ROUTLEDGE HANDBOOK OF ENERGY DEMOCRACY

This handbook offers a comprehensive transdisciplinary examination of the research and practices that constitute the emerging research agenda in energy democracy.

With protests over fossil fuels and controversies over nuclear and renewable energy technologies, democratic ideals have contributed to an emerging social movement. Energy democracy captures this movement and addresses the issues of energy access, ownership, and participation at a time when there are expanding social, political, environmental, and economic demands on energy systems. This volume defines energy democracy as both a social movement and an academic area of study and examines it through a social science and humanities lens, explaining key concepts and reflecting state-of-the-art research. The collection is comprised of six parts:

1 Scalar Dimensions of Power and Governance in Energy Democracy
2 Discourses of Energy Democracy
3 Grassroots and Critical Modes of Action
4 Democratic and Participatory Principles
5 Energy Resource Tensions
6 Energy Democracies in Practice

The vision of this handbook is explicitly transdisciplinary and global, including contributions from interdisciplinary international scholars and practitioners. The *Routledge Handbook of Energy Democracy* will be the premier source for all students and researchers interested in the field of energy, including policy, politics, transitions, access, justice, and public participation.

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"A jaw dropping, rich, and wondrously comprehensive treatment of the topic of energy democracy. A refreshing reminder than energy decisions, policies, and pathways have as much to do with politics and systems of political deliberation as they do hardware, infrastructure, or tariffs. For acts of energy consumption, investment or self-generation can be political statements alongside transactions in the marketplace or preferences for some technical criterion. This book offers a refreshing, urgent reminder of what is at stake—it is at once a sober diagnosis, a creative piece of scholarship, and a call for action."

Benjamin K. Sovacool, *Professor of Energy Policy, University of Sussex*

"This Handbook considers "energy democracy" as both a social movement and a terminological "composition" or way into important conversations about how technological innovation, new economic and political structures, and adaptive communication practices are all required to transform our broken relationship with the planet. Incredibly timely given recent events from Texas to India to around the globe!"

Stephen P. Depoe, *Professor and Head, Department of Communication, University of Cincinnati*

"Smart, comprehensive, and internationally authored, *Routledge Handbook of Energy Democracy* is an essential reference for scholars and climate activists alike in understanding the sociotechnical complexities of the energy transition now occurring and the urgent choices the climate crisis is demanding of us."

Robert Cox, *Professor Emeritus, University of North Carolina at Chapel Hill*

"A groundbreaking and highly recommended intervention that challenges taken-for-granted assumptions that energy transition necessarily delivers more sustainable futures. Contributors interrogate up-and-downstream aspects of energy assemblages, exploring new technologies and articulating participatory alternatives in the context of resource constraints and climate crisis. This collection is a must for exploring just transition."

Majia H. Nadesan, *Professor of Communication, Arizona State University*

"The intersection of energy, environmental, and security concerns creates urgent problems requiring collaborative solutions. This exciting volume provides a rich and ambitious overview of democratic concepts and practices that can empower scholars and activists in transforming the disastrous trends currently created by technocratic, neo-colonial, and corporate-capitalist control of energy systems."

Bryan C. Taylor, *Professor of Communication, University of Colorado Boulder*

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1
ENERGY DEMOCRACY
An introduction

Andrea M. Feldpausch-Parker and Danielle Endres

As we are writing this chapter, the state of Texas in the United States is in a state of energy disaster. A winter storm intensified by climate change, exposed underlying structural problems in the state's dependence on fossil fuels, natural gas infrastructure, and an electricity grid designed without consideration of climate change–intensified bouts of extreme weather. This example is just the latest in a series of "unnatural disasters" (de Onís, 2018a) facing the world as a result of the ongoing climate crisis. It joins with the impacts that Hurricanes Irma and Maria had on Puerto Rico's aging energy system, reliant on fossil fuel imports (de Onís, 2018b), Superstorm Sandy's devastation to the US East Coast (Feldpausch-Parker et al., 2018), and wildfires in the United States, Australia, and the Amazon. Rather than a dystopian future scenario, climate disaster is happening now and affecting people all over the globe. Climate change acts as a threat multiplier, meaning that we have not seen the end of unnatural disasters and climate chaos.

