for immediate socialization and electricity “in the very near future.”⁸⁹ He intended to start with raw materials and energy and gradually socialize more complex sectors, such as banking.⁹⁰ The Reich Council Congress and the *Council of the People’s Deputies*—formed by the USPD and SPD to serve as a provisional government—agreed on this phased approach.

As early as November 18, 1918, the Council of the People’s Deputies had resolved to immediately socialize all “ripe” industrial sectors. At the urging of the majority SPD, however, a commission consisting of economists, workers’ representatives, and business representatives was first appointed. Among other things, this first socialization commission drafted an

82 Ibid.

83 Josef Kurth, “Zur Frage eines Elektrizitätsmonopols,” in: *Sozialistische Monatshefte*, Year 22, Vol. 4/1916, 217–222, and Edmund Fischer, “Das Werden des Elektrizitätsmonopols,” in: *Sozialistische Monatshefte*, Year. 21, Vol. 9/1915, 443–450.

84 Ibid.

85 Ralf Hoffrogge, *Working-Class Politics in the German Revolution: Richard Müller, the Revolutionary Shop Stewards and the Origins of the Council Movement*, Leiden 2015 (Historical Materialism Book Series), 77.

86 Ralf Hoffrogge, “Die wirkliche Bewegung, welche den jetzigen Zustand aufhebt,” in: *PROKLA Zeitschrift für kritische Sozialwissenschaft* 39 (2009), 287–305.

87 For the following, see Jürgen Tampke, *The Ruhr and Revolution: The Revolutionary Movement in the Rhenish-Westphalian Industrial Region, 1912–1919*, London 1979; Heinrich August Winkler, *Von der Revolution zur Stabilisierung: Arbeiter und Arbeiterbewegung in der Weimarer Republik, 1918 bis 1924*, Berlin 1984, 159–175 as well as Peter Wulf, “Die Auseinandersetzungen um die Sozialisierung der Kohle in Deutschland 1920–1921,” in: *Vierteljahreshefte für Zeitgeschichte* 25, Vol. 1/1977, 46–98.

88 Ralf Hoffrogge and Dieter Braeg (eds.), *Allgemeiner Kongress der Arbeiter- und Soldatenräte Deutschlands. 16.–20. Dezember 1918 Berlin – Stenografische Berichte*, Neuausgabe zum 100. Jahrestag (Berlin, 2018), 23–27, 496–498.

89 Ibid.

90 Ibid.

expert report on the socialization of the coal mining industry, which was published in February 1919 (see chapter 5). The commission's work was repeatedly obstructed by opponents of socialization, including Undersecretary August Müller (SPD). In protest against the ongoing obstruction of its work, the first socialization commission ceased its activities in April 1919.

It is true that in March 1919, the National Assembly—which had been in session since the January elections—passed a *law on the regulation of the coal industry* (also known as the Coal Industry Act). This law placed the coal industry under state supervision but left the mines in private ownership. The reason for this half-hearted regulation was that bourgeois parties held a majority in the National Assembly. Advocates of socialization in the USPD and SPD had to reach an agreement with them.

In the Ruhr region, however, socialization was regarded as an urgent task. As early as December 21, 1918, a workers' assembly in Hamborn demanded immediate socialization. The mining town was home to mobile and heavily exploited segments of the proletariat with no ties to the Social Democrats or the mining union *Alter Verband*. Between 1895 and 1914, Hamborn's population had grown from 11,000 to 120,000, with foreign workers accounting for 19.5 percent of the workforce. The residential streets lacked a sewer system; subletting and lodgers were widespread. In December 1918, a delegation from Barmen described the coal miners as "ragged, hollow-cheeked victims of coal capital."⁹¹ As early as November 1918, strikes had secured wage increases and a reduction in the workday to eight hours, including the time-consuming descent into the mine shafts.

The strikes in the Ruhr region unfolded at unevenly across the region and ebbed and flowed several times before reaching a peak in January 1919 with 82,000 strikers, representing approximately 15 percent of the workforce. In Essen, a *Commission of Nine* was formed, consisting of three representatives each from the workers' parties USPD, SPD, and KPD. This initiative by the Essen Workers' Council was intended to unify the movement. The Commission of Nine developed a model of socialization that historian Heinrich August Winkler describes as a concept of syndicalist workplace autonomy.⁹² The miners elected so-called 'foreman district councils,' which in turn formed a colliery council for each mine. These coun-

cils elected regional mining district councils, headed by a central mine council.

The movement was so popular that all labor unions called for participation, including the previously skeptical *Alte Verband*. Coal production was now self-managed and operated with reduced working hours. However, the employers continued to control commercial operations, a situation tolerated by the councils. The "wild" socialization was therefore more of a truce than a victory. The Commission of Nine sought to legalize the arrangement and negotiated first with the People's Deputies and later with the National Assembly, which convened in Weimar on February 6. Yet both bodies refused to legalize the socialization. While the People's Deputies promised future legislative regulation and appointed three socialization commissioners, including a mine director, a government official, and a trade unionist, the appointment of a manager was perceived as a provocation, as the council system itself went unrecognized. The government was willing to grant only "labor chambers" for the mining industry—joint representative bodies of employers and workers. As its sole concession, it promised access to the mines' financial records.

During the negotiations in Weimar, the Commission of Nine split in February following provocations by the military—the KPD and syndicalists called for a strike in response to the dissolution of a soldiers' council in Münster, prompting the SPD to leave the commission. Although the strike achieved record participation with 180,000 participants—about half the workforce—it was violently suppressed by advancing paramilitary forces. This marked the failure of socialization from below.

Conflicts over working hours, however, persisted. March and April 1919 saw another general strike demanding a six-hour workday, a demand that was successfully enforced in some localities. The Ruhr region experienced a final upsurge of the council movement in March 1920 in response to the Kapp Putsch.⁹³ A nationwide general strike thwarted the military coup against the fledgling democracy. In the Ruhr region, local "executive councils" seized power in many cities, and a *Red Ruhr Army* consisting of an estimated 50,000 armed workers mobilized for self-defense. In syndicalist strongholds such as Mülheim, collective mine management was implemented. However, the uprising in the Ruhr region remained isolated and was militarily

91 Winkler, *Von der Revolution zur Stabilisierung*, 162.

92 Ibid., 167.

93 Erhard Lucas, *Märzrevolution 1920*, Vol. 3, Marburg 1973; Winkler, *Von der Revolution zur Stabilisierung*, 324–339.

hopeless. With the *Bielefeld Agreement* of March 24, 1920, part of the movement agreed to disarm, while the rest was violently crushed by the Freikorps and government troops. The Bielefeld Agreement, which built upon an understanding reached between the unions and the Reich government on March 20, provided for the socialization of the coal mines. This promise had succeeded in tempering the uprising.

In fact, a second socialization commission was established, which recommended the socialization of the coal mining industry in July 1920. The commission's second report on the socialization of coal mining, published on September 3, 1920, presented two competing models: the group centered around liberal politician and industrialist Walter Rathenau and SPD politician Rudolf Wissell advocated for greater public control and transparency in coal production, as well as moderate, gradual nationalization.⁹⁴ The second group—including Emil Lederer, Rudolf Hilferding, Karl Kautsky, and Joseph A. Schumpeter—called for the immediate socialization of the mining industry. The plan envisaged the establishment of a public-law body in which all parties involved in the coal industry would be represented.⁹⁵ Both models assumed that companies would be compensated based on book values and earnings. The second socialization commission existed until 1923, but failed to achieve any tangible results. Reasons for this included conflicts within the trade unions as well as in the resolute resistance of the industrial sector, which prevented implementation through delays, influence over personnel appointments, and the reinterpretation of original proposals.

Consequently, implementation did not go beyond the Coal Industry Act, which had already been enacted in March 1919. The half-hearted nature of this measure proved fatal: the consolidation of companies under state supervision created a private-public bloc of interests that adopted structures from the wartime economy of World War I. While the act increased the efficiency and influence of coal capital, democratization failed to materialize. It was not abolished under the Nazi regime but, beginning in 1938, was extended to the annexed territories of Austria and Czechoslovakia. From 1939 onward, the Coal Economy Act was part of the Nazi war economy.

Socialization Clauses as Constitutional Compromises of 1919 and 1949

The legal practice of socialization in the years 1918–1920 oscillated between reinterpretation and resistance. To appease the movement, the National Assembly enacted several laws that, while promising socialization, in reality entailed capital concentration or nationalization. In addition to the Coal Industry Act, the *Act Concerning the Socialization of the Energy Industry* of December 31, 1919, is particularly noteworthy.⁹⁶ It regulated the division of the German Reich into electricity districts and granted the Reich the right to take over electrical facilities. This made possible the state electricity monopoly that had been discussed during World War I. However, this authorization was never implemented.

At the constitutional level, however, socialization was preserved. The Weimar Constitution (WRV), adopted in August 1919, contained a “councils clause” in Article 165 and a provision on socialization in Article 156. The councils clause guaranteed the existence of works councils, which were also statutory backing in 1920. However, the planned regional and national economic councils, in which workers and employers were to participate, were not established. The possibility provided for in Article 156 to transfer private enterprises and property into public ownership in exchange for compensation also remained unused, as the necessary parliamentary majorities were lacking. Regarding socialization, the new constitution proved to be merely a symbolic compromise, one that nonetheless had long-term effects. After 1945, numerous West German state constitutions included provisions for socialization. With the founding of the Federal Republic, Article 15 also incorporated the possibility of socialization into the Basic Law. The concept of a public economy thus also attained constitutional status. This compromise reflected differing interests: on the one hand, voices from the Christian and socialist camps advocated for a public economy; on the other hand, their liberal-conservative opponents rejected this and called for a free market economy.⁹⁷ The decision regarding the economic system was thus left to future legislators.

94 Peter Wulf, “Die Auseinandersetzungen um die Sozialisierung der Kohle in Deutschland 1920/21,” in: Vierteljahreshefte für Zeitgeschichte, Vol. 25 (1977), Issue 1, 64 ff.

95 Ibid.

96 RGBl 1920, Part I, 19–26, <https://alex.onb.ac.at/cgi-content/alex?aid=dra&datum=1920&page=253&size=45>.

97 Wolfgang Abendroth, *Das Grundgesetz – Eine Einführung in seine politischen Probleme*, 2nd edition (Pfullingen, 1966), 64.

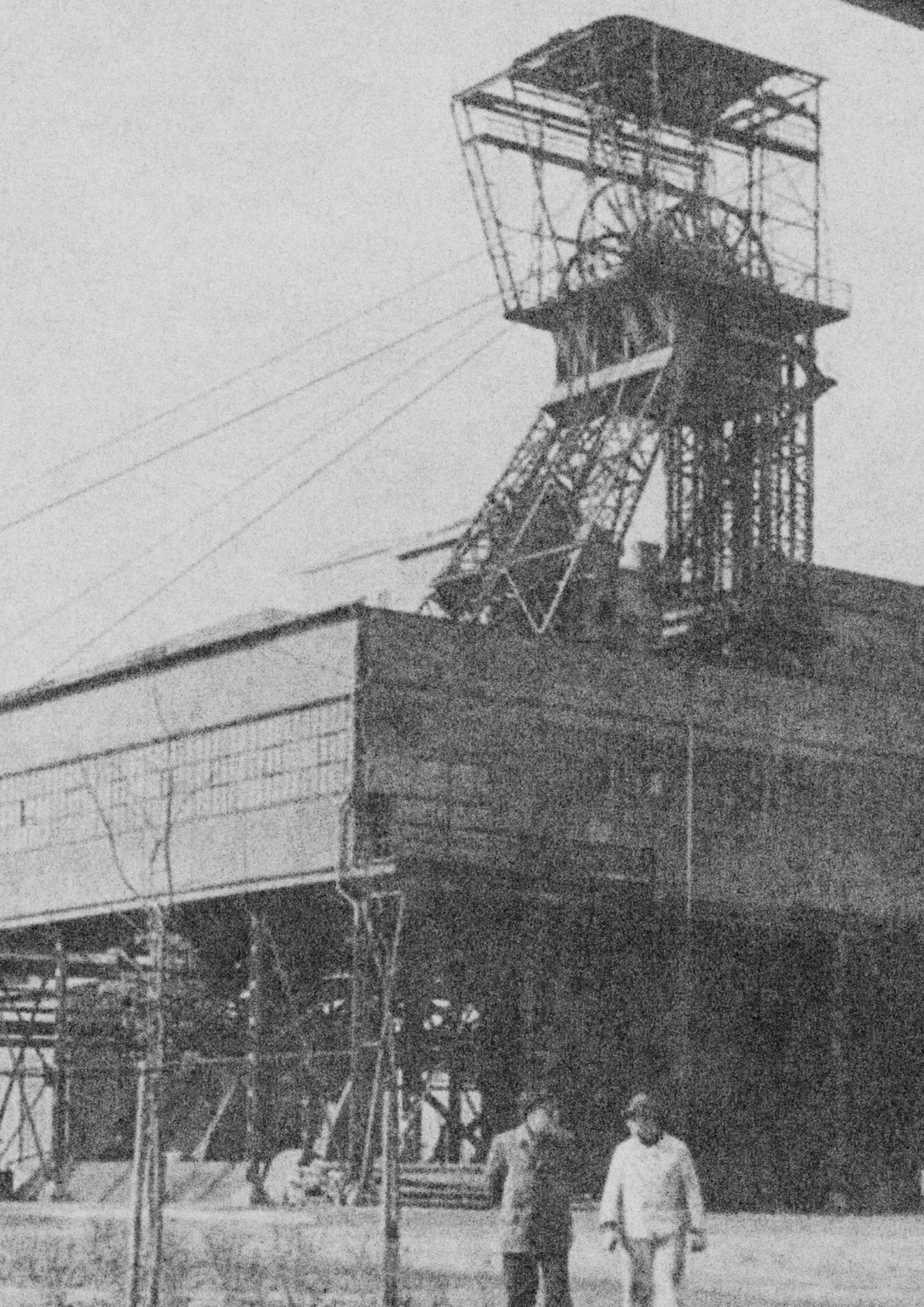
The Socialization Paradox

The programmatic debates leading up to World War I, as well as the push for the socialization of the coal industry beginning in 1919, demonstrate that the workers' movement never viewed the socialization of energy systems in isolation. The focus was always on a reorganization of industrial production as a whole. Concrete attempts at socialization in 1919 and again after 1945 were part of society-wide upheavals in which the existing order had been discredited and a socialist new beginning seemed possible. Where this moment of upheaval was absent, debates on socialization remained vague. Socialization of the energy sector without a sweeping transformation that also encompasses other areas of life therefore seems unlikely for the future as well.

It is striking that, under the broad umbrella of the labor movement, various actors drove the push for socialization. Before 1918, socialization was a discourse among socialist intellectuals, serving a unifying and integrating function. While public ownership was both a utopian ideal and programmatic goal, in practice it was limited to local pilot projects. However, these communes and cooperatives failed to bring about widespread social change; with the shift to Marx's "scientific" socialism in the second half of the nineteenth century, they receded into the background, overshadowed by elections, wage struggles, and strikes. There was no longer any concrete practice of socialization. As a reform, socialization presupposed universal suffrage, yet even revolutionary forces had to postpone it until after the seizure of power. It was not until the revolutions following World War I that common ownership became a practical reality again: through attempts at socialization by the council movement, and then in the 1920s through public-sector initiatives in municipal socialism and a wave of new cooperative formations. Both stemmed from broad politicization and radicalization that also transformed the workers' movement itself. In the coal mining industry, socialization was not driven by political parties and their affiliated intellectuals, but by the miners themselves. They had no reverence for the complexity of "economic life," as reflected in the socialization commissions as well as in trade union and intra-party debates about "readiness for socialization." The miners had retained a degree of craftsmanship autonomy in the production process, which no longer existed in other industries characterized by a high degree of division of labor, and this made socialization concei-

vable. After 1945, however, it was Social Democratic party officials who, as the sole political force in Hesse, dared to undertake partial socialization. Here, a party rushed ahead of its base—but the lack of mass mobilization allowed companies to launch a successful counteroffensive. Taken as a whole, it becomes clear that socialization initiatives only made it onto the political agenda through mass mobilization. They were plausible where existing structures had lost their legitimacy. These windows of opportunity closed more quickly than participants had anticipated. Even though violence was a central instrument of the counterrevolution, it would hardly have achieved its goal in 1919 without the skillful combination of both promising and delaying socialization. The latter tactic proved effective once again beginning in 1945: following the surrender, opponents of socialization lacked access to state power, yet achieved their goal solely through rhetorical concessions and practical delays.

A gateway for delaying tactics was the ambiguous conception of common ownership. Here, a *socialization paradox* became apparent: without the power to socialize, there was no need for concepts. Consequently, conceptual debates and power struggles had to take place simultaneously during the brief historical windows of opportunity. Common ownership was regularly reinterpreted as nationalization—not only by opponents but also by factions of the workers' movement: the equation of the wartime economy with socialism by patriotic Social Democrats during World War I perverted the democratic aspirations set forth in the programs of the nineteenth century. The Coal Industry Act of 1919, gratefully adopted by the Nazi regime, proved to be a bridge from one wartime economy to the next. Even today's attempts to socialize critical infrastructure face the danger of being co-opted as defense policy measures.



