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### Resistance to Energy Transitions

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## Resistance to Energy Transitions

April 22, 2020 marked the 50th anniversary of Earth Day. Billed as a nationwide teach-in, the first Earth Day in 1970 attracted some 20 million participants and ushered in a period of groundbreaking environmental legislation in much of the industrialized world. The following decades saw the creation of a global climate regime, culminating in the adoption of the Paris Agreement in 2016, which aims to limit global temperature rise to 1.5 degrees Celsius. This year, an estimated one billion people in 192 countries took part in Earth Day activities. Yet, while the mood at the first Earth Day was hopeful, this one took place in an atmosphere of impending catastrophe. From melting polar ice caps to record-setting wildfires to locust infestations, the global effects of climate change are accelerating at an alarming rate. As the ravages of climate change become unmistakable, climate action is not accelerating apace.

The Paris targets can only be met by steeply and rapidly reducing carbon emissions. This will require a global transition from fossil fuel to renewable energy sources within the next several decades. The enormous cost of climate inaction is becoming clear to polities all over the world. At the same time, the costs of renewable energy production have plummeted to the point where renewables are competitive with all other energy sources. The political commitment to energy transition, along with the economic arguments in its favor, should result in rapid uptake of renewable energies. Instead, were it not for the global industrial slowdown due to the COVID-19 pandemic, many of the key players would fail to meet their 2020 targets. The United States has announced its withdrawal from the climate regime altogether. The resolve of 2016 has melted into disarray. A rapid energy transition is not a foregone conclusion anywhere in the world.

This special issue addresses domestic constraints on climate action. Specifically, we look at resistance to energy transitions. We take as our starting point the fact that major greenhouse gas (GHG) emitters, even the ones advocating most strongly for global climate action, have faced formidable domestic hurdles to meeting their own commitments. Our goal is to help explain why politics is not keeping up with scientific knowledge or technological developments. Incumbent industries that stand to lose from a rapid transition to renewable energy command considerable political resources. Citizens living close to wind parks express health concerns. Environmentalists face trade-offs between climate protection and landscape and wildlife preservation. Consumers fear rising energy prices. The articles in this special issue analyze the

emerging, multifaceted resistance to energy transitions in a variety of political settings. All of our case studies focus on industrialized democracies, including three of the world's largest economies (the United States, Japan, and Germany) as well as key smaller players (United Kingdom, Switzerland).

We are not the first to try to explain the uneven trajectory of energy transitions. Recent work in public policy, socio-technical transitions, and historical institutionalism in political science have addressed this issue. Some of their accounts focus on stabilizing the overall policy trajectory (Rosenbloom, Meadowcroft, & Cashore, **2019**). Some analyze the factors accounting for the “stickiness” of particular policies and the ability of policy makers to achieve “lock in” (Jordan & Matt, **2014**; Levin, Cashore, Bernstein, & Auld, **2012**). There is an emerging recognition in these literatures that energy transitions are complex, contingent, and prone to unintended consequences (Lockwood, Kuzemko, Mitchell, & Hoggett, **2017**; Meadowcroft, **2009**), and that *politics* is key to both explaining resistance and recommending ways to overcome such resistance (Breetz, Mildemberger, & Stokes, **2018**; Geels, **2014**), thereby accelerating the transitions (Roberts et al., **2018**). Our focus is on the politics of resistance to energy transitions.

We develop politics-oriented explanations within an institutionalist framework. We place special emphasis on Germany. It is Europe's largest industrial power and an early leader in committing to 65% renewable energy by 2030 as well as carbon neutrality by 2050. Each piece in this special issue focuses on a different aspect of resistance to energy transitions, involving different actors and political institutions. These include federalism (the United States, Germany, Switzerland), political parties and electoral politics (Switzerland, United States), media (United Kingdom, Germany), local activism (Germany, Japan), and issue framing (United Kingdom, Germany).