In the midst of the ongoing climate crisis, energy transition is one of the most important issues facing local, national, and international communities. Although climate change often overshadows energy in public discourse, the ability to affect drastic transformations in the way we conceive of, plan, and use energy is crucial to any efforts to address climate change and create sustainable, equitable, and resilient futures. When viewing energy transition as a sociotechnical phenomenon, focus shifts from determining technical feasibility of particular energy technologies to engaging with the messiness and complexity of social, political, and cultural contestation that must be navigated to actually implement energy system changes at multiple scales. Energy systems will continue to change in the coming years; the consequential question is *how* they will change. Protests over the continued use of fossil fuels; controversies over where (and whether) to locate solar, wind, hydro, and nuclear energy sites; and activist calls for a just transition remind us that while energy transition is inevitable, the contours of that transition remain uncertain and contested.

Working from the basic premise that an energy transition rooted in democratic principles is our best hope of achieving just, equitable, and culturally appropriate solutions across the many scales of decision making about energy, this handbook unpacks the relationships between energy and democracy in the context of the climate crisis and energy transition. Energy democracy (ED) first emerged as a term used by activists to call for greater levels of participation in decision making about energy transitions, including more localized control over energy production and consumption, distributional and procedural justice in decision making, and promotion

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of renewable energy sources (e.g., Giancatarino, 2012). To work toward ED—a sociotechnical energy transition infused with democratic practices and ideals—requires that scholars and practitioners engage and experiment with new forms of participation, relations of power, practices of justice, and configurations of energy technologies. As such, there is a profound need to devote scholarly attention to understanding and developing theoretically informed democratic approaches to energy transitions.

Over the several years since we hosted a symposium in 2017 in Salt Lake City, Utah, to build a research agenda for ED, research in this area has grown exponentially (e.g., Burke & Stephens, 2017; Feldpausch-Parker et al., 2019; Hess, 2018; Szulecki & Overland, 2020; van Veelen & van der Horst, 2018). While Reinig and Sprain (2016) note that ED is not sufficiently addressed in interdisciplinary energy scholarship, four years later Szulecki and Overland (2020) characterize ED research as a nascent interdisciplinary field, with a growth spurt in publications starting in 2017. This growing area of research provides many opportunities to contribute to understanding ED as movement, concept, and practice through varied theoretical, conceptual, and empirical lenses.

Our vision is to offer a comprehensive transdisciplinary examination of the research and practices that constitute ED, or, as Chilvers and Pallett (2018) argue, the multiple energy democracies. While no one handbook can offer a fully comprehensive rendering of an emerging research area, we deliberately curated this collection to offer readers an introduction to ED that represents the many disciplines, regions of the world, and forms of social scientific and humanities research that make up this interdisciplinary area of study. Entries from leading international scholars and practitioners highlight various facets of ED and span a variety of theoretical, conceptual, critical, and empirical forms of research. The handbook includes six parts: scalar dimensions, discourses, grassroots and critical modes of action, democratic and participatory principles, energy resource tensions, and energy democracies in practice. Chapters across these parts explain key concepts, reflect state-of-the-art research, and elaborate on the broad range of actors, democratic values, democratic functions, and governance sites that are involved in ED. The handbook contributes to growing efforts to study examples of energy democracies in practice (e.g., Becker et al., 2020; Bloem et al., 2021; Gunderson & Yun, 2021; Hess, 2019; MacEwen & Evensen, 2021; Morris & Jungjohann, 2016; Stephens et al., 2018; Williams & Sovacool, 2020), as well as to engage with theoretical and conceptual perspectives toward ED (e.g., Burke & Stephens, 2017; Cantarero, 2020; Feldpausch-Parker et al., 2019; Sorman et al., 2020; Szulecki & Overland, 2020). The chapters in this handbook not only extend a growing field's understanding of ED but also, in recognition of its roots in social activism, contribute to the ongoing ED movement by offering research-informed insights into best practices and lessons learned from energy democracies in practice.

In the remainder of this introduction, we begin by defining ED as a composition of energy and democracy. Then we will introduce a framework for examining ED at the intersections of justice, participation, power, and technology. This is followed by a preview of the parts of the handbook and a brief conclusion.