5

Strategies for Justifying the Ripeness of Socialization in the Energy Industry of the Weimar Republic

by Solveig Degen

As described in the previous chapter, the energy economy at the beginning of the twentieth century stood at the center of sociopolitical struggles for a more just and democratic economic system. Although the political implementation of socialization measures failed to materialize in the Weimar Republic, an extraordinarily intense theoretical debate unfolded between the revolution, the early Weimar period, and the early 1920s regarding the paths, goals, and prerequisites of a socialist economic order. As the historian and political economist Klaus Novy emphasizes, these debates were marked by an intensity that is virtually unparalleled: socialization became the “overarching ‘order of the day,’” yet its precise content “could only be elaborated gradually and, in part, after the movement had subsided.”⁹⁸ Immediately following the Russian November Revolution of 1918, the USPD in the German Reich pushed within the Council of the People’s Deputies for the rapid socialization of key economic sectors.⁹⁹ “Socialization” was understood in

this context as a comprehensive restructuring of the capitalist economic order to facilitate the transition to socialism. A central component of these debates was the demand for the socialization of the energy sector—that is, the transfer of means of production, such as coal mines, from private to public ownership and a democratization of the administrative structure. Philosopher Jacob Blumenfeld describes this phase as one of “revolutionary confusion,” in which “everyone, from left to right, from elites to workers, was obsessed with the question of socialization and its implementation.”¹⁰⁰ Initially, the intended project seemed straightforward: the means of production were to be transferred from private to public ownership; however, questions arose as to what, how, to what extent, and at what point should socialization take place.

These questions were addressed primarily with reference to the concept of industries being “ripe for socialization.” Novy distinguishes here between microeconomic and macroeconomic approaches to determining readiness for socialization.¹⁰¹ From both perspectives, coal mining emerged as the most pro-

98 Klaus Novy, *Strategien der Sozialisierung: Die Diskussion der Wirtschaftsreform in der Weimarer Republik*, (Campus Verlag, 1978), 35 f.

99 Jürgen Backhaus, Günther Chaloupek and Hans. A Frambach, *The First Socialization Debate (1918) and Early Efforts Towards Socialization* (Springer, 2019), vi f.

100 Jacob Blumenfeld, “The Socialization Debate,” in: *Graduate Faculty Philosophy Journal* 46, no. 1 (2025), 93.

101 Klaus Novy, *Strategien der Sozialisierung*, 42 ff.

minent example of a sector particularly “ripe for socialization.” This was justified, on the one hand, by its unique organizational structure and, on the other, by the fundamental economic importance of coal for the raw materials and energy sector.

Early debate on the ripeness of industries for socialization initially focused on microeconomic criteria. These included, above all, the size of the enterprise, the degree of market concentration and cartelization, the separation of management and ownership, the “compatibility with bureaucratic structures,” the level of technical development, and the type of goods produced. Those sectors whose products were mass-market goods—characterized by standardization and for which demand was relatively independent of individual preferences—were considered particularly ripe for socialization. The coal, steel, and raw materials industries met these conditions in an almost ideal way.

Another key consideration was the superiority of large-scale enterprises in terms of production technology and organization, a fact considered virtually undisputed throughout the socialist bloc. As numerous contemporary contributions to the debate emphasized, this superiority was based on increased productivity and reduced costs through the optimal application of scientific and technical knowledge, the economies of scale inherent in mass production, improved procurement opportunities, a workforce capable of cooperation, and the high degree of concentration within the industry.¹⁰² The fact that the coal and steel industry had already been syndicated during the war served as proof to many theorists of socialization of its particular suitability: the wartime “compulsory syndication” of the steel and coal industries was often cited as a model for either state-led or self-managed economic organizations of the future.¹⁰³ Closely linked to this was the argument of the natural monopoly. Mining, in particular, was regarded as an economic sector in which monopolistic structures not only existed *de facto* but were virtually inevitable due to geological, technical, and infrastructural conditions. Consequently, the demand for the nationalization of mining gained popularity as early as the late nineteenth century, making it, as Novy emphasizes, one of the “oldest economic policy demands.”¹⁰⁴ Mo-

reover, this demand found support not only among left-wing and progressive circles but also, to some extent, within conservative ones.¹⁰⁵ The first Socialization Commission explicitly adopted this line of argument in its *Preliminary Report* of 1919. It states:

“It can be considered undisputed that this monopoly on the most important raw material constitutes a relationship of domination incompatible with the nature of the modern state—and not only the socialist state. It seems unnecessary to revisit the question of whether and to what extent this relationship of domination has been abused to the detriment of the rest of the people—processors, consumers, and workers; its mere existence suffices to make the necessity of its complete abolition evident.”¹⁰⁶

Thus, the mere existence of a concentration of power in the private sector was regarded as sufficient grounds for its abolition, regardless of any demonstrable abuses.¹⁰⁷

As coal’s importance grew as an essential raw material for all sectors of the economy, and as a result of the visible efforts by private mine owners to stabilize their monopoly on extraction and distribution, the call for social control intensified. Novy puts it succinctly: “No industrial sector has been as theoretically controversial in the debate on socialization, or as fiercely and persistently contested—both in and, above all, outside parliament in the streets—as mining; the policy and debate on socialization began with the demand for the socialization of mining, and ended with it.”¹⁰⁸

In addition to these microeconomic criteria, there were increasingly macroeconomic attempts to define the issue, which identified the coal, mining, and energy industries as particularly ripe for socialization—not primarily because of their internal structure, but also because of their macroeconomic position. This line of argument was based on the consideration that certain industries, due to their position in the production process, possess structural leverage that could be utilized for the public management of the overall

105 Ibid.

106 Sozialisierungskommission, Vorläufiger Bericht über die Sozialisierung des Kohlenbergbaus (R. V. Deckers Verlag, 1919), 4.

107 See Erika König, *Vom Revisionismus zum demokratischen Sozialismus* (deb-Verlag das europäische Buch, 1973), 120 f.

108 Klaus Novy, *Strategien der Sozialisierung*, 50f.; Georg Berger, “Nationalisierung des Bergbaus,” in: *Die Arbeit: Zeitschrift für Gewerkschaftspolitik und Wirtschaftskunde*, no. 9, (1932), 617 ff.

102 Ibid., 54 f., see also Otto Neurath, *Bayrische Sozialisierungserfahrungen*. Aus der sozialistischen Praxis, No. 4 (1919, Vienna).

103 Klaus Novy, *Strategien der Sozialisierung*, 50.

104 Ibid.

economy. The coal and steel industry—along with the banking sector—was regarded as a key industry whose socialization would enable intervention at a particular “command height” of the economy, since control over production in this industry would have an impact on pricing, growth, investment, and distribution throughout the entire economic system.¹⁰⁹

These economic rationales also included the assumption of significant untapped potential for rationalization and productivity, gains that could only be fully exploited through a public-sector organization. Novy describes this as a widespread conviction “that only through socialization would it be possible to fully utilize of the productive forces unleashed by capitalism.”¹¹⁰ This referred both to internal reserves within enterprises—such as the ability to introduce technical innovations even when they increase costs—and to macroeconomic synergy effects resulting from centralized distribution and production planning. In addition, a unified, planned economy was expected to yield significant savings by reducing competitive overlaps and overcapacity, and by preventing the outflow of profits to foreign parent companies.¹¹¹ Another argument in favor of socialization was the elimination of capitalist claims to profits and interest. This elimination was expected to unlock significant potential for price reductions, particularly in highly capital-intensive sectors such as the coal and steel industry.

Theorists at the time, however, concerned themselves not only with the advantages of socializing the coal, steel, and energy industries, but also with the potential problems. Many noted, for instance, that successful implementation would require the creation of a functional public monopoly that would not be undermined by substitute products. Furthermore, the question arose as to what means the state should use to prevent non-compliant behavior by private companies in the non-socialized sector—the options discussed ranged from imposing regulatory requirements to withholding the supply of raw materials. It also remained doubtful whether planned-economy control via prices and raw material quotas could actually achieve the desired effects, since indirect, plan-

ned-economy-driven influence on production and investment policy—while maintaining a profit orientation—would likely fail to yield the intended results.¹¹² Yet a shift away from profit orientation would in turn entail other difficulties, such as a loss of steering capacity or the inability to use profits from the socialized industry for other purposes.

In addition, potential conceptual tensions between the democratic transformation of intra-firm power relations and the macroeconomic control logic of planned-economy approaches were discussed. Many theorists of that time believed that there was a systematic contradiction between intra-firm logics, on the one hand, and the macroeconomic objective of influencing other capitalist sectors of the economy, on the other.¹¹³ While the former aimed to abolish capitalist authority within the enterprise, the latter presupposed structural interventions that did not necessarily align with the internal interests of socialized enterprises. Economic theorist Walther Pahl also pointed out that mere control of the circulation process—particularly the credit system—“can be regarded much more as the true beginnings of a socialist planned economy,” even though these instruments themselves remained in need of supplementation.¹¹⁴

Overall, the socialization debate in the Weimar Republic shows that the coal and steel industry—and above all mining—was considered ripe for socialization not solely on the basis of technical or organizational characteristics, but because it stood at the center of nearly all theoretical, political, and strategic considerations that shaped the socialization discussion of the interwar period. It was at once a symbol and a field of experimentation, a key industry and a natural touchstone, a political battleground and a guiding theoretical category. To many contemporaries, their socialization appeared to be a necessary condition for a democratically planned economy—and thus a central building block of any serious socialist transformation strategy.

109 Walther Pahl, “Sozialisierung und Eigentum,” in: *Die Arbeit: Zeitschrift für Gewerkschaftspolitik und Wirtschaftskunde*, Vol. 4, (1923, 218 f.). <https://library.fes.de/arbeits/pdf/1932/193204.pdf>.

110 Klaus Novy, *Strategien der Sozialisierung*, 55 ff.

111 Ibid., 178 ff.

112 Walther Pahl, “Die Krise des Sozialismus und die Sozialisierungsfrage,” in: *Die Arbeit: Zeitschrift für Gewerkschaftspolitik und Wirtschaftskunde* (1931), 50.

113 Klaus Novy, *Strategien der Sozialisierung*, 55.

114 Walther Pahl, “Die Krise des Sozialismus und die Sozialisierungsfrage,” in: *Die Arbeit: Zeitschrift für Gewerkschaftspolitik und Wirtschaftskunde* (1931), 50.



6

Europe as an Energy Project 1945–1980

by Solveig Degen and Daniela Russ

Immediately after World War II, the focus was on rebuilding destroyed energy systems and stabilizing the political order. In the process, energy cooperation among European countries became more institutionalized, and economic growth was prioritized. Even before the war, there were cross-border power lines for transporting hydroelectric power; the German coal industry had been exporting large quantities of fuel to neighboring countries since the late nineteenth century.¹¹⁵ During the war, connections between the warring parties were severed, while connections within allied parties were expanded. The Cold War ushered in a phase of energy integration, economic growth, and increasing cooperation, although the latter kept Western and Eastern Europe separate in terms of

energy sectors.¹¹⁶ The period from 1945 to the mid-1970s is today also described as the “golden age” or the “great acceleration”:¹¹⁷ in many European count-

¹¹⁵ Rainer Fremdling, “Britische und deutsche Kohle auf nord-deutschen Märkten 1913,” in: *Regionen im historischen Vergleich. Schriften des Zentralinstituts für sozialwissenschaftliche Forschung der Freien Universität Berlin* (VS Verlag für Sozialwissenschaften, 1989).

¹¹⁶ Ronan Bolton, Vincent Lagendijk and Antti Silvast, “Grand Visions and Pragmatic Integration: Exploring the Evolution of Europe’s Electricity Regime,” in: *Environmental Innovation and Societal Transitions* 32 (2019), 55. <https://doi.org/10.1016/j.eist.2018.04.001>; Vincent Lagendijk, *Electrifying Europe: The Power of Europe in the Construction of Electricity Networks* (Amsterdam University Press, 2008), 26–27; Gert P. J. Verbong and Frank W. Geels, “Exploring Sustainability Transitions in the Electricity Sector with Socio-Technical Pathways,” in: *Technological Forecasting and Social Change* 77, no. 8 (2010), 1214. Ethan B. Kapstein, *The Insecure Alliance: Energy Crises and Western Politics since 1944* (Oxford University Press, 1990).

¹¹⁷ John Robert McNeill and Peter Engelke, *The Great Acceleration: An Environmental History of the Anthropocene since 1945* (Cambridge, MA: Harvard University Press, 2016); Gianni Toniolo, “Europe’s Golden Age, 1950–1973: Speculations from a Long-Run Perspective,” in: *The Economic History Review* 51, no. 2 (1998), 252. <http://www.jstor.org/stable/2599377>; Fotis Pantazelos, Polyxeni Kechagia and Theodore Metaxas, “The Golden Age of Global Economic Growth 1950–1970: Characteristics, Dimensions and Impacts on European Countries,” in: *Histories* 5, no. 4 (2025).

ries, including Germany, energy consumption doubled between 1950 and 1970.¹¹⁸

The *European Recovery Program* (ERP), better known as the Marshall Plan, was crucial to the post-war development of Western Europe. The U.S. not only provided financial resources for reconstruction but also promoted greater integration of Western European energy systems. The OEEC (now the OECD), which emerged from the administration of Marshall Plan funds, became the central Western European forum for exchange and cooperation in the energy sector.¹¹⁹ In addition, it initiated the founding of the *Union pour la coordination de la production et du transport de l'électricité* (UCPTE, an association of grid operators). In the East, socialist countries cooperated within the Council for Mutual Economic Assistance (Comecon), which also promoted integrative projects, such as a joint transmission grid or the *Druzhba* oil pipeline.¹²⁰ At the same time, on the initiative of the planning-minded Jean Monnet, and with the blessing of the United States, the institutions and treaties from which today's European Union emerged were established: The *European Coal and Steel Community* (ECSC, also known as the "Coal and Steel Union"), founded in 1951, was promoted as a first step toward securing lasting peace. By placing the coal and steel industries under joint administration, it effectively prevented the use of raw materials vital to warfare for national rearmament (particularly by Germany).

118 In Western Europe, total energy consumption doubled from 427,603 kilotons of oil equivalent (ktoe) to 1,047,489 ktoe in 1970; for a description of developments in Germany, see Stephen G. Gross, *Energy and Power: Germany in the Age of Oil, Atoms, and Climate Change* (Oxford: Oxford University Press, 2023), 57 ff.

119 Rüdiger Graf, *Öl und Souveränität: Petroknowledge und Energiepolitik in den USA und Westeuropa in den 1970er Jahren* (De Gruyter, 2014); Matthias Schmelzer, *The Hegemony of Growth: the OECD and the Making of the Economic Growth Paradigm* (Cambridge University Press, 2016).

120 Falk Flade, "The Role of the Council for Mutual Economic Assistance in the Construction of the Transnational Electricity Grid Mir," in: *Comparativ* 27, no. 5–6 (2017), 48, <https://doi.org/10.26014/j.comp.2017.05/06.03>; Perović, *Rohstoffmach Russland*, 89–91.

6.1. The Founding of the European Coal and Steel Community (ECSC) and the Role of Coal

Coal stood at the forefront of European integration for good reason: prior to World War II, it was the most important energy source in Europe and met 90 percent of the continent's energy needs.¹²¹ Although some countries, such as Switzerland and Norway, derived a large portion of their electricity from hydropower, coal was unquestionably the economic backbone of national economies: it served as fuel for households, transportation, and industry, and was also a raw material for iron and steel production and the chemical industry. Coal reserves, however, were not evenly distributed: even before World War I, Germany and Great Britain were Europe's leading coal producers.

The European Coal and Steel Community established a supranational administration of the coal and steel industries of Germany, France, the Benelux countries, and Italy. The participating countries thereby ceded a portion of their sovereignty regarding industries vital to warfare to the *High Authority*, in which they were all represented. The idea was that the High Authority would preside over a kind of public-interest cartel: its mandate was to coordinate production not for profit but to increase productivity; its negotiations would be public, not secret; and it would act in the public interest, not for private gain.¹²² However, the High Authority achieved its goal of European integration without fully controlling the European coal and steel industry for the benefit of the Community. Even the "decartelization" of the Ruhr industry—a prerequisite for the ECSC—turned out to be very mild: the expropriated entrepreneurs were compensated with shares in the newly formed companies, allowing them to quickly reestablish themselves. "The common market, created to regulate heavy industry, had become its property," concludes a history of the ECSC. The ECSC thus represented the realization of an international steel cartel—which European steel companies had been promoting since the 1920s—disguised as

European integration.¹²³ Other studies place greater emphasis on the ambivalence between competitive strategy and protectionism within the European Coal and Steel Community, noting that protectionism was intended to safeguard not only cartels but also jobs in the European coal industry.¹²⁴

World War II had once again demonstrated the strategic importance of oil, yet consumption remained low. Its widespread use in industry, private transportation, and as a chemical feedstock did not begin until the postwar era. During the reconstruction period, European economies began to orient themselves around access to inexpensive crude oil: between 1947 and 1960, European demand for oil tripled.¹²⁵ Over 10 percent of the total Marshall Plan funding went toward crude oil and petroleum products, three-quarters of which ended up in the pockets of just three U.S. oil companies that sold oil from the Middle East to Europe.¹²⁶ Since the U.S. feared that high energy costs could increase the appeal of communist parties, it supported the expansion of the coal and oil industries.¹²⁷

The rise of oil and the globalization of the coal market coincided with a relative decline in the importance of the European coal industry. Refining crude oil into kerosene—which was used in ships and airplanes—produced a byproduct, heavy fuel oil, that could be sold as heating oil and used to fire all kinds of boilers. In this sector, the oil industry began to compete directly with the coal industry. Declining productivity, rising costs, and competition from oil led to a persistent structural crisis in the coal sector, which governments sought to address through various forms of support. State influence over the coal industry was pronounced—40 percent of European coal production was under direct government control in the 1950s; subsidies and price controls were the norm, with the "range of regulatory approaches within

121 Painter, "The Marshall Plan and Oil," 163.

122 John Gillingham, *Coal, Steel, and the Rebirth of Europe, 1945–1955: The Germans and French from Ruhr Conflict to Economic Community* (Cambridge University Press, 2004), 232.