In his opening piece, Christoph Stefes (**2020**) develops an analytical framework that borrows key insights from recent studies on institutions (for a summary of these studies, see Stefes, **2019**). Energy transitions involve multiple formal and informal institutions that structure human interaction in politics, the economy, and society. Where these institutions are clear and align well insofar as institutional incentives and disincentives, they direct most of the main actors toward a decarbonized and sustainable energy future. Yet, transitions of this magnitude rarely proceed smoothly. Institutions might be inherently contradictory, or they are not particularly detailed, leaving room for interpretation. Furthermore, institutions might contradict each other, canceling out institutional effects. These institutional “gaps” (Thelen, **1999**, p. 382) might serve as

policy windows that opponents of renewable energy exploit to slow down, halt, or even reverse energy transitions.

Positive and negative feedback loops within and between various institutions shape the direction and speed of energy transitions. It is important to point out, though, that actors, by linking institutions to each other, take advantage of these loops. For instance, as public policies trigger economic growth and technological development in the renewable energy sector, proponents of energy transitions are able to strengthen their political clout, pushing for further policy changes that advance their cause. This is an example of a positive feedback loop. This special issue, however, focuses on the opponents of energy transitions and how they are able to link institutions in ways that stifle energy transitions.

To conceptualize these institutions, Stefes ([2020](#)) dissects energy transitions into three interrelated paths: the political and policy path, the economic and technological path, and the legitimation path. For each path, distinct institutions can be identified. Especially the legitimation path has been under-examined in the transition literature. The pace of energy transitions depends on the willingness of citizens to accept the upfront costs of switching to an alternative energy system. These costs are often quite significant, and they are unequally distributed. If legitimation efforts by proponents are institutionally embedded through prevalent norms and values, popular acceptance of energy transitions is stable and lasting. Yet, negative developments in the other two paths help opponents to delegitimize energy transitions by tapping into different sets of norms.

In his study of Germany's energy transition, Roger Karapin ([2020](#)) provides a good example of negative and positive feedback loops between the institutions that shape the developments of the three meso paths. With the passage of the first major pro-renewable energy legislation at the federal level in 1990, Germany's energy transition took off at a rapid pace for more than 20 years. Initial skepticism about the feasibility of the project gave way to widespread popular support. At that point, Germans tolerated the fact that their *Energiewende* required massive state intervention, as Germany's voters are generally supportive of state intervention. Yet, as the costs of the German energy transition rose, and these costs were disproportionately shouldered by lower-income families due to various institutional aberrations and contradictions in the political and economic paths, the *Energiewende's* opponents saw an opportunity to delegitimize the energy transition and add allies to their coalition. Ultimately, these efforts have failed to derail the energy transition in Germany. Citizen support has remained strong. By

raising issues of social justice, however, opponents weakened the legitimacy of the energy transition. This allowed them to slow down the expansion of renewable energy primarily through an institutional switch from a feed-in-tariff to an auction system.

The study by Karoliina Isoaho and Jochen Markard ([2020](#)) examines another country in which the incumbents of the conventional energy system tried to delegitimize the energy transition by shoring up support for fossil fuels. Isoaho and Markard emphasize that “struggles over ideas and values are particularly relevant for sustainability transitions.” In particular, the authors analyze how the coal lobby in the United Kingdom tried to “white-wash” coal by pointing toward the potential of carbon dioxide capture and storage (CCS). We have seen similar attempts to reverse the decline of carbon fuels by the Trump administration in the United States. In the United Kingdom, this attempt manifestly failed. Developments in the economic-technological path were un conducive to changing the political discourse around the energy transition. CCS’s early promise to turn coal into a clean energy source proved to be vastly exaggerated. It would take decades and tremendous investments to make it work. Meanwhile, renewables became an ever more viable source for clean, reliable, and affordable energy. In the end, the coal lobby conceded defeat despite the fact that it had initially enjoyed considerable government support for CCS. The British economy had already diverged too much from the coal path. What is remarkable about the British case is that here policy followed economic-technological developments and, in turn, public discourse rather than the other way around. The opponents of an energy transition in the United Kingdom ultimately failed to turn the tide because they could not revive the legitimacy of coal due to insurmountable technological hurdles and an economic development that clearly favored renewable energy.