Energy democracy as composition

Energy democracy is a composition, or a putting together, of energy and democracy for a specific sociotechnical purpose: a democratic energy transition in the face of the climate crisis. Bruno Latour (2010) offers the concept of *composition* to highlight that "things have to be put together (Latin, *componere*) while retaining their heterogeneity" (pp. 473–474). In response to

growing ecological crises, Latour offers composition as an alternative to the forms of critique and deconstruction that commonly guide academic inquiry. Focusing primarily on putting things together turns attention to building alternatives and solutions that can have impact on addressing real-world problems, as opposed to the tendency of critique and deconstruction to stop at identifying problems. Composition works on two levels as a framing tool for this handbook's focus on ED: (1) It focuses attention on how seemingly disparate things—like energy and democracy—can be put together in a variety of ways, or *energy democracies* (Chilvers & Pallett, 2018); (2) it focuses attention on developing research programs that go beyond identifying what is wrong by offering immediate, yet thoughtful compositions of new solutions, imaginaries, and futures that respond to the many exigencies faced by society, such as the climate crisis. Composing is difficult but may provide an elemental framework for the energy exigencies at hand. In keeping with the obligation to put together while retaining heterogeneity, we will begin by defining energy and democracy.

Energy

While there are many ways of thinking about energy—from capacity to act, to spiritual essence, to power, to vigor—here energy refers to the forms of power, such as electricity, that are used to enable human technologies. Endres et al. (2016) define energy as:

> power that may be used to operate the infrastructures of the human-built environment. Humans derive that power from resources such as fossil fuels, solar, wind, hydroelectric, nuclear, biofuels, and geothermal sources that are extracted and harnessed, prepared, and distributed in a cycle of energy production. We use the term *energy resources* to discuss sources of energy, *energy production* to describe the cradle-to-grave process whereby energy is supplied to human-built infrastructures, and energy consumption to refer to the processes wherein people use energy resources to power infrastructure, technology, and other activities.
>
> *(p. 420)*

In this way, energy is an essential but often unseen and not reflected upon component of human society (e.g., Szeman & Boyer, 2017). Yet, while some form of energy is foundational to human society, there are significant choices to be made about which energy resources and forms of production and consumption to use. With the alarming present and future realities of climate change and inequities in the distribution of harms, we find ourselves in a time of energy transition with a complex matrix of contestation over what choices to make across scales of participation and governance.

Inherent to our definition of energy is the notion that energy resources, production, consumption, and transition work at the intersection of the technical and social. Energy, then, is also a composition. While many still overwhelmingly consider energy as a technical phenomenon that requires the work of innovative scientists and engineers, it would be a mistake to ignore its social aspects. As Sovacool and Dworkin (2014) note, energy is the:

> sociotechnical system in place to convert energy fuels and carriers into services—thus not just technology or hardware such as power plants and pipelines, but also other elements of the "fuel cycle" such as coalmines [sic] and oil wells in addition to the institutions and agencies, such as electric utilities or transnational corporations,

> that manage the system, as well as the households and enterprises that consume or put that energy to work.
>
> *(pp. 7–8)*

Furthermore, "energy transitions are complicated by the histories, cultures, practices, and existing spatial relations between sites of production and sites of consumption" (Curley, 2018, p. 58). Developing a technology does not guarantee that society will use it or that publics and policy makers will accept scientific evidence as valid. Put simply: Technology alone is not sufficient for implementation of that technology. Indeed, energy is a quintessential example of the inextricable intersections between technoscience and society (e.g., Jones, 2013; Laird, 2013; Sovacool & Brossmann, 2013). This handbook, therefore, resists viewing the social, political, and cultural elements of energy as merely contextual, instead seeing them as essential starting points for investigation into energy and energy transitions.

As a sociotechnical phenomenon, energy is the subject of research from a range of disciplinary perspectives, from sciences and engineering to humanities and social sciences. This handbook's engagement with energy encompasses the full range of social scientific and humanities perspectives, including our disciplinary grounding in energy communication (Cozen et al., 2018; Endres et al., 2016) and energy humanities (Szeman & Boyer, 2017; Wenzel, 2016), as well as the rich sets of interdisciplinary energy studies that are seen in journals such as *Energy Research & Social Science* and collaborations such as the Energy Impacts Research Coordination Network (see EnergyImpacts.org).