123 Gillingham, *Coal, Steel, and the Rebirth of Europe, 1945–1955*, 299–312; cited on 299; J. W. Reichert, "Die Festländische Rohstahlgemeinschaft," in: *Weltwirtschaftliches Archiv* 25 (1927), 340.

124 Uwe RönDIGS, *Globalisierung und europäische Integration: der Strukturwandel des Energiesektors und die Politik der Montanunion, 1952–1962*, 1st edition, Nomos-Universitätschriften Geschichte 11 (Nomos-Verl.-Ges., 2000), 419–423.

125 Painter, "The Marshall Plan and Oil," 164.

126 *Ibid.*, 165.

127 *Ibid.*, 164; Gillingham, *Coal, Steel, and the Rebirth of Europe, 1945–1955*, 116, 177.

the European Coal and Steel Community [...] extending from French nationalization to the private-sector organization of the industry in Belgium.”¹²⁸ Yet government support could not halt the structural crisis. In Germany, investment in the coal industry fell from 1.1 billion DM in 1959 to less than 300 million DM by the end of the 1960s.¹²⁹ This was accompanied by a steady decline in employment in the coal-mining regions.¹³⁰ As employment in mining declined, so did the political power of the miners—a central component of the labor movement in many European countries.

6.2. Socialization within the Rule of Law: the Hessian Socialization of Energy and Mining 1946–1965

by Ralf Hoffrogge

The partial socialization in Hesse during the years 1946–1967 is the only example of a socialization process that was actually carried out in twentieth-century Germany. Its course reveals possibilities, but also resistance and the failure of socialization within a constitutional state. Nevertheless, the Hesse example has received surprisingly little attention in current debates on socialization.

The socializations in Hesse were based on the state constitution enacted in 1946, which was adopted with majorities from the CDU, SPD, and KPD. The driving force was the Social Democratic Party, which drew on its debates regarding public ownership and economic democracy from the 1920s.¹³¹ Driven by the need for a fresh start, the Hessian Constitution was unique in providing the immediate socialization of certain industrial sectors, whereas other state constitutions and the Basic Law merely provided for the possibility of socialization. In the state constituent assembly, the CDU had agreed to its immediate implementation after the chemical industry had been exempted. As a result of this compromise, Article 41 on socialization secured a broad majority in the state assembly, with 82 out of 90 votes. However, the U.S. military administration insisted that the socialization clause be put to a separate vote during the constitutional referendum—with 71.9 percent in favor of socialization, the result was clear.¹³² As a result, “mining (coal, potash, ores), iron and steel production facilities, energy sector enterprises, and rail and overhead line transport systems”¹³³ were transferred to public ownership.

Hesse’s socialization was not superseded by the Basic Law in 1949, but had to be implemented

128 These subsidies include, for example, mandatory purchase obligations imposed on the electric power industry and steel mills, or the so-called “Coal Penny”—a surcharge on electricity prices that was funneled into the coal industry and paid from 1974 to 1995; see Röndigs, *Globalisierung und europäische Integration*, 13. The quotation is from *ibid.*, 141.

129 Stephen G. Gross, *Energy and Power: Germany in the Age of Oil, Atoms, and Climate Change* (Oxford: Oxford University Press, 2023), 85.

130 Sören Becker, “Kohleförderung und -nutzung in Deutschland: Ausstieg aus dem Brennstoff der Industrialisierung,” in *Energiegeographie: Konzepte und Herausforderungen*, ed. Becker et al. (Stuttgart: UTB Verlag, 2021), 148.

131 Ralf Hoffrogge, “Vom Sozialismus zur Wirtschaftsdemokratie. Ein kurzer Abriss über Ideen ökonomischer Demokratie in der deutschen Arbeiterbewegung,” in: *Geschichte einer pluralen Linken*, eds. Marcel Bois and Bernd Hüttner, Vol. 3, Berlin 2011.

132 Gerd Winter, “Sozialisierung in Hessen 1946–1955,” in: *Kritische Justiz* 7 (1974) 2, Nomos Verlagsgesellschaft mbH, 157–175, here 157–160.

133 Art. 41, para. 1, no. 1 of the Hessian Constitution (HV).

through state legislation. This was because the public ownership established by the constitution lacked a formal legal structure; the affected enterprises were managed by trustees drawn from the previous management under the supervision of the Ministry of Economic Affairs. This, combined with the constitution's lack of clarity regarding the specific sectors to be socialized, created a power vacuum that the opposition exploited in the years that followed—ultimately leading to the successful dismantling of the system. For a long time, historians viewed the resistance of Western Allies as the decisive factor in the end of socialization.¹³⁴ However, a study by Detlev Heiden in 1997—which remains authoritative to this day—rejected this thesis: according to him, it was not only socialization that failed in Hesse, but also the liberal concept of unbundling pursued by the United States.¹³⁵ He attributed the causes of this “dual failure” to effective resistance by business leaders coupled with the state government’s hesitation in making full use of available scope.¹³⁶ The state government was formed by a grand coalition of the SPD and the CDU, with the SPD providing the Minister-President, Christian Stock, and heading the Ministry of Economic Affairs under Harald Koch (1946–1949).

In addition to iron production, the energy sector was central to the Hessian socialization project. The socialized sector consisted of Hessian lignite mining, comprising 19 mines owned by 15 private companies. These were predominantly small or medium-sized enterprises, as large companies headquartered outside of Hesse were not included. In addition to lignite, the project included the electricity and gas industries, 11 joint-stock companies with 15 plants (some under municipal ownership or structured as mixed-economy enterprises) as well as 56 Hessian municipal utility operations.¹³⁷

134 Eberhard Schmidt, *Die verhinderte Neuordnung: 1945–1952. Zur Auseinandersetzung um die Demokratisierung der Wirtschaft in den westlichen Besatzungszonen und in der Bundesrepublik Deutschland*, EVA, Frankfurt am Main 1971.

135 Detlev Heiden, *Sozialisierungspolitik in Hessen 1946–1967: Vom doppelten Scheitern deutscher Traditionssozialisten und amerikanischer Industriereformer*, Münster 1997.

136 On business resistance, see in particular Detlev Heiden, “Im Grunde alles erreicht, worum wir jahrelang gekämpft haben: Die hessische Sozialisierung und die Unternehmer,” in: *Zeitschrift für Unternehmensgeschichte / Journal of Business History* 44 (1999) 1, Verlag C. H. Beck, 67–86.

137 Winter, “Sozialisierung in Hessen 1946–1955,” 160; Heiden, *Sozialisierungspolitik in Hessen 1946–1967*, 329–336 on lignite, 376–405 on the gas and electricity sectors.

The state government, elected in late 1946, presented an implementation plan in October 1947, which was approved by the state parliament. It proposed a new form of ownership—the “social communities”—which was neither state nor private property. The social communities were to be led by a board of directors comprising five representatives from the labor unions, five representatives from the local municipality acting as the voice of consumers, and five representatives from a higher-level “regional community.” The board of directors was responsible for appointing the company’s executive board. Forty percent of the profits were to be allocated to the regional community for an investment and equalization fund. The use of surpluses was earmarked for specific purposes.

The regional community was conceived as a planning and governing body; it was to be led by a council consisting of five state parliament representatives, five trade unionists, and five members of the municipal umbrella organizations. The concept was more concrete than any of the Weimar efforts; it was an attempt at democratic enterprise management with elements of regional economic planning. Historian Gerd Winter identifies several drawbacks: a lack of transparency, a somewhat elitist understanding of economic democracy, and the unrestricted mandate of participating representatives.¹³⁸ In practice, however, these problems did not materialize because the CDU did not support the proposal. The party secured concessions such as authorizing of alternative legal entities to operate publicly owned enterprises or allowing the accumulation of financial reserves. Nevertheless, the draft failed to secure a majority and was narrowly rejected by the state parliament. The power vacuum persisted, and the state government lost its momentum. The situation worsened when, in December 1948, U.S. military authorities seized the Hessian coal, iron, and steel industries in order to implement their own plans for unbundling.¹³⁹ The scope of socialization shrank considerably, as coal mining—a key part of the energy sector—was no longer under state control. In the iron industry, the former owners succeeded in excluding profitable downstream processing by exploiting the vague wording in the socializa-

138 Winter, “Sozialisierung in Hessen 1946–1955,” 161.

139 Jürgen Weitzel, “Das Eigentumsproblem,” in: Bernhard Dietelkamp, *Zwischen Kontinuität und Fremdbestimmung: zum Einfluss der Besatzungsmächte auf die deutsche und japanische Rechtsordnung 1945 bis 1950*, 1996, 195–212, here 210–211.

tion clause regarding “iron production”—once again, the scope of socialization shrank.

Another source of conflict arose with the municipalities. Since local authorities were unwilling to forgo either revenue or control over municipal utilities and transportation services, even SPD-led city councils opposed socialization;¹⁴⁰ a Social Democratic opposition emerged within the Hessian Association of Cities and Towns.¹⁴¹

The conflict was intensified by two state- and semi-state-owned actors in the Hessian electricity industry: RWE and Preag.¹⁴² Preag was a conglomerate owned by the Prussian state, which had been dissolved in 1946. In 1945, through a dubious maneuver, Supervisory Board Chairman Hermann Schilling succeeded in relocating the company's headquarters from Berlin to Hamburg and had himself appointed as trustee. Preag controlled several subsidiaries that held stakes in companies in Hesse. Schilling claimed that Preag was already publicly owned and successfully fended off attempts to seize its assets. Preag used its loss-making lignite subsidiary, Hefrag, as leverage; by withholding investments and funds from Hefrag, it jeopardized the security of supply and wage payments. Through joint ventures, Preag succeeded in aligning affiliated municipalities with its position. For example, municipalities in Lower Saxony, as co-owners of the Preag subsidiary *Elektrizitäts-AG Mitteldeutschland* (EAM), resisted attempts to seize their operating assets in Hesse.¹⁴³ Ultimately, EAM was granted the same status as purely municipal utilities. This resulted in a postponement of the takeover and the preservation of the old management structures. The EAM works council supported this approach. At the energy conglomerate RWE, whose shares were partly held by municipalities, an alliance of private and municipal actors also formed against socialization. The Hessian Ministry of Economic Affairs underestimated the strength of this opposition. Through deferrals and exemptions for corporations with municipal shareholders, they succeeded in removing a large

part of the Hessian electricity sector from the assets slated for socialization. In the gas sector, Preag was able to employ a similar strategy.¹⁴⁴

The power struggle was accompanied by a flurry of legal debates critical of socialization, which grew increasingly heated beginning in 1950.¹⁴⁵ A leading voice among the opponents of nationalization was Carl Schmitt, once the chief legal advisor to the Nazi regime. The dispute culminated in 1951 and 1952 in two rulings by the Hessian State Constitutional Court, acting as the guardian of the state constitution. The State Constitutional Court rejected direct attacks on socialization but limited its scope. Municipal and small businesses, as well as enterprises with a majority public ownership, were excluded from public ownership.

The socialization of the Hessian energy industry was thus dead. The cause of its demise was the sluggish and haphazard implementation during the years 1946–1950. The lack of a definition of “public ownership” in the state constitution had provided an opening for reinterpretations, and the protracted and ultimately unsuccessful clarification in the law on social communities had given the opposition time to form alliances. It is striking that during the period leading up to the monetary reform, when socialization was supported by a social majority, there was no mobilization of the population. The Hessian KPD had proposed such a mobilization in December 1948 in response to U.S. seizures, but failed to win any partners for the initiative.¹⁴⁶

Socialization in Hesse concluded in 1954 with a settlement between the state and the former owners regarding compensation for the remaining socialized assets. The last socialized enterprise, the *Hessische Berg- und Hüttenwerke AG*, was privatized in 1965. The legal form of the “social community” was never implemented. Thus, from 1946 to 1965, there were enterprises that were *de jure* socialized in Germany, but *de facto* they were either state-owned enterprises or private firms under state trusteeship. The concept of socialization failed to take hold due to the lack of a distinct democratic legal form.

A distinctive feature of the Hessian case—in addition to the ideological confusion between nationalization and socialization—is the emergence of

140 A leading voice was Otto Witte, governor of the Wiesbaden Municipal Association. He threatened to halt investments and regarded the municipal enterprises as already having been municipalized; see Heiden *Sozialisierungspolitik in Hessen 1946–1967*, 395.

141 *Ibid.*, 402–405.

142 *Ibid.*, 379 ff. (PREAG), 396 ff (RWE).

143 *Ibid.*, 393.

144 *Ibid.*, 400.

145 Winter, “Sozialisierung in Hessen 1946–1955,” 166.

146 Heiden, *Sozialisierungspolitik in Hessen 1946–1967*, 146.

state-private or municipal-private conglomerates such as RWE and Preag, which hijacked the discourse on “public ownership” to serve corporate interests. In retrospect, they reveal a paradox of municipal socialism: while it succeeded in establishing well-functioning municipal utilities during the 1920s, it entered into public-private partnerships amidst the cutthroat competition of the electricity market. Instead of creating islands of public-sector enterprises to serve as models, private capital colonized the logic of public-sector enterprises. This colonization contributed to the failure of the Hessian socialization effort.

Even today, municipalities still hold over 20 percent of RWE’s capital. For several years now, the corporation has faced demands for socialization from the “Expropriate RWE & Co.” campaign. The problem of socializing mixed municipal-private conglomerates is thus once again a pressing issue, even though the socialization of municipal property has not (yet) been a topic in the public debate.

6.3. The Electricity and Gas Sectors – Transnational, But Not European

The expansion plans and calls for rationalization put forth by the major electric companies and their engineers (see section 3.2) had never been limited by national borders. As early as the first half of the century, engineers were discussing a large-scale, integrated European electricity grid; there were even vague proposals for a connection between Europe and North Africa.¹⁴⁷ However, these visions had no prospect of being realized, as they already presupposed the trust and cooperation they sought to foster. Instead, European grid integration emerged gradually after World War I through the interconnection of existing national systems and the gradual harmonization of technical standards such as voltage levels, frequencies, and operating rules.¹⁴⁸

This trend intensified after World War II with the support of the Marshall Plan, yet it unfolded largely outside the formal institutions of the European Community.¹⁴⁹ European energy companies and state-owned electricity utilities increasingly began linking their grids across national borders. The expansion of cross-border high-voltage transmission lines made it possible to balance peak loads between different countries, utilize power plant capacity more efficiently, and increase the stability of the electricity supply. This technical cooperation was a key prerequisite for the subsequent development of integrated European energy markets. The development of the European interconnected grid was driven primarily by technical experts, engineers, and energy supply companies.¹⁵⁰ Pivotal roles were played, among others, by transnational professional organizations such as the *Union pour la Co-ordination de la Production et du Transport de l’Électricité* (UCPTE) and the *Union Internationale des Producteurs et Distributeurs d’Énergie Électrique* (UNIPED), which developed technical standards and coordinated exchanges between national electric companies.¹⁵¹

147 Vincent Lagendijk, *Electrifying Europe: The Power of Europe in the Construction of Electricity Networks* (Amsterdam University Press, 2008), 96 ff.; Erik van der Vleuten and Arne Kaijser, “Networking Europe,” in: *History and Technology* 21, no. 1 (2005), 34 f.

148 Lagendijk, *Electrifying Europe*, 157 f.

149 Ibid., 121 f.

150 Ibid., 217 f.

151 Ibid.

As part of the Treaty of Rome, a second European “Community” was established in 1957 with a mandate focused on energy—and electricity in particular: the European Atomic Energy Community (Euratom). The purpose of this atomic community was the joint development, distribution, and marketing of Europe’s nuclear energy resources, as well as the strengthening of its international competitiveness. In Monnet’s view, the development of productive forces in the energy sector was also intended to facilitate political integration. In this sense, however, Euratom can be described as a “failed community,” as it was unable to closely integrate the nuclear industries of its member states.¹⁵² The two largest countries, Germany and France, held differing views on the extent to which the state should guide nuclear industrial policy. The German and French nuclear industries pursued divergent paths in the 1960s, each developing their own distinct types of power plants and organizing their cooperation outside of Euratom.¹⁵³ By the time of the Chernobyl reactor accident, if not before, there was no longer a European consensus on the use of nuclear energy.

Like the electricity sector, gas infrastructure did not develop strictly in line with European institutions in the postwar period. The gas industry had historically emerged from the local marketing of a byproduct of coal and oil extraction. It was not until the second half of the twentieth century that gas came to be treated as an energy source in its own right—one that was actively explored and could be transported over long distances; the liquefaction of gas made its commodification even easier beginning in the 1970s. Beginning in the 1960s, some European countries—notably Austria, Italy, and Germany—began to establish long-term energy relationships with the Soviet Union. The goal of these partnerships was to reduce dependence on the Middle East and U.S. oil companies, as well as to secure affordable sources of gas and oil for domestic industry. Furthermore, gas was considered a clean energy source, as its combustion does not produce sulfur dioxide, which causes acid rain.