The study by Clau Dermont and Lorenz Kammermann ([2020](#)) assesses how much the dynamics within the political path relative to the legitimation path impact particular aspects of the energy transition. In particular, the authors focus on the nuclear phaseout in Switzerland before and after the Fukushima Daiichi nuclear disaster. Exogenous effects often trigger far-reaching institutional changes, changing path dynamics and redirecting political, economic, and social developments. Yet, Fukushima did not appear to change popular beliefs in the desirability and feasibility of Switzerland’s energy transition. Fukushima indeed did little to change the levels of support and resistance to nuclear energy on the political left and right, respectively. What seemed to matter more were the changing attitudes of the representatives of the center parties who, in the wake

of Fukushima, sided with the political left and voted in favor of a nuclear phaseout. Due to Switzerland's political institutions (e.g., the electoral system), the coalition against nuclear energy and in favor of renewables formed a majority in the Swiss parliament after 2011. As they joined the anti-nuclear coalition, center parliamentarians appeared to follow personal conviction more than electoral calculations. Even in the wake of Fukushima, the energy transition had not become a salient issue and popular opinion had not changed dramatically. In 2016, for instance, a popular referendum to accelerate the nuclear phaseout was rejected. In other words, the legitimation path did not predetermine the politics of the energy transition. In this case, focusing on the institutions and actors of the political path appears more fruitful. Even smaller political changes have the potential to achieve far-reaching results, such as the *Energiewende* in Germany in 1990 (Karapin, 2020; Stefes, **2020**) and, as Dermont and Kammermann show, the nuclear phaseout in Switzerland, which inevitably changes the economic-technological path of this Alpine republic.

Comparing Germany and Japan, Carol Hager and Nicole Hamagami (**2020**) add another level of analysis to the study of energy transitions, which are not just a top-down undertaking. In fact, the German energy transition had its origins in local communities, which, in opposition to nuclear energy, fostered the development of renewable energy sources more than 40 years ago (Hager, **2016**). By doing so, they began to legitimize energy transitions in the early years of the energy transition in Germany, laid the economic and technological foundation which allowed renewable energy to take off after 1990, and built the political base of the pro-transition coalition. In many ways, local communities thereby provided early positive feedback loops. In Japan, the energy transition arrived later but was temporarily put into high gear in the wake of Fukushima. Many Japanese communities pushed for local renewable energy development, generally in partnership with government and industry actors. Challenges along the economic-technological path, however, enabled national-level incumbent actors in both countries to slow and reassert control of the energy transition, weakening its legitimacy. Community-level activists are now opposing large national energy initiatives, even when they involve renewables. In Japan, it has led some activist communities to separate from their national partners. In both cases, the retrenchment at higher levels of governance interrupted the positive feedbacks on the local level that had provided the energy transition some of its most committed support.

Finally, in their analysis of the United States, Murray and Niven (**2020**) demonstrate the complexity of energy transitions in which a central government plays no significant role. As the authors argue, economic and technological developments—“decentralized market forces and deployment of new technologies”—have largely determined the pace and direction of the energy transition in this country. Another development that is somewhat unique to the United States is the importance of large corporations, whose procurement of renewable energy has grown significantly in recent years, accelerating the switch from fossil to renewable energy sources. The federal government directly supported this switch through favorable tax policies for renewables and indirectly through federal environmental regulations that increased the costs of fossil fuels, leveling the playing field overall. More recently, however, the Trump administration has weakened or even abolished these policies in an attempt to halt and reverse the energy transition. In the end, as Murray and Niven argue, these attempts will not succeed. In the American federal system, where authority over energy is largely decentralized, state and local governments play a more important role than the federal government. By introducing renewable portfolio standards and carbon pricing, state and local governments are able to accelerate energy transitions. Yet, in the United States not all have. The result is a patchwork of localized energy regimes, which demonstrates that the analytical framework proposed by Stefes (**2020**) in this issue might need additional layers of analysis.

Differentiating legitimation, economic-technological, and political paths enables us to portray the complex and contingent nature of energy transitions. The interactions of institutions and actors along these three paths, and the convergence or divergence of the paths over time, help explain the stop–start pattern of energy transitions even in countries such as Germany that have taken a leadership role in climate policy. Attention to these different aspects of energy transitions may also bring to light new opportunities to stabilize the global move toward a low-carbon future in the face of catastrophic climate change.

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