Democracy

Democracy is notoriously difficult to define. Communication scholars often think about democracy as what McGee (1980) called an ideograph, or an abstract ideological concept that is presented as self-evident across a variety of contexts to justify action. People may think they know what democracy means, and people living and working in democratic nations certainly hear repeated appeals to democracy as a social good. Yet those appeals rely less on a precise definition than on values, ideologies, and specific contexts. It should be no surprise to readers that democracy has been theorized, debated, and developed over thousands of years and across multiple disciplines. Scholarly literatures identify numerous models, forms, practices, and ideals of democracy. The purpose of our handbook is not to wade into the intricacies of scholarly debate about democracy, though many of our authors draw from various intellectual traditions and conversations about democracy. Rather, we offer a basic definition of democracy as a starting point.

Democracy is fundamentally "a method of group decision making characterized by a kind of equality among the participants at an essential stage of the collective decision making" (Christiano, 2018). This definition focuses on democracy as a process of collective decision making that can occur within a variety of groups ranging from a family to a community to a business to a state or national government. With this definition, the forms of decision making and participation can also vary: "It may involve direct participation of the members of a society in deciding on the laws and policies of the society or it may involve the participation of those members in selecting representatives to make the decisions" (Christiano, 2018). Mouffe's (2005) perspective on democracy assumes that decision making operates at the confluence of dialogue and rhetoric, where attempts to achieve mutual agreement include both the dissemination of persuasive messages (rhetoric) and intersubjective meaning-making (dialogue) processes among participants. Her theory highlights the concepts of *democratic paradox* and *agonism*, while also

recognizing the very real requirement of moving beyond agonism to development, deployment, and administration of policies that convey sufficient public legitimacy to enable deliberation. The goal is to achieve (always temporary) consensus on procedure, without necessarily resolving the interest- and value-based conflicts between citizens, who will likely continue disagreeing and will hopefully continue arguing with one another. Only through this process of contestation of ideas is society able to enact changes in democratic practice that respond to contemporary needs.

Yet democracy is not only a process. Any democratic process is also interconnected with values and ideals. One value is the active and frequent participation by all of those who will be affected by a decision. Others are equity as an ideal that can be achieved by promoting justice among participants and a faith in the ability of a collective to compromise and make decisions with the best interests of all participants in mind. Democratic process is not easy. Indeed, it is a radical ideal that is often not met but is strived for in response to powerful interests and tyrannical leaders. With this definition, then, democracy is not affiliated with a particular political party, government, or nation-state. Democracy as a practice is possible on a variety of scales of decision making, ranging from the local to global, making possible the pursuit and practice of democracy in nondemocratic states.

Democracy is not unconnected with technology (e.g., Collins & Evans, 2002; Hamlett, 2003; Latour, 2004; Mercer, 1998). Indeed, Winner (1986) and Sclove (1995) argue for democratization of technological decision making so that publics, such as emergent ED movements, can be more involved in technological decision making. Jasanoff (2005) importantly highlights that any analysis of the interface between democracy and technology requires a consideration of the civic epistemologies at play across nations. Democracy, therefore, is not one thing in practice. It is a process and set of ideals that may look different when applied to different technologies in different contexts with different participants.

Energy democracy

As framed in this handbook, ED is a composition, a joining together of energy with democracy. Winner (1986) warns against viewing any one energy technology as intrinsically democratic, so the goal of ED movements and research is not to find the most democratic energy option. Rather, ED, in the sense of composition, simply puts the two terms together to encourage that energy decisions are as democratic as possible. Yet this is no easy task and involves a variety of different conceptions of ED. From a compositionist approach, there are many possible energy democracies that emerge within particular contexts, places, and configurations.