Against this backdrop, the first cross-border pipeline projects between East and West emerged: between 1968 and 1970, Italy, Austria, and Germany sig-

ned gas supply contracts with the Soviet Union, and other European countries followed suit. As a result, some Western European countries were connected to the gas networks of socialist countries earlier than they were to those of other Western European nations.¹⁵⁴ Indirectly, however, the connection to socialist gas networks also led to the accelerated expansion of Western European infrastructure: since Soviet gas was considered “politically unreliable,” its import was accompanied by the construction of “emergency connections” to the West.

Given their differing energy balances and energy sector structures, stakeholders in Austria, Italy, and Germany each had their own reasons for seeking cooperation with the socialist countries. Italy had possessed a state-owned national oil company since 1926, intended to secure access to fuels for the coal-poor country and to limit the control of multinational oil companies over the Italian market. After the war, this company was renamed *Ente nazionali idrocarburi* (Eni) and, under this name, continued to pursue an independent oil policy that sought out sources not controlled by the Seven Sisters. As early as the 1950s, Eni was sourcing inexpensive oil from the Soviet Union; in the 1960s, a series of agreements were concluded in which loans and industrial goods were exchanged for gas supplies.¹⁵⁵ In Italy, the rapprochement with the Soviet Union thus took place against the backdrop of the country’s own limited fuel reserves and an attempt to break free from dependence on multinational corporations.

In Austria, by contrast, a distinct, albeit small, oil and gas industry existed, with the state holding a monopoly on extraction, exercised through the *Österreichischen Mineralölverwaltung* (ÖMV). It was precisely the municipal and regional consumers served by this monopoly—IOGAS, Wiener Stadtwerke, and Steirische Ferngas—who were interested in tapping into alternative sources of supply and, in the 1960s, began considering the import of Dutch or Algerian gas. In contrast, the ÖMV, whose facilities were concentrated in eastern Austria, developed an import strategy focused on socialist countries. These imports were all the more important for the company as Austrian gas reserves were showing signs of depletion. Central to

152 Peter R. Weilemann, *Die Anfänge der Europäischen Atomgemeinschaft: zur Gründungsgeschichte von EURATOM 1955–1957*, 1st edition (Nomos-Verlagsgesellschaft, 1983), 157.

153 Maria Padovan, “A Missed Integration? Euratom, France, Italy and Industrial Nuclear Ambitions (1957–73)” (PhD diss., University of Rome Tor Vergata, 2025), 237.

154 Per Högselius, *Red Gas: Russia and the Origins of European Energy Dependence* (Palgrave Macmillan, 2013), 3.

155 Silvio Labbate, “Italy and Soviet Gas: The History of a Dependence (1960–1984),” in: *Cold War History*, 14, January 2026, 2, <https://doi.org/10.1080/14682745.2025.2529254>.

the political support for these plans, however, was also the nationalized steel industry, which feared for its markets amid the tension between the European single market and socialist economic integration, and hoped to secure a major pipeline contract.¹⁵⁶

In Germany, negotiations regarding Soviet gas supplies began later and were driven primarily by government actors, particularly the SPD under Willy Brandt. In Bavaria, Bayerngas—a purchasing consortium of municipal utilities—had long signaled its interest in imports from socialist countries. The German steel industry had long been involved in East-West trade through the supply of steel pipes: it was supposed to have supplied the pipes for the Druzhba Pipeline, a project of the Warsaw Pact states that was, however, boycotted by NATO under U.S. pressure. An elegant solution was subsequently found for the Austrian-Soviet pipeline contract involving the Austrian re-export of German pipes.¹⁵⁷ Germany's leading gas company—Ruhrgas,¹⁵⁸ and in particular its minority shareholders Shell and Esso (Exxon)—reacted cautiously to the possibility of Soviet gas imports. Yet even though the agreement was initially concluded solely for political reasons, the gas suppliers quickly proved profitable for German industry, including the gas industry itself, as suppliers were pitted against one another, driving down prices.¹⁵⁹

On the Soviet side, closer cooperation with the West and the massive export of raw materials were no less controversial. The need for foreign currency had shaped export policy since the early days of the Soviet Union. In doing so, the Soviet Union sought to counteract the risk of "dependent development" by investing in the targeted development of individual sectors. The Soviet Union could not develop its Siberian oil and gas resources on its own; to do so, it also needed capital, technology, and expertise from other socialist (in the case of the Druzhba pipeline) or Western European states. Moreover, the strategy of transporting resources over such vast distances represented a shift in the Soviet Union's energy policy paradigm, which had long promoted regional energy

self-sufficiency.¹⁶⁰ Not least, Soviet planners pointed out that "optimizing" the domestic energy balance—that is, energy planning based on intra-Soviet considerations—would be complicated by linkage to world market prices. The Soviet leadership was also aware that trade in pipeline gas involved long-term relationships that could be politically risky. However, against the backdrop of détente, rising global oil prices in the 1960s, and increasing domestic demand in the western regions of the Soviet Union, the extraction of Siberian resources and the construction of a pipeline network appeared increasingly attractive.¹⁶¹

156 Högselius, *Red Gas*, 50.

157 *Ibid.*, 52.

158 Ruhrgas was founded in the 1920s as a subsidiary of the Stinnes Group to transport coal gas.

159 Högselius, *Red Gas*, 130.

160 Felix Frey, *Arktischer Heizraum: Das Energiesystem Kola zwischen Regionaler Autarkie und gesamtstaatlicher Verflechtung 1928–1974* (Bohlau Verlag GmbH, 2019), 16–18.

161 Perović, *Rohstoffmacht Russland*, 113–130; Dunja Krempin, *Die sibirische Wucht: Der Aufstieg der Sowjetunion zur globalen Gasmacht, 1964–1982*, 1st edition (Böhlau Verlag, 2020), <https://doi.org/10.7788/9783412519322>; Högselius, *Red Gas*, 133.

6.4. The Founding of OPEC and the Oil Crises of the 1970s

The history of East-West relations in the European energy sector cannot be understood without considering the changes in the global oil industry. In the early 1970s, most Western European nations were heavily dependent on energy imports. In 1973, oil accounted for approximately 63 percent of Western Europe's energy needs, with about 45 percent of that oil imported from Arab countries.¹⁶² Oil was considered inexpensive and abundantly available. In Germany, more than half of energy consumption was met by oil,¹⁶³ while in the United Kingdom, this share was about 44 percent.¹⁶⁴ Denmark, too, met nearly all of its energy demand through imports: 92 percent of the country's total energy consumption (TEC) was based on the use of oil, of which, in turn, about 90 percent came from the Middle East.¹⁶⁵ While European economies fueled their growth with cheap oil and gas and sold their products at rising prices on the world market, the prices of raw materials had barely increased since World War II.

In the oil sector, raw material producers in the Global South succeeded in securing a larger share of value generated. Since the 1950s, multinational oil companies have gradually lost control over oil production in the Middle East, Venezuela, and North Africa. The shift in the balance of power between the *oil majors* and producing countries—and the latter's ability to demand a larger share of so-called oil rents—became evident in the revised *profit-sharing agreements*: while a 50:50 profit-sharing ratio was common in the late 1950s, this was superseded in the 1960s by contracts that granted producing countries 75 percent of

the profits.¹⁶⁶ At the initiative of Venezuela and Saudi Arabia, some of the largest oil-exporting countries founded the *Organization of the Petroleum Exporting Countries* (OPEC) in 1960.¹⁶⁷ OPEC modeled itself after earlier production cartels, particularly the *Texas Railroad Commission*, which regulated the Texas oil industry. In the years that followed, OPEC sought to maintain the price of oil at a level attractive to exporting countries by setting production quotas. This successful economic coordination among countries of the Global South—whose oil industries originated in the colonial or mandate eras or were based on highly asymmetrical contracts—was central not only to the oil industry but also to the decolonization movement and calls for a new, more equitable world economic order.¹⁶⁸

OPEC provides an important context for the 1973 oil crisis, though it was not its cause. Since the 1960s, OPEC members had coordinated production quotas and prices without the situation noticeably deteriorating for consumers. In 1973, OPEC discussed further price increases to respond to the inflation of the dollar following the collapse of the Bretton Woods Agreement.¹⁶⁹ Independently, the Arab members of OPEC (OAPEC) began imposing an embargo against the United States and European supporters of Israel in response to U.S. support for Israel during the Yom Kippur War.¹⁷⁰ It was only in the context of a sharp rise in European demand driven by economic growth, coupled with stagnant commodity prices and OPEC's ability to at least partially assert the interests of producer countries, that these two events—the

162 Hanns W. Maull, "Oil and Influence: The Oil Weapon Examined: Introduction," in: *The Adelphi Papers* 15, no. 117 (1975), 5, <https://doi.org/10.1080/05679327508448403>; Jonas Kreienbaum, *Das Öl und der Kampf um eine neue Weltwirtschaftsordnung: Die Bedeutung der Ölkrisen der 1970er Jahre für die Nord-Süd-Beziehungen* (Berlin: Walter de Gruyter GmbH & Co. KG, 2022), 79.

163 Gross, *Energy and Power*, 96.

164 Central Intelligence Agency, "Intelligence Memorandum – North Sea Oil: Implications for Britain in the Seventies" (Washington DC, 1972), <https://www.cia.gov/readingroom/docs/CIA-RDP85T00875R001700040041-1.pdf>.

165 Mogens Rüdiger, "The 1973 Oil Crisis and the Designing of Danish Energy Policy," in: *Historical Social Research* 39, no. 4 (2014): 99.

166 This was also an explicit strategy by Eni's chairman—Enrico Mattei—to secure access to oil in competition with multinational corporations; see Hanieh, *Crude Capitalism*, 115.

167 Giuliano Garavini, "Completing Decolonization: The 1973 'Oil Shock' and the Struggle for Economic Rights," in: *The International History Review* 33, no. 3 (2011): 474–479, <https://doi.org/10.1080/07075332.2011.595593>.

168 Giuliano Garavini, "From Boumediensomics to Reaganomics: Algeria, OPEC, and the International Struggle for Economic Equality," in: *Humanity: An International Journal of Human Rights, Humanitarianism, and Development* 6, no. 1 (2015): 79–92, <https://doi.org/10.1353/hum.2015.0004>; Jonas Kreienbaum, *Das Öl und der Kampf um eine Neue Weltwirtschaftsordnung: Die Bedeutung der Ölkrisen der 1970er Jahre für die Nord-Süd-Beziehungen* (De Gruyter, 2022), <https://doi.org/10.1515/9783110770001>; Christopher R. W. Dietrich, *Oil Revolution: Sovereign Rights and the Economic Culture of Decolonization, 1945 to 1979* (Cambridge University Press, 2017).

169 Garavini, "Completing Decolonization," 479.

170 Garavini, *The Rise and Fall of OPEC in the Twentieth Century* (Oxford University Press, 2019), 217.

price increase and the embargo—were able to create a relative scarcity.¹⁷¹ In response to the embargo, the benchmark price for Arab “Light Crude Oil” rose from \$3.29 per barrel in 1973 to \$11.58 in 1974.¹⁷² Following the second oil crisis of 1979, triggered by the Iranian Revolution, the price of oil rose from \$14.02 to \$36.06 per barrel.¹⁷³

Thus began, in the 1970s, the most massive global redistribution of wealth ever to take place without war—specifically, from the Global North to the oil-producing countries of the Global South.¹⁷⁴ To avoid jeopardizing the dollar’s dominance, the U.S. negotiated with Saudi Arabia as early as 1974 to ensure that OPEC oil reserves would be traded in dollars and that petrodollars—the profits from oil—would be invested in U.S. Treasury bonds on favorable terms. However, petrodollars also flowed into Europe’s increasingly liberalized financial system, into arms imports, and as loans to other countries in the Global South.¹⁷⁵ In Europe, of course, the two oil crises of the 1970s are remembered quite differently: as a shock that exposed the dependence of European energy economies and as the beginning of globalization, which ushered in Europe’s relative economic decline.

6.5. European Responses to the Oil Crises of 1973 and 1979

In response to the first oil crisis of 1973, the European Council adopted a new energy policy strategy in 1974. This involved the adoption of two directives intended to limit the expansion of electricity generation based on petroleum products and natural gas; the first of these directives remains in effect.¹⁷⁶ In retrospect, this fuel substitution policy was successful to a certain extent: within ten years, imports from countries outside the EEC were cut in half—partly due to the expansion of the oil and gas industry in the North Sea—and the energy intensity of industrial production fell by 20 percent.¹⁷⁷ However, most contemporary analyses viewed the development of a pan-European response to the oil crisis as a failure. Even before the crisis, efforts to establish a common EEC oil strategy ran up against divergent national interests: the United Kingdom and the Netherlands—as the home countries of two oil majors, BP and Royal Dutch Shell respectively—rejected interference in corporate pricing policies, while France and the United Kingdom, due to their ties with the Middle East, preferred bilateral negotiations with OPEC countries.¹⁷⁸ After the embargo took effect, the United Kingdom, Spain, and Belgium imposed an export ban on refined petroleum products to stabilize their domestic economies.¹⁷⁹ Overall, such divergent national energy and pricing policies prevented a coordinated European response. Although the *International Energy Agency* (IEA) was founded in 1974 as an organization intended to represent the interests of oil-consuming countries, this response came too late to cushion the immediate impact within the respective countries.¹⁸⁰

In Germany, the federal government sought to counter the effects of the crisis primarily by regula-

171 Sampson, *The Seven Sisters*, 252.

172 Ian Skeet, *OPEC: Twenty-Five Years of Prices and Politics* (Cambridge: Cambridge University Press, 1988), 99 ff.

173 Garavini, *The Rise and Fall of OPEC*, 222.

174 Terry Lynn Karl, “The Perils of the Petro-State: Reflections on the Paradox of Plenty,” in: *Journal of International Affairs* 53, no. 1 (1999), 31.

175 Hanieh, *Carbon Capitalism*, 182–192; David E. Spiro, *The Hidden Hand of American Hegemony: Petrodollar Recycling and International Markets* (Cornell University Press, 1999), 112–122; David M. Wight, *Oil Money: Middle East Petrodollars and the Transformation of US Empire, 1967–1988* (Cornell University Press, 2021).

176 No. 75/405/EWG (1975) and No. 75/404/EWG (1975).

177 Atle Midttun, “Electricity Policy Within the European Union: One Step Forward, Two Steps Back,” in: *European Electricity Systems in Transition: A Comparative Analysis of Policy and Regulation in Western Europe*, ed. Atle Midttun (Amsterdam: Elsevier, 1997), 244 f. (ebook).

178 Elisabetta Bini, Giuliano Garavini and Federico Romero (eds.), *Oil Shock: The 1973 Crisis and Its Economic Legacy* (London: Bloomsbury Publishing, 2016), 150ff.; Gross, *Energy and Power*, 131 f.

179 Ibid.; Henning Türk (2014) “The Oil Crisis of 1973 as a Challenge to Multilateral Energy Cooperation among Western Industrialized Countries,” in: *Historical Social Research* 39(4), 225 f.

180 Henning Türk, “The Oil Crisis of 1973,” 225 f.

ting oil consumption and investing in alternative energy sources such as natural gas, nuclear power, and coal.¹⁸¹ As a result, an alliance formed among proponents of the nuclear and coal industries, a coalition that would continue to shape German politics well into the 1980s.¹⁸² During the crisis, Germany experienced a sharper decline in oil supplies than most other Western European countries.¹⁸³ The SPD government under Willy Brandt viewed this as a serious threat to German industrial output and security of supply, but also as an opportunity to realign energy policy: the party's left wing in particular, as well as younger delegates, saw the crisis as a chance for sweeping structural reforms, such as comprehensive price controls and the nationalization of international corporations.¹⁸⁴

On November 9, 1973, a law was passed to secure the energy supply, providing the legal basis for far-reaching state intervention in the energy sector, including the authority to set price caps on energy.¹⁸⁵ In practice, however, the federal government made little use of these powers, focusing instead primarily on measures to manage consumption and coordinate efforts, such as speed limits, the famous Sunday driving bans, and the establishment of a clearinghouse for petroleum.¹⁸⁶ Consequently, Germany was the only Western European country that did not impose state controls on oil prices. Oil companies were not subject to any limits on the prices they could charge German consumers and were therefore able, throughout the crisis, to purchase oil on the Rotterdam spot market, outbid companies from other countries, and sell the oil at a profit in West Germany.¹⁸⁷ As a result, prices in the Federal Republic rose dramatically, yet the oil supply remained secure throughout the crisis. German economic growth remained positive in the first quarter of 1974, whereas it declined in the United States, the United Kingdom, and the OECD as a whole.¹⁸⁸

In addition to capping oil prices and entering into bilateral agreements, France pursued a consistent energy transition: with the Messmer Plan of 1974, the government responded to the oil crisis by pushing for a rapid and comprehensive expansion of nuclear power. Through loan guarantees and public funds, the state-owned energy provider *Électricité de France* (EDF) was able to make major investments in nuclear power plants.¹⁸⁹ Within a decade, EDF ordered 51 reactors, causing the share of nuclear power in electricity generation to rise from 8 percent in 1973 to 80 percent in 1990, while the share of fossil fuels declined from 65 percent to 7 percent.¹⁹⁰ The implementation of this program relied heavily on the state-centered structure of the French energy system. Elites from the technical civil service corps drove the nuclear program forward within ministries as well as in leadership positions at central institutions such as EDF and the *Commissariat à l'énergie atomique et aux énergies alternatives* (CEA).¹⁹¹ The state held majority stakes in key companies such as EDF, Framatome (a reactor manufacturer), and the nuclear energy company *Compagnie Générale des Matières Nucléaires* (COGEMA), and coordinated research and development through the CEA.¹⁹² This was complemented by strong state control over the banking system, which served as a central steering mechanism.¹⁹³ Public bodies specifically granted loans, preferential interest rates, and guarantees to strategically important industries, thereby directing investment toward the nuclear sector.¹⁹⁴ Overall, this facilitated a technocratic and state-centered crisis policy that differed significantly from the strategies adopted in Germany.