The rise of a social movement and area of scholarship

ED as a social movement is roughly a decade old, gaining traction in the early 2010s and gaining attention from a diversity of social science and humanities scholars shortly thereafter. As Szulecki and Overland (2020) note, energy democracy is "linked to the expanded deployment of distributed and small-scale renewable sources" and "the growing politicization of energy governance and climate policy" (p. 1). Feldpausch-Parker et al. (2019) define ED as "an emergent social movement that reimagines energy consumers as prosumers . . . who are involved in decisions at every stage, from energy production through consumption" (p. 2). The movement was borne out of valuing localized autonomy over energy resources and operations, democratic decision making, resisting various forms of environmental injustice, and promoting a just transition (e.g., Angel, 2016; Fairchild & Weinrub, 2017; Giancatarino, 2012; Sweeney, 2014). Angel

(2016) gave shape to the sentiments of this movement in a report from an international workshop on ED held in Amsterdam, The Netherlands, in February 2016 (roughly a year and a half prior to our research symposium in July 2017, as previously noted).

> From energy access to climate justice and from anti-privatisation to workers' rights, people across the world are taking back power over the energy sector, kicking-back against the rule of the market and reimagining how energy might be produced, distributed and used. For many (but not all) movements involved in struggles around energy, the concept of energy democracy is proving increasingly useful as a means of bringing together disparate but clearly linked causes under a shared discourse and, possibly, something of a common agenda.
>
> There is no singular understanding of the call for energy democracy. The term clearly evokes a desire for collective control over the energy sector, counterposed with the dominant neoliberal culture of marketisation, individualisation and corporate control. Energy democracy is concerned with shifting power over all aspects of the sector—from production to distribution and supply, from finance to technology and knowledge—to energy users and workers. Movements deploying the concept of energy democracy also demand a socially just energy system, meaning universal access, fair prices and secure, unionised and well-paid jobs. They want an energy system that works in the public interest, with the profit motive giving way to social and environmental goals. And they seek a transition from high to low carbon energy sources, ultimately meaning a world powered by 100 percent renewable energy.
>
> *(p. 3)*

ED, then, includes several key attributes: A broad range of actors, democratic values, democratic functions, and governance sites as related to energy transition. It is upheld by various processes that support democratic functions, such as public engagement as sense making around socio-technical systems (Einsiedel et al., 2013), making issues of power and competing values open to discussion and resolution (Sharpe et al., 2016), and enabling the conflict and contestation inherent in the redistribution of resources (Lawhon & Murphy, 2012). ED raises questions about what aspects of the energy system ought to be governed by democratic norms, which can be answered by mapping the range of sites of decision making, voice, and agency. Unlike transition management studies that often focus on solely technical or economic policy changes, ED considers a wide range of potential governance sites and stakeholders from energy production to everyday practices.

ED is primarily a movement of local energy practitioners. Proponents view it as a way ordinary people respond to their communities' most critical needs, especially those related to climate change and other environmental injustices (Climate Justice Alliance, n.d.). Expanding social demands on energy systems beyond access, reliability, and affordability to include a suite of environmental and economic benefits has fundamentally altered the configuration of who can directly influence shifts in energy systems. As Sweeney (2014) states:

> A timely and equitable energy transition can occur only with greater energy democracy, which requires that workers, communities, and the public at large have a real voice in decision making, and that the anarchy of liberalized energy markets is replaced with a comprehensive and planned approach.
>
> *(p. 217)*

ED is both a social movement that calls for more democratic decision making about the energy transitions needed to address the climate crisis and an academic area of study (Feldpausch-Parker et al., 2019).

ED is inclusive of considerations of energy justice (Finley-Brook et al., 2018; Sovacool et al., 2017), a just transition (McCauley & Heffron, 2018; Na'puti et al., 2018; Swilling & Annecke, 2012), and energy coloniality (de Onís, 2018b), as is demonstrated by chapters in this volume. More broadly, ED also allows for considerations of climate justice (Pezzullo & de Onís, 2018; Schlosberg & Collins, 2014). We do not offer ED as a replacement for research or activism centered on these terminologies. Rather, we propose that ED is broad and inclusive enough to think with these concepts toward a democratic energy transition built on the pillars of justice, power, participation, and technology.

As noted, ED is fundamentally a sociotechnical process of energy transition. Transition management presumes that emerging technologies influence and are influenced by social context as they progress through the phases of predevelopment, takeoff, breakthrough, and stabilization (Loorbach, 2010). Despite a growing sense of urgency, diffusion of low-carbon energy technologies has been slow and uncertain, and many obstacles have emerged (Stephens & Zwaan, 2005; Wilson & Stephens, 2009). Research exploring the challenges of energy technology diffusion has generally focused on the economic and technical aspects (Lawhon & Murphy, 2012). Drawing from research on the sociotechnical dimensions of energy technologies, ED considers a broader range of actors and social influences than just the economic and technical. ED contributes to a theory of sociotechnical energy transitions that recognizes that social change and technological change are fundamentally interrelated (Geels & Schot, 2007).

Energy democracy frameworks

As scholars attempt to capture the momentum of a social movement and its theoretical and practical implications, some, including ourselves, have attempted to provide a framework for an ED research agenda. An early framework from Kunze and Becker (2014) evolved from ED movements in Europe, pulling from case studies in Germany, Spain, the United Kingdom, France, Hungary, Italy, and Belgium. This framework includes democratization, property, surplus value production, and ecology. The authors take a postgrowth stance for which people and planet are prioritized above capitalism, citing the elimination of energy and fuel poverty as well as the conservation of biodiversity as examples. Focusing on efforts in North America, Burke and Stephens (2017) instead focus on the use of policy instruments and goal attainment in ED movements, noting that multiple goals are often sought from such efforts. Hess (2018) relatedly takes on a multicoalition perspective to energy transitions, whereas Szulecki (2018) breaks ED into: "popular sovereignty, participatory governance and civic ownership, and operationalizing with relevant indicators" (p. 21). The Climate Justice Alliance even assembled a list of ten principles for ED in an effort to guide the movement, including human rights, self-determination, energy as a commons, just transitions, energy use, community governance, diversity of scale, reclaiming relationship, acknowledging, acting on, and repairing historical harms, and rights of nature (Center for Earth, Energy & Democracy & CJA Energy Democracy Working Group, 2015, p. 6). These are just a handful of frameworks adding to this nascent body of literature that is both attempting to analyze energy system reimagining efforts and to contribute to articulating the principles undergirding those efforts. ED frameworks demonstrate the hope of shaping energy systems so they are more equitable and better able to deal with social and environmental challenges such as the climate crisis. In the following sections, we will outline our framework as an attempt to create a transdisciplinary research agenda.

Justice-participation-power framework

Feldpausch-Parker et al. (2019) synthesized and analyzed extant interdisciplinary scholarship on ED and proposed a framework for future research based on the conceptual pillars of *justice*, *participation*, and *power*. While these components may not be the only elements at play, their presence in various configurations can be seen throughout the literature and movement as fundamental to democratic energy transitions. Highlighting justice, participation, and power does not ignore the importance of technology, economics, and governance in energy transitions but shifts the organizing focus of energy transitions to ensuring adherence to democratic principles and practices in energy decision making. This framework offers a heuristic for understanding sociotechnical energy transition, "enabling examination of theoretical models, empirical examples of ongoing struggles over energy, and practical recommendations for communities engaged in promoting energy democracy" (Feldpausch-Parker et al., 2019, p. 3).

Justice in ED builds from social and environmental justice movements and discourses of climate justice, energy justice, and just transitions. As the Climate Justice Alliance (2018) notes on their website, "Transition is inevitable. Justice is Not." Similarly, no one energy technology is guaranteed to promote justice and democracy in all locations and contexts. Activists and scholars promote justice by illuminating and attempting to address issues of inequality and marginalization in energy processes, including inequalities of access to affordable energy, impacts from energy systems, and access to energy decision-making processes about energy infrastructure (e.g., Cha, 2020; Healy & Barry, 2017; Newell & Mulvaney, 2013). "The solution to resolving the Energy Trilemma"—economics, politics and environment—is justice and equity (Heffron et al., 2015, p. 168). Heffron et al. (2015) go on to argue that "this represents a move away from solely having economic thinking drive policy aims" (p. 169). A just transition sees economics from the lens of ensuring justice for workers and localities. Furthermore, while justice is traditionally conceived of as a human construct, it should also be applied to the more-than-human world to incorporate ecological systems into energy transition (Feldpausch-Parker et al., forthcoming; Whyte, 2016).