As in France, the oil crisis also ushered in a comprehensive, state-led project for energy independence

181 Michael T. Hatch, *Politics and Nuclear Power: Energy Policy in Western Europe* (Lexington: University Press of Kentucky, 2014), 42 f.; Kreienbaum, *Das Öl und der Kampf um eine neue Weltwirtschaftsordnung*, 83.

182 Gross, *Energy and Power*, 150 f.

183 Hatch, *Politics and Nuclear Power*, 38 ff.

184 Gross, *Energy and Power*, 129.

185 Hatch, *Politics and Nuclear Power*, 39.

186 Ibid.; Kreienbaum, *Das Öl und der Kampf um eine neue Weltwirtschaftsordnung*, 84 f.

187 Gross, *Energy and Power*, 147 ff.

188 Ibid.

189 John L. Campbell, *Collapse of an Industry: Nuclear Power and the Contradictions of US Policy* (Ithaca, NY: Cornell University Press, 1988), 146 f.

190 Julius J. Andersson and Jared J. Finnegan, "Industrial Policy and Decarbonization: The Case of Nuclear Energy in France" (Working paper, Stockholm School of Economics, 2024), 2.

191 Campbell, *Collapse of an Industry*, 145 f.; Finon, Dominique, and Carine Staropoli, "Institutional and Technological Co-evolution in the French Electronuclear Industry," in: *Industry and Innovation* 8, no. 2 (2001), 185.

192 Ibid.; Andersson und Finnegan, "Industrial Policy and Decarbonization," 28.

193 Campbell, *Collapse of an Industry*, 146.

194 Ibid.; Lönnroth, Måns and William Walker, "Nuclear Energy in Western Europe," in: *Energy*, 9, no. 9–10 (1984), 825 f.

in Denmark, which continues to shape Danish energy policy to this day. After oil and gas fields were discovered in the North Sea in the 1960s, Denmark began building its own oil industry as early as 1972. With the founding of the state-owned company *Dansk Olie og Naturgas A/S* (Dong, now Ørsted), the foundation was also laid for state-run natural gas extraction in the Baltic Sea.¹⁹⁵ In the short term, the government responded to the oil crisis in a manner similar to that in Germany: with measures to reduce oil consumption, including speed limits and car-free Sundays.¹⁹⁶ However, with the establishment of the Danish Energy Agency and the Ministry of Energy, as well as the adoption of the first energy plan in 1976, Denmark also laid the institutional foundation during this period for its energy policy, which to this day remains strongly characterized by elements of state planning. The primary goal of the initial energy plan was to reduce dependence on imports. However, other objectives were also established, such as greater diversification of fuel sources, promotion of energy efficiency, and a reduction in total national energy consumption.¹⁹⁷ Key to achieving these goals were, above all, projects for large-scale district heating infrastructure, the utilization of unused waste heat from industry, the integration of combined heat and power (CHP) plants into the energy system, the expansion of cooperative models, and the use of locally available renewable energy sources.¹⁹⁸ To support these efforts, the government introduced a tax on heating oil in 1977, increased it in 1985 despite falling oil prices, and, starting in 1981, provided targeted subsidies for alternative heating technologies such as heat pumps.¹⁹⁹ These policies ultimately led to a ban on oil and gas heating systems for new and existing buildings in 2013 and 2016, respectively.²⁰⁰ Overall, as a result of the oil crisis, Den-

mark laid the structural and political foundations for its current pioneering role in the field of decarbonization.²⁰¹

195 Katinka Johansen, "A Brief History of District Heating and Combined Heat and Power in Denmark: Promoting Energy Efficiency, Fuel Diversification, and Energy Flexibility," in: *Energies* 15, no. 24 (2022), 7.

196 Ibid.

197 Manuel Frondel, "So geht Wärmewende! Das Beispiel Dänemark" (Initiative Neue Soziale Marktwirtschaft, 2024), <https://www.insm.de/aktuelles/oekonomenblog/so-geht-waerme-wende-das-beispiel-daenemark>.

198 Johansson, "A Brief History of District Heating," 8.

199 Frondel, "So geht Wärmewende! Das Beispiel Dänemark."

200 Ibid.

201 Among IEA countries, Denmark has the highest share of renewable energy in its electricity mix; it accounts for more than 80 percent. Coal has been virtually eliminated from the Danish district heating sector, which contributes to Denmark's overall energy supply having a lower dependence on fossil fuels than the IEA average. In addition, Denmark has committed to phasing out the production of fossil fuels (including gas and oil) by 2050; see: *International Energy Agency* (IEA), "Denmark," 2026, <https://www.iea.org/countries/denmark>.

6.6. The Origins of European Environmental Policy and the Anti-Nuclear Movement

The ecological consequences of intensive energy production did not remain hidden for long. In 1962, American biologist Rachel Carson described in her book *Silent Spring* the deaths of birds whose fatty tissue had absorbed the insecticide DDT, thereby sparking a wave of environmental activism in the United States. This movement soon spread to Europe as well.²⁰² In the 1960s, environmental policy in Europe focused primarily on the effects of coal mining. In West Germany, the Ruhr region was particularly affected, suffering from air and water pollution caused by coal, steel production, and mining. Coal production made smog a pervasive problem and led, for the first time, to bipartisan measures for air pollution control.²⁰³ As early as 1961, Willy Brandt, then still mayor of Berlin, declared, "[t]he sky over the Ruhr region must turn blue again."²⁰⁴

In the late 1960s, the first citizens' initiatives emerged, targeting industrial environmental pollution and establishing new forms of civil society protest.²⁰⁵ Subsequently, following the change in government in 1969, the SPD-FDP coalition addressed the issue for the first time and made environmental protection a central policy area.²⁰⁶ "Acid rain" also led to intense political and scientific debates about air pollution in both Germany and the United Kingdom during the 1970s and 1980s.²⁰⁷ In Germany, the consequences for the forests—"forest dieback"—came particularly to the fore: visible damage to forests was seen as a dramatic sign of environmental pollution and, in the

long term, led to stricter regulation of industrial emissions.²⁰⁸

In the late 1970s, West Germany also experienced strong political mobilization against the expansion of nuclear energy. People were concerned about reactor safety, the long-term consequences of radiation, and the unresolved issue of final disposal of nuclear waste. Furthermore, they criticized the lack of democratic participation in far-reaching technology policy decisions. On February 18, 1975, farmers, winegrowers, and students gathered in Wyhl, Baden-Württemberg, to protest the construction of a nuclear power plant. This protest is widely regarded as the birth of the German anti-nuclear movement. The police clearance of the site using water cannons and canine units drew nationwide attention. Shortly thereafter, a similar event took place in Brokdorf, Schleswig-Holstein. After the construction of a nuclear power plant was approved there, several thousand people attempted to occupy the site, but were driven off by police. Two weeks later, on November 13, 1976, over twenty thousand demonstrators once again flooded the site, leading to violent clashes.²⁰⁹ The press referred to the "Battle of Brokdorf" and described conditions as resembling a civil war; dozens were injured during the protests.²¹⁰ By early 1977, these protests spread to other reactor sites. Mass demonstrations followed in Germany and France, and the Europe-wide campaign *Atomkraft? Nein danke* was launched.

In 1980, the anti-nuclear movement gave rise to the first environmental political party in West Germany, *the Greens*. The Federal Republic of Germany thus became the first major industrialized nation in which an environmental party gained prominence.²¹¹ The Greens tapped into growing fears of ecological destruction and "technology gone awry" and linked these concerns discursively to the history of German

202 Ivo Engels, "Modern Environmentalism," in: *The Turning Points of Environmental History*, ed. Frank Uekötter (Pittsburgh, PA: University of Pittsburgh Press, 2010), 120 ff.

203 Gross, *Energy and Power*, 158.

204 Sozialdemokratische Partei Deutschlands (SPD), "Blauer Himmel über der Ruhr," 2026, <https://www.spd.de/160-jahre/1961-blauer-himmel-ueber-der-ruhr>

205 Horst Mewes, "A Brief History of the German Green Party," in: *The German Greens: Paradox Between Movement and Party*, ed. Margit Mayer and John Ely (Philadelphia: Temple University Press, 1998), 31 f.; Engels, "Modern Environmentalism," 120 ff.

206 Gross, *Energy and Power*, 162.

207 Engels, "Modern Environmentalism," 128 f.; Roland Schäfer, "Lamettasyndrom und Säuresteppe: Das Waldsterben und die Forstwissenschaften 1979–2007," in: *Schriften aus dem Institut für Forstökonomie*, no. 34 (Freiburg i. Br.: Albert-Ludwigs-Universität Freiburg, Institut für Forstökonomie, 2012), 11 ff.; Maarten. A. Hajer, "Argumentative Diskursanalyse. Auf der Suche nach Koalitionen, Praktiken und Bedeutung," in: *Handbuch Sozialwissenschaftliche Diskursanalyse*, ed. Keller et al. (Wiesbaden: VS Verlag, 2004), 271 f.

208 Schäfer, "Lamettasyndrom und Säuresteppe," 11 ff.

209 Norddeutscher Rundfunk (NDR), "Dem Verbot zum Trotz: Großdemo gegen AKW Brokdorf 1981," NDR Geschichte, 28. February 2026, <https://www.ndr.de/geschichte/schauplaetze/dem-verbot-zum-trotz-grossdemo-gegen-akw-brokdorf-1981,brokdorfdemonstration101.html>.

210 Ibid.

211 Margit Mayer and John Ely (eds.), *The German Greens: Paradox Between Movement and Party* (Philadelphia: Temple University Press, 1998), 3 ff.; Eckhard Müller-Rommel, *Grüne Parteien in Westeuropa: Entwicklungsphasen und Erfolgsbedingungen* (Opladen: Leske + Budrich, 1993).

National Socialism.²¹² Nuclear energy was equated with the kind of authoritarian, centralized state policy practiced under National Socialism.²¹³ In contrast, the Greens saw the promotion of renewable energy as a promise for a decentralized, democratic energy policy. Although new energy policies were also discussed in the United States, the United Kingdom, and France in the 1970s, it was only in the Federal Republic of Germany that a political force emerged to represent these views at the national level.

France also experienced significant anti-nuclear protests in 1977. However, the centralized nature of the French state allowed nuclear energy policy to be imposed from above, despite growing local protests.²¹⁴ Furthermore, a large part of the political left supported nuclear power during the 1970s, as the technology—and above all the non-civilian nuclear program—was viewed as an important prerequisite for French independence from the United States.²¹⁵

Following the 1986 Chernobyl nuclear accident, debates of varying intensity arose across Europe regarding the future role of nuclear power.²¹⁶ The reaction was particularly strong in Germany, where a robust anti-nuclear movement already existed and, at that time, the first Green Party environment minister was in office in Hesse. Political and social resistance to the use of nuclear power was also evident in other countries. In Italy, citizens voted in a November 1987 referendum to phase out nuclear energy.²¹⁷ In Switzerland, meanwhile, voters approved a ten-year moratorium on the construction of new nuclear power plants in September 1990.²¹⁸ Opinion polls conducted by the European Community indicate that the Chernobyl disaster had an impact on public perception even in France. In 1986, 49 percent of respondents considered the use of nuclear power to entail unacceptable risks, while 47 percent supported its continued de-

velopment.²¹⁹ At the very latest since the 2011 reactor disaster in Fukushima, Japan, there has been no unified consensus in Europe regarding the use of nuclear power.

212 Gross, *Energy and Power*, 157 ff.

213 Ibid.; Mewes, *A Brief History of the German Green Party*, 31.

214 Gross, *Energy and Power*, 168 f.

215 Ibid.

216 Astrid Sahm, "Atomenergie in Ost- und Westeuropa: Reaktionen auf Tschernobyl und Fukushima," in: *Osteuropa* (2013): 106 f.

217 Frank Rehmet, "Direkte Demokratie und Atomenergie," *Mehr Demokratie e. V., Diskussionspapiere und Untersuchungen*, no. 11 (2002), <https://www.mehr-demokratie.de/fileadmin/pdf/du11-atomenergie.pdf>.

218 Ibid.

219 Sahm, "Atomenergie in Ost- und Westeuropa," 107



7

The Liberal Restructuring of the EU Energy Industries from 1980 to the Present

by Solveig Degen und Daniela Russ

Today, Europe is considered a prime example of liberalized electricity markets. The profound restructuring of Western Europe's energy supply since the 1980s, which paved the way for this model, was a protracted political process that permanently altered the relationship between the European Union, its member states, and national energy systems. Early European cooperation in the coal and steel industries did not simply carry over into other sectors. For most of the twentieth century, vertically integrated energy companies (more or less) operated as natural monopolies within clearly defined service areas in the electricity and gas sectors.²²⁰ Competition in network-based industries was long regarded as "anachronistic": a relic of the prewar era when the electricity industry consisted of numerous small, uncoordinated companies whose competition had led to duplicate structures and inefficiencies (see chapter 2).²²¹ However,

a paradigm shift began around 1980: driven by the global rise of neoliberal ideas, the question came to the forefront of whether network industries such as electricity and gas supply could not also be organized on a competitive basis.²²² Pioneering projects in Chile, Argentina, the United States, the United Kingdom, and Scandinavian countries demonstrated early models of market-based energy supply that combined state regulation with institutional reforms.²²³ Toward the end of the 1990s, the European Union also made the market-oriented restructuring of energy markets a central element of single market integration.

Political and economic debates frequently refer to the "liberalization" of energy markets. However, this term is only partially accurate since the introduction of energy markets required extensive government intervention as well as complex regulatory frameworks. It is therefore less a matter of "liberating" the energy

220 Holley H. Ulbrich, "Natural Monopoly in Principles Textbooks: A Pedagogical Note," in: *The Journal of Economic Education* 22, no. 2 (Spring 1991), 179 f.; Susanne K. Schmidt, *Liberalisierung in Europa: Die Rolle der Europäischen Kommission* (Frankfurt am Main: Campus, 1998), 184 f.

221 Canay Özden-Schilling, *The Current Economy: Electricity Markets and Techno-Economics* (Stanford University Press, 2021), 2 f.; Brett Christophers, *The Price Is Wrong: Why Capitalism Won't Save the Planet* (London: Verso Books, 2024), 44.

222 Richard F. Hirsh, *Power Loss: the Origins of Deregulation and Restructuring in the American Electric Utility System* (MIT Press, 1999); Özden-Schilling, *The Current Economy*, 2 ff.; Tooraj Jamasb and Michael Pollitt, "Electricity Market Reform in the European Union: Review of Progress Toward Liberalization & Integration," in: *The Energy Journal* 26, no. 1 (2005): 11 ff.

223 Jamasb and Pollitt, "Electricity market Reform in the European Union," 15

sector from state control than a reorganization of government oversight through the targeted creation of markets—in short, a liberal restructuring.²²⁴ This re-regulation encompasses four interrelated processes: (1) unbundling, (2) privatization, (3) marketization, and (4) de-monopolization. Additionally, the increasing (5) financialization of energy infrastructures can also be understood as part of liberal restructuring. Analytically, these processes can be distinguished from one another; in practice, however, they are closely intertwined.

Unbundling refers to the organizational and legal separation of different stages of the energy value chain—that is, the separation of power generation, transmission, and distribution—or the dismantling of vertical integration.²²⁵ Privatization denotes the transfer of public assets or enterprises into private ownership. In the 1980s and 1990s, it was a central component of economic reform programs that claimed profit-maximizing companies were more efficient, more innovative, and ultimately achieved better outcomes for consumers.²²⁶ Marketization, by contrast, describes the shift from political allocation decisions to market decisions. Instead of a body comprising industry and political representatives setting prices and making investment decisions, the price and distribution of energy are to result from the decentralized decisions of market actors.²²⁷ Marketization represents the central ideological driving force behind liberal restructuring. The fundamental assumption is

that, in competition among energy producers, those making more efficient production decisions will prevail; thus, competition leads to lower long-term costs and reduced consumer prices. Marketization in the energy sector generally presupposes unbundling, since competition can take place primarily at the level of power generation and, to a limited extent, in distribution. It is important to note, however, that marketization does not necessarily require privatization or full competition, as state-owned enterprises can also operate for profit, just as markets can exist even under monopolistic conditions.²²⁸ De-monopolization refers to the dismantling or splitting up of existing monopoly structures and the admission of multiple market players within a sector. This process is closely linked to marketization but is not a mandatory prerequisite. In some countries, reform policies initially led to a significant increase in the number of market participants—and subsequently to renewed concentration.²²⁹

224 The fact that energy markets do not emerge “naturally” but must be institutionally created is also recognized in regulatory practice. For example, Mark Christie, Commissioner of the U.S. Federal Energy Regulatory Commission, recently remarked that electricity markets “despite their name [...] are never true markets, but rather administrative constructs with some market characteristics,” as quoted in Christophers, *The Price Is Wrong*, 37.

225 Unbundling is considered the most widespread reform measure in the electricity sector worldwide, particularly in the countries of the Global North. Even in state-capitalist energy systems such as those in China or India, generation and transmission have now been organizationally separated, even though the resulting companies remain majority state-owned, see Vivien Foster, Samantha Witte, Sudeshna Ghosh Banerjee, and Alejandro Moreno, “Charting the Diffusion of Power Sector Reforms across the Developing World” (Policy Research Working Paper WPS8235, World Bank Group, 2017), 13–16.

226 Christophers, *The Price Is Wrong*, 55.

227 Ibid., 59. Under the previously dominant structure of vertically integrated monopolies—so the argument of liberal reformers—utility companies could, in effect, set prices largely at will despite state price commissions. Competition, on the other hand, would lead to consumers paying less.

228 Ibid. The commodification of the energy sector is most pronounced in the area of electricity generation. In contrast, end-user markets are significantly less developed. “True” retail markets, in which consumers frequently and freely switch between different electricity providers, are relatively rare in Europe. Even in countries such as Germany, Austria, or the United Kingdom, where a large number of electricity providers compete in the market, only a relatively small number of households switch providers regularly. This is because factors such as complex rate structures, transaction costs, and cognitive biases make switching significantly more difficult than in other economic sectors; see Rahmatallah Poudineh, “Liberalized Retail Electricity Markets: What We Have Learned after Two Decades of Experience?” (OIES Paper EL 38, Oxford: Oxford Institute for Energy Studies, December 2019), <https://www.oxfordenergy.org/publications/liberalized-retail-electricity-markets-what-we-have-learned-after-two-decades-of-experience/?v=79cba1185463>, 6 ff.; In Germany, the rate of supplier switches most recently stood at 14 percent, and the rate of contract switches at only 7 percent in 2024 (see Federal Network Agency Monitoring Report 2025), 26, https://www.bundesnetzagentur.de/Shared-Docs/Pressemitteilungen/EN/2026/20260311_SMARD.html.

229 For example, in the United Kingdom in 2008, the “Big Six” energy companies still supplied over 99 percent of household and small business customers with electricity. With the further liberalization of the market in the 2000s and 2010s, numerous new providers entered the market, causing their number to rise to 35 at one point. However, after many of these new providers went bankrupt in the early 2020s, only 18 providers remain today. By the summer of 2025, more than 91 percent of British households were once again being supplied by one of the six major energy providers. See Tahreem Zubida, “Competition in UK Electricity Markets, 2024” (London: Department for Energy Security and Net Zero, published September 30, 2025), https://assets.publishing.service.gov.uk/media/68da73e049e17d00a56ffb60/Competition_in_UK_Electricity_Markets_2024.pdf; Confused.com, “Who Are The Big Six Energy Suppliers?”, 2026, <https://www.confused.com/gas-electricity/guides/big-six-energy-suppliers>.

Finally, financialization describes the process by which energy companies, infrastructure, and future energy revenues are increasingly treated as financial assets. Investment decisions, ownership structures, and pricing mechanisms are thus shaped more by financial market logic than by sector-specific supply or industrial policy objectives. A central component of this development is the growing influence of institutional investors such as pension funds, insurance companies, sovereign wealth funds, and infrastructure and private equity funds. For these actors, energy infrastructure—such as power grids, pipelines, or large power generation facilities—represents attractive investment opportunities, as it promises long-term and relatively stable returns.²³⁰ Since asset managers have invested heavily in large wind and solar farms, their influence on the energy sector is growing alongside the decarbonization of the energy system.²³¹ At the same time, a multitude of financialized markets have emerged in which energy circulates not only as a physical commodity but also as a tradable financial product. Alongside traditional wholesale markets for electricity and gas, futures markets (including day-ahead and intraday markets) have emerged where future deliveries are traded, as well as markets for financial derivatives that can be used to hedge price risks or establish speculative positions.²³²

230 Peter O'Brien and Andy Pike, "The Financialization and Governance of Infrastructure," in: *Handbook on the Geographies of Money and Finance*, ed. Ron Martin and Jane Pollard (Cheltenham: Edward Elgar Publishing, 2017), 223 f.; Gavin Bridge, Begüm Özkaynak and Ethemcan Turhan, "Energy Infrastructure and the Fate of the Nation: Introduction to Special Issue," in: *Energy Research & Social Science* 41 (2018): 1–11; Stephen Hall, Andrew E. G. Jonas, Simon Shepherd and Zia Wadud, "The Smart Grid as Commons: Exploring Alternatives to Infrastructure Financialisation," in: *Urban Studies* 56, no. 7 (2019): 1387 f.

231 Christophers, *Our Lives in Their Portfolios*, 125.

232 Christophers, *The Price Is Wrong*, 62.

7.1. Falling Oil Prices, New Technologies, and a Stagnating Industry

The liberal restructuring of the energy sector in Europe was part of a broader neoliberal project that gained global influence in the mid-1980s and extended beyond the energy sector.²³³ Despite this insight, it is worth examining the various factors that made this project so attractive—particularly for the restructuring of the energy sector—as well as the specific strategies employed by proponents of neoliberal ideas to gain political influence.

For decades, Western Europe's national energy systems were closely intertwined with the postwar paradigms of energy policy. In the postwar period from 1945 to the early 1980s, centralized planning for long-term capacity expansions seemed virtually without alternative: electricity demand rose with industrial growth, and the assumption of persistently high fuel prices justified large-scale investments in coal- and nuclear-powered baseload systems. When the oil crises of the 1970s exposed the energy sector's vulnerability, European governments responded by re-nationalizing responsibility for energy policy: in many European countries, state institutions were expanded and domestic fossil fuel production was bolstered.

Against this backdrop, the rapid collapse of global market prices for oil in the mid-1980s felt like a political earthquake: the price plunge from nearly \$30 per barrel (1984) to about \$14 (1986) undermined the central premises of national energy policy.²³⁴ Triggered by a strategic shift on the part of Saudi Arabia, which increased its production to regain market share, OPEC lost control over the global market price.²³⁵ For net energy importers in Western Europe, this meant a rapid easing of the energy policy situation, which had been previously perceived as threatening. The question of whether comprehensive government safeguards against international price fluctuations were still necessary became the subject of increasingly contentious debate.

These changes in the oil market reinforced a parallel trend in the international coal markets: falling oil prices made coal less attractive in many sectors and placed significant pressure on the already struggling national coal industries of Western Europe, especially in the United Kingdom and Germany.²³⁶ At the same time, international productivity gains—particularly in Australia, the U.S., and later South Africa—led to a substantial expansion of the global coal supply.²³⁷ For countries with good access to the international ports of Rotterdam and Antwerp, such as West Germany or the United Kingdom, this opened up access to low-cost imported coal. The price disparities were stark: in the United Kingdom, international coal prices in the mid-1980s were up to 70 percent below domestic production costs.²³⁸ These developments led to calls, particularly from parts of industry, for a restructuring of national energy models and better access to low-cost energy sources.

At the same time, regulatory pressure also increased due to new environmental regulations (see section 6.7). Concerns about acid rain led to stricter emissions standards, which posed significant economic challenges, particularly for older coal-fired power plants. Nuclear energy, previously a central pillar of national modernization strategies, also lost political legitimacy following the Chernobyl accident in 1986. Overall, the 1980s saw the erosion of the two pillars—coal and nuclear power—upon which the close interdependence of the state, industry, and monopoly utility providers had been based.²³⁹ This weakened the political stability of integrated monopoly companies and created a structural opening for market-based organizational models.

Technological developments in the natural gas sector beginning in the late 1980s also contributed to this trend: technological advances in flexible gas-fired power plants, known as *Combined Cycle Gas Turbines* (CCGTs), lowered investment costs, shortened construction times, and significantly reduced operational risks compared to nuclear or coal-fired power

233 Quinn Slobodian, *Globalists: The End of Empire and the Birth of Neoliberalism* (Cambridge: Harvard University Press, 2018); Naomi Klein, *The Shock Doctrine: The Rise of Disaster Capitalism* (New York: Metropolitan Books, 2014).

234 Peter J. G. Pearson and Jim Watson, "UK Energy Policy 1980–2010: A History and Lessons to Be Learned [Project Report]" (London: IET / The Parliamentary Group for Energy Studies, 2012), <http://www.theiet.org/factfiles/energy/uk-energy-policies.cfm>, 8.

235 Ibid.

236 Gross, *Energy and Power*, 84 ff.; Ronan Bolton, *Making Energy Markets: The Origins of Electricity Liberalisation in Europe* (Cham: Palgrave Macmillan/Springer Nature, 2022), 8 f.

237 Bolton, *Making Energy Markets*, 9.

238 Ibid.; for a detailed account of the problems facing *British coal* production, see Dieter Helm, *Energy, the State, and the Market: British Energy Policy since 1979* (Oxford: Oxford University Press, 2004), 154 ff.

239 Ibid.

plants.²⁴⁰ In the U.S., gas-fired power plants have been competing directly with established electricity generators since grid access was opened up by the *Public Utilities Regulatory Policies Act* (1978).²⁴¹ Gas-fired power plants offer operational flexibility, remain efficient even at small scale, and entail comparatively low investment costs, making it possible for independent producers to operate them as well. Furthermore, they do not constitute a natural monopoly, unlike nuclear power or coal mining. These technological characteristics made gas-fired power plants an attractive option in a situation increasingly marked by uncertainty regarding long-term demand trends in the energy sector. In the United Kingdom, the late 1980s saw the infamous *Dash for Gas*, during which more than twenty new gas-fired plants with a total capacity of 14.2 GW were built within the span of eight years.²⁴²

However, the decline of the coal and nuclear industries was not driven solely by the expansion of gas but also followed structural changes in European economies. Due in part to higher energy efficiency in industry and the transition to service-oriented economic structures, industrial energy consumption rose at a slower rate. In many European countries, this development called into question the need for large-scale, long-term, and centrally planned power plant capacity. Industrial energy demand declined throughout the EEC between 1980 and 1987,²⁴³ while total energy consumption in Western Europe rose slightly between 1980 and 1990.²⁴⁴ These technological, macroeconomic, and geopolitical developments formed key framework conditions for the liberal restructuring of the European energy sectors. However, they do not alone explain why market-based reforms ultimately prevailed. Economic crises, technological changes, or geopolitical shifts did not automatically lead toward liberal restructuring; rather, they were strategically exploited by political and economic actors in various contexts to challenge existing institutional arrangements and advance reform projects. Despi-

te national energy systems, ownership structures, and political interests that were in some cases very different, energy policy evolved into a central arena of European integration in the 1990s: the European Commission made the common electricity market the centerpiece of the European single market project. It was ultimately the driving force behind the restructuring process—often against the reservations of individual member states.²⁴⁵ However, it was also able to draw on the experiences of two pioneers of liberalization: the United Kingdom and Norway.

240 Derek Spooner, "The 'Dash for Gas' in Electricity Generation in the UK," in: *Geography* 80, no. 4 (October 1995): 395.

241 Hirsh, *Power Loss*, 247–248.

242 Ibid.

243 Bolton, *Making Energy Markets*, 10.

244 JeanMarie MartinAmouroux, "World Energy Consumption 1800–2000: The Results," in: *Encyclopédie de l'énergie*, May 9, 2022, <https://www.encyclopedieenergie.org/en/worldenergyconsumption18002000results>.

245 Stephen Padgett, "The Single European Energy Market: The Politics of Realization," in: *Journal of Common Market Studies* 30 (1992), 55 ff.; Schmidt, *Liberalisierung in Europa*, 49 ff.

7.2. The Origins of Restructuring: the United Kingdom and *Nord Pool*

When Margaret Thatcher took office in 1979, a comprehensive program of neoliberal structural reforms and privatizations began in the United Kingdom. In the early 1980s, major state-owned companies such as *British Telecom* and *British Gas* were privatized. The electricity industry, however, was initially exempt from these reforms. A key reason for this was the widespread view that electricity supply constituted a classic “natural monopoly” requiring centralized coordination of power generation and the transmission grid.²⁴⁶ This changed, however, in the mid-1980s, as the liberalization agenda gained momentum even outside the government.

During this phase, the initiative was driven primarily by market-fundamentalist think tanks, in particular the *Institute of Economic Affairs* (IEA) and the *Centre for Policy Studies* (CPS), founded in 1974 by Keith Joseph and Margaret Thatcher.²⁴⁷ Within the CPS, a small team developed concrete reform proposals for a competitive restructuring of the electricity sector. These advisory networks played a decisive role, working alongside officials from the Department of Energy and industry representatives in various working groups to flesh out the specific institutional details of the reform.

The first decisive political step toward liberal restructuring came with the drafting of the White Paper *Privatizing Electricity*, which was published on February 25, 1988. Authored primarily by a civil servant, William Rickett, the White Paper set forth six guiding principles for liberal restructuring.²⁴⁸ Institutionally, the document called for a radical overhaul: the large state-owned energy company, the *Central Electrici-*

ty Generating Board (CEGB), was to be split into two competing electricity generation companies, while an independent grid operator was to be created and jointly owned by the regional utility companies.²⁴⁹

Despite the political momentum, the restructuring was by no means uncontroversial within the industry: Sir Walter Marshall, chairman of the CEGB and later removed from office by the Thatcher government, was particularly skeptical. Industry stakeholders and policymakers faced the challenge of fostering competition without jeopardizing the public utilities that depended on their monopoly status. The market's design therefore deviated from the White Paper in several respects: to avoid political conflicts with the coal and nuclear industries, long-term contracts were introduced. The new power generators committed to purchasing coal from *British Coal* for many years, while the regional electricity companies were required to purchase electricity from nuclear power plants at above-average prices.²⁵⁰ These regulations significantly reduced the actual intensity of competition. A large portion of the electricity supply was secured through long-term contracts, thereby limiting free market transactions. In the short term, therefore, large industrial electricity customers benefited most from the reform, whereas residential customers saw no price reductions.²⁵¹ In summary, the British restructuring of the energy sector was largely the result of a neoliberal project shaped by the political and ideological agenda of the Thatcher government, which, however, had to make some concessions when confronted with the realities of the industry.

An alternative development emerged in the Scandinavian countries. The history of Nordic electricity integration dates back to 1963, when NORDEL—a joint coordinating body for electricity transmission—was founded.²⁵² Norway was a pioneer in energy market liberalization and an early advocate of a common

246 Bolton, *Making Energy Markets*, 15; Helm, *Energy, the State, and the Market: British Energy Policy since 1979*, 2.

247 Bolton, *Making Energy Markets*, 35.

248 First, decisions regarding electricity supply should be guided by the needs of customers. Second, competition was identified as the best guarantee of consumer interests. Third, regulations should promote competition and intervene only where natural monopolies exist. Fourth, security of supply should be ensured at all times. Fifth, consumers should be granted new rights, and sixth, employees should be given opportunities for participation and entrepreneurial freedom. See UK Parliament, “Electricity (Privatization),” House of Commons Debate, Hansard, March 7, 1988, vol. 129, cc. 49–128, UK Parliament, <https://api.parliament.uk/historic-hansard/commons/1988/mar/07/electricity-privatisation>.

249 Ibid.

250 Bolton, *Making Energy Markets*, 56.

251 Ibid.

252 Lennart Carlsson, “International Power Trade: The Nordic Power Pool” (World Bank, Washington, DC, 1999), https://www.researchgate.net/profile/Lennart-Carlsson/publication/268200686_International_Power_Trade-The_Nordic_Power_Pool/links/59a6c8750f7e9b41b78908f0/International-Power-Trade-The-Nordic-Power-Pool.pdf, 2; Nils Flatabø, Gerard Doorman, Ove S. Grande, Hans Randen and Ivar Wangensteen, “Experience with the *Nord Pool* Design and Implementation”, in: *IEEE Transactions on Power Systems* 18, no. 2 (2003), 546.

Scandinavian market. The Norwegian government pressed both its Nordic neighbors and EU countries to liberalize the electricity market, as Norwegian hydropower companies produced a significant energy surplus in the 1980s, making the development of new markets economically attractive.²⁵³

In 1996, Norway, Sweden, Finland, and Denmark founded *Nord Pool*, the world's first cross-border energy market. In contrast to the British electricity market model, which relied heavily on privatization and competition, the Scandinavian system combined market mechanisms with continued significant forms of public ownership and government control. Crucial to this was *Nord Pool's* institutional design, which enabled cross-border trade without fully relinquishing national sovereignty over the organization of the respective electricity systems.²⁵⁴ It was precisely this combination—a common market alongside the retention of national regulatory powers—that later became an important reference point for the design of the European internal electricity market. However, even *Nord Pool* could not prevent a certain degree of ownership concentration in power generation and distribution.²⁵⁵

253 Carlsson, "International Power Trade," 3 f.

254 Ronan Bolton, "A History of Electricity Regulation: Origins and Evolution of the Nordic Model," in: *Oil, Gas, and Energy Law* 21, no. 2 (2023), 10 f.