Participation pulls heavily from participation and democracy literatures to focus on how individual and collective actors participate in energy decision making. Engagement may include a variety of democratic practices, both within and outside formal decision-making processes sanctioned by governance institutions. Therefore, this category goes beyond the traditional practices of public comment periods and public hearings to include a broad swath of participatory actions (Feldpausch-Parker et al., 2019). Sociotechnical transitions research provides some examples where participation can include ownership and management of energy technologies by (re)imagining ratepayers "as prosumer, or innovators, designers, and analysts who are involved in decisions at every stage" (Feldpausch-Parker et al., 2019, p. 2). Social movements are also key to shaping energy politics and serve as an example of forms of participation that exceed official processes (Cozen et al., 2018; Endres et al., 2009; Pezzullo, 2007). Regardless of the form of participation, ED involves challenges to traditional technocratic or decide-announce-defend (DAD) forms of participation in environmental decision making (Depoe et al., 2004; Hendry, 2004; Hunt et al., 2019). Justice is relational to participation in that just forms of participation involve the genuine inclusion of all relevant stakeholders. For this to be fully realized, energy decision-making processes must expand beyond overreliance on technocratic and economic knowledges that privilege expert voices with institutional power to also include local, public, and Indigenous knowledges that engage with or have the capacity to engage with social and ecological systems in everyday life (Endres, 2009; Fischer, 2000; Kimmerer, 2013; Kinsella, 2004).

Power in this framework is focused on the ability to act (or not act) to elicit change. Mouffe (2000) notes that power is often unequally distributed in decision-making processes, leaving some actors to wield greater influence than others. This is very much the case in energy systems decision making. Burke and Stephens (2017) argue that "central to an energy democracy agenda is a shift of power through democratic public and social ownership of the energy sector and a reversal of privatization and corporate control" (p. 38). Power is multidirectional—it can be a form of control from an official position, or it can be resistive. In the case of the latter, power depends "on the hope that activism, grassroots democratic organizing, local governing structures, and public participation have the power to make changes in the status quo and possibly change existing hierarchies and relationships" (Feldpausch-Parker et al., 2019, p. 5). Understanding controlling and resistive forces of power can, therefore, provide an opening for reconstituting the understanding of energy transition via ecological processes, sociotechnical arrangements, and the societal consequences. Taken together, justice, participation, and power represent a set of intersecting nodes within ED that allow for a view of sociotechnical energy transition that centers the power of people to challenge inequitable structures and make change.

An expanded justice-participation-power-technology (JPPT) framework

Although the presence of energy technologies is assumed in the justice-participation-power framework, other ED frameworks include more explicit discussion of the technical and infrastructural components of energy transitions within a social context (see Kunze & Becker, 2014). As the body of literature on ED continues to grow and grapple with the complexities associated with socially and environmentally equitable energy systems, we have refined our framework to include technology as one of the nodes.

Research exploring the challenges of energy technology diffusion and implementation has generally focused on economic and technical solutions to technology deployment (Lawhon & Murphy, 2012). Yet, as we have argued, we cannot resolve sociotechnical problems like the climate crisis and energy transition without focusing on the intersecting societal, historic, cultural, and ecological factors. In this vein, Feldpausch-Parker et al. (2019) call to shift the focus of energy transition research "from viewing the sociopolitical elements as context to seeing them as key starting points for investigation of sustainable energy transitions" (p. 3). In addition to centering the sociopolitical in our understanding of energy technologies, the JPPT framework retains the centrality of actors and social influences other than economics and technology, while also exploring how economics and technology play into the composition of ED. This enables viewing energy technology transition through the lenses of justice, participation, and power, therefore reorienting the range of considerations, voices, and values available for analysis. The JPPT framework contributes to viewing sociotechnical energy transitions as matters of social change that are inseparable from justice, participation, and power. As such, the intersections of justice, participation, power, and technology offer a way to analyze the components of energy transition using democratic principles as the primary lens.

This expansion of our framework explicitly captures the roles played by technology and technological innovation in a just and equitable energy transition. What sets our framework apart from others is its continued focus on democratic theory and practice—via justice, participation, and people power—that we view as essential to the ED movement and scholarship. Practicing democracy requires conditions for productive interaction within communities of similar values and interests, between diverse communities, and at interfaces with decision makers.

This focus on democracy as the primary lens for energy transition brings its own limitations, particularly its narrowed focus on justice, participation, power, and technology. Szulecki and Overland (2020) acknowledge the difficulties of developing one overarching framework for ED movements and research programs. Instead, they provide three "ideal-typical understandings of energy democracy" including "a process," "an outcome of decarbonisation," and "a normative goal" (p. 2). Sorman et al.'s (2020) framework includes (1) the concept of energy as something that is socially and politically constructed; (2) the political, which captures the discourses of energy security versus energy sovereignty; and (3) the people, which addresses political polarization and post-truth energy politics. While the JPPT framework has less breadth than these frameworks, its strength is in its attention to how energy technology systems can be democratized via considerations of justice, participation, and power. Our framework also allows for comparisons of democratic constructs between case studies in locations with different social pressures and cultural considerations. Thus the JPPT framework provides a terministic screen (Burke, 1966), or lens, through which to highlight practices, that enables an energy transition that values just, participatory, and equitable power relations.

Scope of the handbook

Our vision for this handbook is to offer a transdisciplinary and international examination of the research and practices that constitute the emerging research agenda in ED. The handbook addresses ED as both a social movement and an academic area of study. It includes entries from leading scholars and practitioners that highlight various facets of ED theory and practice. The chapters include scholars and practitioners not only within communication, our primary affiliation, but across the humanities and social sciences. Moreover, the handbook engages with global energy issues through choice of both examples and international scholars. In sum, this handbook serves as a key source for students and researchers who want to teach about or engage in a research program on ED.

Part overviews

The handbook is divided into six parts that attempt to encompass different aspects of and scholarly lenses for examining ED. **Scalar Dimensions of Power and Governance in Energy Democracy** introduces dimensions of ED at different scales of governance, recognizing and working through dynamics of power. Chapters in this part demonstrate how ED is scale dependent. **Discourses of Energy Democracy** showcases prevalent discourses of ED that construct particular visions of energy transition. Together, the chapters in this part reveal patterns and tensions in how discourses of and about ED differently construct meanings and coordinate energy transition. **Grassroots and Critical Modes of Action** reviews grassroots and critical strategies for enacting ED. The chapters in this part provide a set of options that can operate singly or in combination to foster energy democracies in particular locales. **Democratic and Participatory Principles of Energy Democracy** introduces principles and constructs that characterize ED. Chapters in this part theorize and analyze a wide variety of democratic practices in many contexts and formats. **Energy Resource Tensions** introduces different types of energy resources (hydro, solar, wind, natural gas from fracking, and nuclear) and the tensions that exist in their continued or contested use. Chapters present these tensions through empirical and critical study. **Energy Democracies in Practice** introduces strategies and imaginaries for enacting ED through coalitions, projects, organizations, and movements that provide insight

into doing the practical work of building ED. Chapters in this part offer analysis and description of both currently used and possible practices of ED.

Through these six parts, the handbook offers entries that explain key concepts, reflect state-of-the-art research, and build the research agenda for ED. Each section has an introductory chapter that outlines section contents, four chapters that engage with the section topic, and a response chapter that showcases section themes and points to future opportunities for research and practice.

Concluding thoughts

The research in the handbook illustrates the complexity of sociotechnical energy transitions; theorizes the principles of ED; analyzes on-the-ground energy democracies; illustrates the range of actors, scales, sites, and practices involved in ED; and assists practitioners in engaging in efforts to democratically participate in decisions regarding energy. This strategic integration of transdisciplinary and international research enhances and encourages future opportunities for ED research. The broader significance lies in its contribution to a better understanding of the composition of energy transitions and democratic world making.

This book is a composition in multiple senses of the word. Its subject matter requires a composition of energy and democracy into energy democracies. It is a composition of multiple disciplines. It is a composition of scales, locations, concepts, practices, and more. Rather than collapse differences, these compositions focus on the temporary "putting-together" for the purpose of analytic, theoretical, or practical clarity. This handbook is also a composition in Latour's (2010) second sense, as an intervention into an ongoing sociotechnical challenge facing society. The chapters in this book give guidance for policy makers, activists, and others seeking a democratic energy transition. As such, the handbook aligns with engaged and praxis-based research practices (Endres et al., 2008; Sismondo, 2008). We offer this composition with the hope that it spurs more research and action toward a just, equitable, and democratic energy transition that can begin to scale back human contributions to the climate crisis.

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