255 Flatabø et al., "Experience with the *Nord Pool* Design and Implementation," 546.

7.3. The Liberalization Policies of the European Commission Against National Restrictions

When the EEC began discussing the possibility of an internal energy market in the 1980s, European energy policy was already considered a failure.²⁵⁶ Although two of the founding treaties—the Treaty establishing the ECSC and the Treaty establishing Euratom—were directly related to the energy sectors, neither a common energy policy nor market integration had been advanced for a long time. Cross-border electricity trading existed long before the liberalization policy (see section 6.8). However, electricity integration was a “patchwork of gradually emerging and collaborating national networks.”²⁵⁷ In 1985, the European Commission published an influential White Paper examining the barriers to cross-border trade between member states.²⁵⁸ The study was authored by Arthur Cockfield, the British Commissioner for the Internal Market and a close ally of Thatcher. Due to the United Kingdom’s central role in the formation of the *Common Market*, this period was also described as the “Thatcherization of Europe.”²⁵⁹ A new competitive orientation for the energy sector was then officially announced for the first time in a 1986 Council resolution.²⁶⁰ In 1988, a Commission working paper was published setting out the agenda for the European “internal energy market.”²⁶¹

The reasons for the restructuring remain a sub-

ject of debate among researchers, as reservations about the liberalization measures prevailed in most member states. Admittedly, there was economic interest in cross-border trade: it was attractive to all those countries that occasionally produced too much energy. The situation was particularly critical in France, where immense nuclear power capacity resulted in a significant electricity surplus.²⁶² Industrial consumers saw the European single market as a means of gaining access to cheaper electricity producers across national borders and freeing themselves from the obligation to purchase electricity from local and national monopoly providers.²⁶³ However, the interests of the opposing side—such as state-owned or state-supported monopoly providers—carried just as much weight and were equally influential. Generally, member states’ reluctance toward far-reaching restructuring stemmed from the specific historical origins of the energy supply system, industrial policy interests, and concerns about security of supply and loss of sovereignty. Germany and France, in particular, long played a role in slowing down the restructuring process. While France sought to protect its heavily state-organized nuclear energy program, Germany’s primary aim was to preserve its domestic coal industry and the historically established structures of its electricity sector.

In Germany, resistance to liberalization was closely linked to the historical development of the electricity industry. Unlike in France or the United Kingdom, the sector was not characterized by a single national monopoly, but rather by a complex network of large integrated utility companies, regional suppliers, and municipal utilities. Among the largest players were the *Rheinisch-Westfälisches Elektrizitätswerk (RWE)*, *PreussenElektra*, and *Bayernwerk*, which together controlled more than half of electricity generation.²⁶⁴ At the same time, there were around forty regional suppliers and about a thousand municipal utilities serving local monopoly areas.²⁶⁵ This fragmented structure was based less on state regulation than on voluntary industry agreements—known as Asso-

256 Neill Nugent, *The Government and Politics of the European Community*, 2nd ed. (Basingstoke: Macmillan, 1991), 259; Padgett, “The Single European Energy Market,” 55.

257 Vincent Lagendijk and Victor van der Vleuten, “Inventing Electrical Europe: Interdependencies, Borders, Vulnerabilities,” in: *The Making of Europe’s Critical Infrastructure: Common Connections and Shared Vulnerabilities*, ed. P. Hogselius, A. Hommels, A. Kaijser and V. van der Vleuten (London: Palgrave Macmillan, 2013), 74.

258 European Commission, *Completing the Internal Market: White Paper from the Commission to the European Council* (Milan, 28–29 June 1985), <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:51985DC0310>.

259 Nicholas Sowels, “From the ‘Thatcherisation of Europe’ to Brexit,” in: *Revue Française de Civilisation Britannique* XXIV, no. 4 (2019).

260 Official Journal of the European Communities C 241 19 September 1981, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:C:1981:241:FULL>; Padgett, “The Single European Energy Market,” 57.

261 Bolton, *Making Energy Markets*, 130.

262 Thomas Reverdy and Daniel Breslau, “Making an Exception: Market Design and the Politics of ReRegulation in the French Electricity Sector,” in: *Economy and Society* 48, no. 2 (2019), 201.

263 Ibid.

264 Bolton, *Making Energy Markets*, 176.

265 Ibid.

ciation Agreements—which regulated the division of the market among the various players. Local governments were strong advocates of the system, as many municipal utilities at that time (as they do today) used their revenue from electricity supply and concession fees to subsidize other public services, such as transportation, housing, or waste management.²⁶⁶ This practice intensified resistance to competition reforms, since opening up the markets had the potential to threaten the financial foundation of municipal budgets.

In France, the organizational structure was fundamentally different: the market was dominated by EDF, a highly centralized, state-owned electricity company closely linked to the ambitious expansion of nuclear power. As previously described, since the 1960s France had deliberately shifted its energy policy away from coal toward oil and ultimately to nuclear power.²⁶⁷ In the 1980s, the massive expansion of nuclear power led to significant overcapacity, causing electricity exports to be increasingly viewed as an economic opportunity. The Mitterrand administration promoted the vision of France as the “powerhouse of Europe.”²⁶⁸ Despite this interest in exports, however, France remained skeptical of comprehensive liberalization, as a competitive European market could have jeopardized the business model of the state-owned monopoly EDF. Instead, the French government favored greater cooperation and coordinated trade relations among national utilities, similar to the existing system within the UCPTE.²⁶⁹ Throughout the 1980s and early 1990s, despite these reservations, a growing interdependence developed between the German and French power systems: energy companies such as RWE and EDF collaborated on nuclear energy projects and cross-border electricity trading.²⁷⁰ At the same time, German reunification opened up new prospects for more intensive cooperation, for example in the modernization of East German power supply and in the exchange of baseload and peak-load electricity.²⁷¹

266 Gerold Ambrosius, *Infrastrukturelle Marktordnungen im sektoralen und epochalen Vergleich: Energie und Telekommunikation vor dem Ersten Weltkrieg und heute* (BadenBaden: Nomos, 2024), 186 ff.

267 Reverdy and Breslau, “Making an Exception,” 200 f.

268 Bolton, *Making Energy Markets*, 158.

269 Ibid., 165.

270 Ibid., 183 f.

271 Padgett, “The Single European Energy Market,” 64 ff.

The driving force behind the liberal restructuring must be sought more within the European Commission itself. Although there were staunch neoliberals in the Commission, Nicolas Jabko interprets the process more as the Commission harnessing the market as a means of European integration.²⁷² The Commission was well aware of the member states’ reservations, and so it sought to frame the reform process more as a technocratic task and to forge alliances with those interest groups within the member states that favored market integration. Rather than forcing liberalization through legal channels, it pursued a more dialogue-oriented, gradual approach, without, however, ruling out judicial recourse.²⁷³ This cautious approach allowed Germany, France, and other European member states to largely preserve their national structures, while at the same time laying the groundwork for an integrated European electricity market.

Against this backdrop, a gradual political shift in thinking eventually took place. A central component of the Commission’s early proposals was the introduction of the so-called *common carriage* principle. This principle was intended to allow large consumers to source electricity directly from producers in other member states, while existing transmission grids would serve solely as transport infrastructure.²⁷⁴ Many member states and companies opposed this principle, as integrated utility companies would have been required to relinquish some of their control over the grids to independent national regulatory authorities or even to a European regulatory body. Despite strong resistance from the member states, the Commission continued to adhere to the common-carriage principle.²⁷⁵ Thus, in March 1991, the Commission launched a major initiative: legal proceedings were initiated to challenge the cross-border energy transmission agreements of ten member states.²⁷⁶ Influenced by European single market policy and mounting pressure from the European Commission to enforce

272 Nicolas Jabko, *Playing the Market: A Political Strategy for Uniting Europe, 1985–2005* (Cornell University Press, 2006), 94; see also Sven Opitz and Ute Tellmann, “Europe as Infrastructure: Networking the Operative Community,” in: *South Atlantic Quarterly* 114, no. 1 (2015): 179–82.

273 Padgett, “The Single European Energy Market,” 69 f. Schmidt, *Liberalisierung in Europa*, 211 ff.

274 Bolton, *Making Energy Markets*, 130 f.

275 Padgett, “The Single European Energy Market,” 62 f.

276 David Buchan, “EC Commission Acts Against National Energy Monopolies,” in: *Financial Times*, March 22, 1991.

liberalization measures through the courts if necessary, both countries began to gradually accept reforms. With the First Electricity Directive (96/92/EC) of 1996 and the First Gas Directive (98/30/EC) of 1998, the Commission ultimately prevailed. Both common carriage and third-party access to grids were introduced, and the vertical unbundling of energy companies was initiated. However, the actual market liberalization did not occur abruptly but rather unfolded as a gradual process from the late 1990s through the 2010s.²⁷⁷

The success of liberalization against strong reservations must also be viewed in the context of the politically desired European integration. At the time, liberalization appeared to be the only viable path for achieving a certain degree of integration among Europe's national energy sectors.²⁷⁸ The parallel creation of a single market for other goods further intensified the pressure, as disparities in electricity prices could be portrayed as distortions of competition.²⁷⁹ However, the restructuring did not lead to a unified European market, as national systems largely remained in place and the markets developed differently across regions. As Bolton highlights, due to the lack of a central European regulatory authority, integration proceeded on a regional and fragmented basis, often relying on pre-existing trade relationships and infrastructure.²⁸⁰

277 Schmidt, *Liberalisierung in Europa*, 183 ff.

278 Jabko, *Playing the Market*, 120.

279 *Ibid.*, 103.

280 Bolton, *Making Energy Markets*, 127.

Overview of Key EU Directives on the Liberal Restructuring of the Electricity and Gas Sectors

First Restructuring Phase – “First Energy Package”

1996	Directive 96/92/EC	Introduces elements of competition into the electricity sector for the first time
1998	Directive 98/30/EC	Extends the market liberalization framework to the gas sector

“Second Phase of Restructuring – “Second Energy Package”

2003	Directive 2003/54/EC	Establishes full market liberalization for non-residential customers and mandates the legal unbundling of the transmission and distribution networks
2003	Directive 2003/55/EC	Establishes more comprehensive market liberalization in the gas sector, as well as regulated network access and stricter unbundling requirements

Third Restructuring Phase – “Third Energy Package”

2009	Directive 2009/72/EC	Strengthens unbundling through <i>ownership-unbundling</i> (or equivalent models) while simultaneously reinforcing the role of independent regulatory authorities and consumer rights
2009	Directive 2009/73/EC	Extends the unbundling and regulatory requirements of the Third Energy Package to the gas sector

Fourth Phase – “Clean Energy Package”

2019	Directive (EU) 2019/944	Calls for greater integration of renewable energy, promotion of active consumers (“prosumers”), and increased flexibility in market mechanisms
2023	Reform of the EU Electricity Market Design	Complements the liberalized electricity market with stability mechanisms such as long-term contracts (e.g. CfDs and PPAs) to mitigate price volatility and secure investments in renewable energy

Table created by the author

Overall, the European energy market did not emerge from a uniform reform model, but rather from the interplay of diverse national interests and institutional approaches. While the United Kingdom served as the political driving force behind liberalization, regional experiments such as the Scandinavian electricity market provided important institutional models for the practical design of a European energy market that combined competition with national sovereignty. In the course of this restructuring, regulatory authorities were established across all European countries to oversee the implementation of European directives and have been continuously monitoring compliance ever since.²⁸¹ In addition, the EU created new supranational energy institutions: the *Agency for the Cooperation of Energy Regulators* (ACER) and the *European Networks of Transmission System Operators* (ENTSO-E for electricity and ENTSG for gas). This gave rise to the network of market rules, grid coordination, and European oversight that continues to shape the European energy sector to this day.

A key difference within European energy integration emerged during the liberalization of the electricity and gas markets. While the electricity sector had been the subject of intense political debate regarding market opening and cross-border trade since the 1980s, liberalization in the gas sector progressed much more slowly.²⁸² This was primarily due to the structural characteristics of the gas sector: factors such as long-term supply contracts, strong regional ties, dependence on a few external suppliers, and the high capital intensity of pipelines all meant that the market was traditionally dominated by a few large companies and state-supported import monopolies.²⁸³ The electricity sector, on the other hand, already had more integrated grids and a longer tradition of cross-border collaboration. The Commission also took a leading role in gas liberalization.²⁸⁴ An important strategy involved linking energy policy with environmental policy, since gas was considered a relatively environmentally friendly energy source at the time.²⁸⁵

281 Foster et al., "Charting the Diffusion of Power Sector Reforms," 52.

282 Christian von Hirschhausen, "Reform der Erdgaswirtschaft in der EU und in Deutschland: Wie viel Regulierung braucht der Wettbewerb?," in: *Perspektiven der Wirtschaftspolitik* 7, no. 1 (2006), 89.

283 Brutschin 2013, 139 f.

284 Elina Brutschin, "Dynamics in EU Policy-Making: The Liberalization of the European Gas Market" (PhD diss., Universität Konstanz, 2013), 138.

285 Ibid., 139 f.; von Hirschhausen, "Reform der Erdgaswirtschaft in der EU und in Deutschland," 90 f.

7.4. The Interweaving of European Climate and Energy Policy

Since the 1990s, European energy policy has been interwoven with the emerging field of climate policy. Through international climate agreements such as the *Kyoto Protocol* (1997) and, later, the *Paris Agreement* (2015), European nations committed to long-term emissions reductions. As a result of these commitments, the *European Emissions Trading System* (ETS) and extensive support mechanisms for renewable energy were introduced, including as part of the *EU Green Deal* (2019). For a long time, the German *Renewable Energy Sources Act* (EEG) of 2000 was considered a particularly influential instrument; it guaranteed fixed feed-in tariffs for electricity from renewable sources and served as an international model for similar support programs.

Through active government support for renewable technologies in many European countries and at the EU level, wind and solar energy evolved within a few decades from niche applications to central pillars of European electricity supply. At the same time, their integration into liberalized electricity markets remains a challenge to this day. While market logic creates short-term price and efficiency incentives, renewable energies require long-term investments that are not as profitable as fossil fuel infrastructure.²⁸⁶ In addition, the rising share of fluctuating power generation requires a profound restructuring of electricity systems: grid infrastructure must be expanded and made more flexible, new storage technologies developed, and additional capacity for balancing and reserve made available.²⁸⁷ Ensuring grid stability also entails a growing regulatory coordination effort.

Essentially, European energy policy is characterized by a contradictory dual dynamic: on the one hand, the EU continues to pursue the goal of an integrated internal market for energy designed to foster competition, cross-border trade, and industrial growth. On

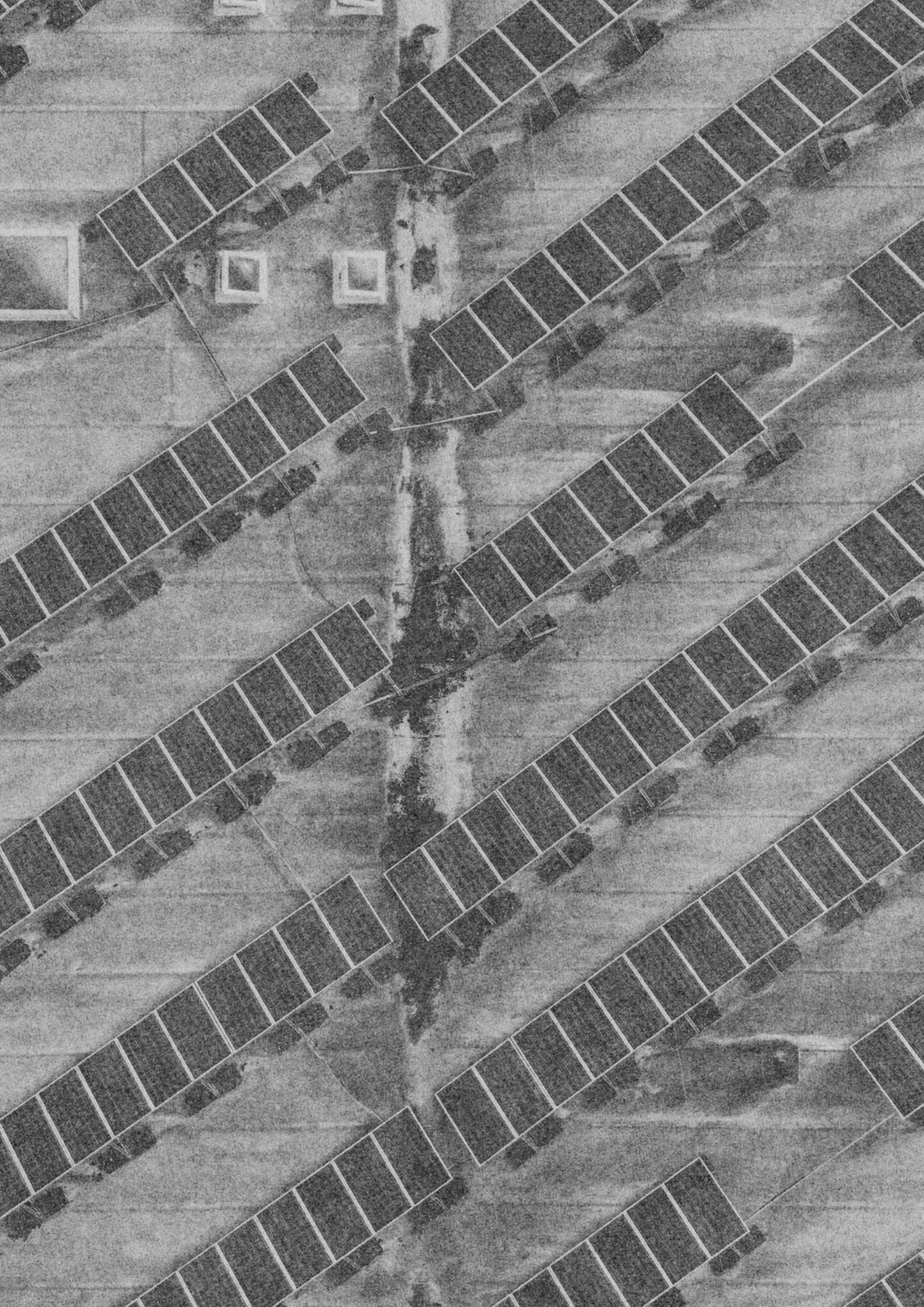
the other hand, the role of state intervention has expanded significantly, as the decarbonization of energy systems requires long-term industrial policy and infrastructure decisions that sometimes run counter to the other objectives.

This double-edged development has been further complicated by geopolitical crises: the European gas crises of 2006 and 2009 already highlighted the vulnerability of Europe's energy supply. At the latest with Russia's attack on Ukraine in 2022, the issue of European energy independence once again took center stage, alongside the challenge of securing growth while simultaneously achieving decarbonization. The heavy reliance of many European states on fossil fuel imports is increasingly perceived as a security risk. Programs such as REPowerEU, which was adopted in 2022, therefore seek to achieve several goals simultaneously: a reduction in fossil fuel imports, the accelerated expansion of renewable energy, a reduction and diversification of energy consumption, an adoption of more energy-efficient technologies, and the establishment of new industrial value chains.²⁸⁸ European energy policy has thus evolved from what was initially a primarily technocratic and security-oriented regulatory field into a central policy area where conflicts over ecological transformation, economic growth, public services, and geopolitical security are interwoven.

286 Christopher, *The Price is Wrong*, xiii.

287 Anna J. Wieczorek, Harald Rohrer, Dierk Bauknecht, Simon Bolwig, Pieter Valkering, Regine Belhomme, Klaus Kubeczko and Simone Maggiore, "Decentralised Energy Futures: Emerging New Logics of Energy System Organisation," in: *Emerging New Logics of Energy System Organisation* (2022), 4; Klaus Kubeczko and Astrid Krisch, "Kapitel 22. Netzgebundene Infrastrukturen," in: *APCC Special Report: Strukturen für ein klimafreundliches Leben*, 591–609 (Berlin and Heidelberg: Springer Berlin Heidelberg, 2023).

288 European Commission, REPowerEU: Affordable, Secure and Sustainable Energy for Europe (2022–present), https://reforms-investments.ec.europa.eu/document/download/c58a5fce-0504-4852-89bb-f51a16131c5a_en?filename=REPowerEU%20TSI_Final%20synthesis%20report_0.pdf.



8

Energy Planning – The Need for Coordination

by Jakob Heyer

An economy's energy system—understood as an integrated unity comprising energy generation, conversion, storage, distribution, and consumption, linked through infrastructure and coordination mechanisms—requires comprehensive public planning and coordination. A “pure” market mechanism—understood as competition among multiple private providers—cannot guarantee this. Its specific irrationality becomes particularly evident where highly interdependent decisions are made by independent private actors. This becomes clear when reviewing the emergence of the energy economy in Germany from 1880 to 1945, as well as the liberal restructuring of the energy industry in the EU since 1990. At the same time, this development was complex and nuanced, characterized, particularly in Germany, by hybrid institutional arrangements. Nevertheless, several conclusions regarding current energy policy challenges can be drawn from these experiences.

As outlined in chapter 3, the emergence of the energy economy from 1880 to 1945 revealed a growing divergence between microeconomic and macroeconomic rationality in both hydropower and coal-fired power generation. Due to extensive interdependencies and economies of scale, efficiency gains in production and distribution could increasingly be achieved only through overarching, centralized planning and coordination, conditions that were insufficiently met by competition among fragmented private providers.

This development culminated in the theory and practice of the “natural monopoly,” which is characteristic of parts of the energy industry. The “natural” dimension of the monopoly stems from the structural characteristics of network industries. Sectors in which goods and services are provided via physical infrastructure networks—such as energy, water, and telecommunications—entail high fixed costs, economies of scale (i.e. low marginal costs), extensive interdependencies, and the inefficiency associated with network duplication.²⁸⁹ Under these conditions, provision by a single supplier is more efficient than by multiple competing supplier. This view is also acknowledged by mainstream economics.

Particularly in the area of network infrastructure, private, competitive provision carries the risk of inefficient fragmentation and undersupply, especially in peripheral, less profitable regions. Private monopolies, too, can lead to excessive prices and similar undersupply. At the same time, a comprehensively accessible and integrated network generates significant positive externalities by fully integrating markets, thereby enabling, for example, productivity gains through specialization. Against this backdrop, it makes economic sense to ensure broad network acces-

289 Parallel networks make no economic sense, among other reasons, because end users are each connected to a network via specific, location-based access points, so that competing infrastructures lead to cost-intensive duplication in serving the same demand or result in higher average costs due to lower utilization rates.

sibility and integration. While this may not be profitable from the standpoint of individual firms, the public sector can ensure it institutionally, following a logic that does not depend directly on profitability. These considerations regarding natural monopolies in network industries—which include large segments of the energy sector—suggest the following conclusion: state or public bodies, representing an economy-wide perspective within a market economy, should also undertake coordination and supply. This can be observed, for example, in countries such as France. The historical development in Germany described here, however, deviates from this pattern: although a high degree of concentration developed in energy generation, energy distribution was characterized by natural monopolies with clearly defined service areas, and the energy sector was increasingly subject to intensive state regulation and coordination, this did not result in a clear trend toward centralized public ownership. Instead, an institutionally differentiated but functionally integrated structure emerged, in which centralized private actors (large, vertically integrated companies), decentralized public bodies (municipal utilities), and central government institutions (energy authorities) jointly organized the energy economy without necessarily leading to inefficient fragmentation. Furthermore, increasing regulation and coordination were embedded in a complex web of state, municipal, and private interests, serving economic, fiscal, and strategic purposes—including those related to a wartime economy. As Hoffrogge emphasizes, the emergence of large, powerful private energy conglomerates and the close cooperation between the state and monopoly capital in the energy economy gave rise to an influential bloc of public-private interests; this bloc was closely intertwined with the more or less “planned” wartime economies of World War I and World War II and must therefore be viewed critically.

The fact that the energy system requires overarching public planning and coordination—something a “pure” market mechanism cannot guarantee—is also historically evident in the liberal restructuring of the European energy sector since the 1990s. Chapter 7 traces how European peacekeeping originally aimed, among other things, to dismantle the powerful wartime national bloc of interests—comprising the state and monopoly capital—in the energy sector (particularly in coal), and to replace it with a supranational regulatory and integration regime for a highly concentrated, strategically important market.

With the neoliberal shift beginning in the 1980s and 1990s, market-based orders were then established. These can be understood as heavily regulated “pseudo-markets” that nonetheless embody a policy of market-based decentralization—a departure from overarching public planning and coordination. However, this policy has proven inadequate for meeting the extensive challenges currently facing decarbonization of the energy system.²⁹⁰

For example, European electricity markets have so far failed to ensure either sustainably affordable energy or sufficient investment in the urgently needed decarbonization.²⁹¹ Due to marginal cost pricing and price volatility, they do not create stable investment conditions. The private sector, on the other hand, due to limited profitability, is making insufficient progress toward the massive investments required for decarbonization—which must be understood as comprehensive electrification. This is the case despite a government subsidy regime that often ensures only minimal returns without triggering the necessary investment momentum.²⁹²

In this context, questions regarding economic coordination mechanisms (market or plan) intertwine with entirely new technical and ecological challenges. With decarbonization and the phase-out of nuclear power and coal, a system of centralized generation providing stable baseload power is being eliminated. While this opens up progressive opportunities to dismantle the aforementioned traditional interdependencies between the state and monopoly capital in the energy sector, current trends toward market-based decentralization are also heading in the wrong direction. A renewable energy system is characterized by entirely new, far-reaching challenges that require a new form of comprehensive public planning and coordination.

Large, long-term investments are central. Given the inertia of the private sector, these investments must be initiated, coordinated, and implemented through industrial policy. The expansion of genera-

290 See above: The fact that energy markets do not arise “naturally” but must be institutionally created is also recognized in regulatory practice. For example, Mark Christie, commissioner of the U.S. Federal Energy Regulatory Commission, recently noted that electricity markets “despite the label [...] never have been true markets, but rather administrative constructs with some market characteristics,” as quoted in Christophers, *The Price Is Wrong*, 37.

291 Sean Sweeney, “Mapping a Public Pathway For Europe’s Energy Transition.”

292 Brett Christophers: “Capitalism Can’t Solve Climate Change.”

tion capacity, grid infrastructure, storage, and sector coupling is characterized by pronounced interdependencies and complementarities, meaning that expansion is only worthwhile if it proceeds in a largely synchronized manner. Compared to fossil fuels, renewable energy sources have significantly lower energy density and, due to their characteristics, require significantly greater infrastructure investment for storage and transportation. At the same time, these energy sources involve considerable externalities—particularly greenhouse gas emissions—that are not sufficiently internalized in monetary prices, meaning that fossil fuels still appear cheaper than they actually are.

Technically, renewable electricity is characterized by more decentralized and, above all, fluctuating generation, which places increased demands on grid stability, storage, and the expansion of large-scale integrated grids to compensate for weather fluctuations.²⁹³ Added to this are physical, technical and ecological constraints, such as limited efficiencies in hydrogen production or land use associated with wind and solar energy.

The necessary, comprehensive electrification of the energy sector requires that energy generation, transmission, and infrastructure increasingly merge to form an integrated system. Overall, however, this necessitates a shift away from “pure” market logic toward public planning and coordination, as well as a public-sector approach not dependent on immediate, short-term profits. Accordingly, new forms of state planning and regulation have already emerged, operating in ways that run counter to market mechanisms.²⁹⁴ Against this backdrop, the continuing focus on market-based decentralization appears anachronistic. This is particularly true in light of the historical development patterns of the energy economy, in which the need for integrated infrastructure and overarching coordination—as well as the recognition that competition among fragmented private providers structurally leads to inefficiencies—has become increasingly evident.

Given its immense systemic, infrastructural, technical, and physical challenges, decarbonization requires comprehensive planning and coordination—without which its progress will remain insufficient. This gives rise to the need for an expanded public role in the form of a public, democratically planned, and coordinated energy system.²⁹⁵ However, this goal should not be equated with centralist planning or exclusive state ownership. Rather, it calls for new, information-based forms of coordination in which central and decentralized actors collaborate within an integrated infrastructure oriented toward the common good.

293 See Gretchen Anna Bakke, *The Grid: the Fraying Wires Between Americans and Our Energy Future*; Ezra Silk, “Victory Plan,” on ideas of a “supersmart grid.”

294 A current negative example is the planned “capacity markets” for fossil-fuel-fired power plants intended to secure supply amid fluctuating renewable electricity generation, in which the provision of power plant capacity is subsidized by the government and financed through levies—a practice criticized by market-liberal actors as “planned-economy capacity subsidies” (Naturstrom AG: *Teurer Kapazitätsmarkt für Gaskraftwerke*). Thanks to Sophie-Marie Aß for the reference.

295 Sean Sweeney, “Mapping a Public Pathway For Europe’s Energy Transition.”



FÜR DIE ENERGIESICHERHEIT
NOTWENDIG?

KEINE LÜGEN

VOR RÜGEN!



9

Conclusion

by Solveig Degen and Daniela Russ

The historical development of the European energy economy cannot be explained by a single logic: it is neither merely an expression of the state's quest for power, nor a pure product of capitalist accumulation dynamics. Rather, its genesis was the result of the shifting and at times contradictory interplay of both forces. Even feudal states fostered economic activity and trade in order to finance their armies, thereby influencing energy-technical development. While the coal sector and its associated energy technologies had long been dominated by private entrepreneurs in Great Britain, many continental European states did not relax their control over mining (as well as oil extraction) until the nineteenth century, driven by military and economic competition with Great Britain. Ironically, the shift from state control to the promotion of bourgeois entrepreneurship did not signal a retreat but rather a deepening interest on the part of states in industrial modernization. It was within this "liberal" context of the late nineteenth century that the major oil and electricity companies emerged, wielding unprecedented power over the production, distribution, and use of energy.

However, by World War I at the latest, it had become abundantly clear that energy supply was a central prerequisite for securing state and political power. Wartime economy and industrial mobilization demonstrated that state sovereignty could not be maintained without access to fossil fuel resources. During this period, the idea emerged that energy could not be left solely to private interests but must be organized for the public good—though state interests were often equated with those of the general public. The debates on socialization during the Weimar Republic marked the first and, to date, most far-reaching at-

tempt to organize energy infrastructures democratically. Ultimately, however, this attempt foundered on private capital interests and political power dynamics.

Precisely because the energy industries were vital to the war effort, they stood at the center of the postwar order. With the end of World War II, energy policy increasingly became a central element of state regulatory policy and European integration. The energy sector was not only central to reconstruction and economic development but was now also understood as an integral part of the welfare state's provision of public services. An unprecedentedly close link between the state, industry, and energy planning characterized postwar Keynesian policy in Western European countries; this link ranged from state monopolies to strong state influence (as is evident, for example, in German gas policy). Although the issue of global competitiveness had become apparent in the European coal industry quite early on, it only came to the forefront with the stagnating growth and oil crises of the 1970s. Starting in the 1980s, the idea that energy supply could be organized more efficiently through competition gradually gained traction. The state, however, did not withdraw but transformed itself into a competitive state tasked with securing favorable energy conditions for growth and international competitiveness.

Current decarbonization policies are giving rise to a new area of tension: the transformation of energy systems through grid upgrades, the expansion of renewable energy, the electrification of various economic sectors, and the reduction of fossil fuel sources, requires far-reaching infrastructural changes that must be implemented within a short timeframe. The most serious implementation gap to date regarding

these objectives, as well as the recent backlash against climate policy at the EU level and in numerous member states, reveal both the limitations of an exclusively market-based approach and the ambivalence of state intervention: while the ecological transformation demands coordinated planning and long-term investments, government strategies remain bound to liberal-capitalist imperatives of growth, geopolitical security, and capital accumulation.²⁹⁶ Energy policy is thus once again becoming—as has so often been the case throughout history—a central battleground for conflicting societal objectives.

At the same time, history reveals a persistent democratic deficit: although the energy economy profoundly influences human life—whether through the organization and intensity of labor, through the technical capabilities of warfare and surveillance, or through its numerous ecological consequences, both locally and globally—democratic influence over it remains markedly limited. While access to energy and economic prosperity rose sharply over the course of the twentieth century, decisions about what, how, and for what purpose energy should be produced were rarely open to public debate. The anti-nuclear movement stands as one of the few examples in which an energy source was phased out due to grassroots pressure. Otherwise, energy systems generally transcend local scales, relying instead on complex infrastructures and global resource chains. Unlike in other areas of social reproduction, forms of collective democratic control, such as models in cooperative housing, have therefore rarely emerged.

In the course of the expansion of renewable energy, collective forms such as energy cooperatives have indeed slowly emerged. However, current approaches to a decentralized energy transition—the expansion of renewable energy, the growth of local energy communities, or prosumer supply models—are not sufficient on their own to transform the energy foundations of modern societies. For example, while energy cooperatives can enable some people to remain independent of external electricity supplies for much of the time, ensuring a reliable electricity supply every moment of the year requires integration into a larger context—one in which democratic organization

is rarely envisioned. If democratization is understood not merely as self-production but as having a say in societal production—that is, in the question of what the devices, packaging materials, and infrastructure we use daily are made of and for what purpose—then local organization or a network of cooperatives is no longer enough. Developing a democratic form for the societal organization of energy at the level of supra-local economic and technical interdependencies is a central task of the democratic socialization movement.

The task of the present, therefore, consists not only in expanding renewable energy sources, but in redefining the social organization of energy itself. What is required is a new synthesis of public agency, democratic participation, and technical planning expertise. Public ownership, state infrastructure capacities, and societal knowledge must be brought together in ways that enable collective, democratic decisions regarding long-term trajectories of development—in other words, ways that make the socialization of energy possible. The socialization of energy entails the ability to democratically determine who can utilize nature's malleability and for what purposes it is utilized. Whoever controls energy controls the conditions under which society reproduces and transforms itself. The democratic shaping of the energy transition is therefore not merely a task of sectoral reform, but a central prerequisite for realizing a good life for all.

296 See also Ulrich Brand, Daniel Hausknost, Alina Brad, Gabriel Eyselein, Mathias Krams, Danyal Maneka, Melanie Pichler and Etienne Schneider, "Die strukturellen Grenzen des Dekarbonisierungsstaates," in: PROKLA. Zeitschrift für kritische Sozialwissenschaft 55, no. 221 (2025): 801–820.

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Notes

