Elgar Encyclopedia of Environmental Sociology

Edited by

Christine Overdevest

Associate Professor of Sociology, Department of Sociology and Criminology & Law, University of Florida, USA

ELGAR ENCYCLOPEDIAS IN SOCIOLOGY

Edward Elgar PUBLISHING

Cheltenham, UK • Northampton, MA, USA

Published by
Edward Elgar Publishing Limited
The Lypiatts
15 Lansdown Road
Cheltenham
Glos GL50 2JA
UK

Edward Elgar Publishing, Inc.
William Pratt House
9 Dewey Court
Northampton
Massachusetts 01060
USA

A catalogue record for this book
is available from the British Library

Library of Congress Control Number: TO FOLLOW

This book is available electronically in the Elgaronline
Sociology, Social Policy and Education subject collection
http://dx.doi.org/10.4337/9781803921044

ISBN 978 1 80392 103 7 (cased)
ISBN 978 1 80392 104 4 (eBook)

Contents

Ecological Democracy: Theory and Practice at the Democracy–Environment Nexus." *Journal of Environmental Policy & Planning* 22(1):1-15.
Ryghaug, Marianne, Tomas Moe Skjølsvold, and Sara Heidenreich. 2018. "Creating Energy Citizenship Through Material Participation." *Social Studies of Science* 48(2):283-303.
Seyfang, Gill, Jung Jin Park, and Adrian Smith. 2013. "A Thousand Flowers Blooming? An Examination of Community Energy in the UK." *Energy Policy* 61:977-89.
Sovacool, Benjamin and Michael Dworkin. 2015. "Energy Justice: Conceptual Insights and Practical Applications." *Applied Energy* 142:435-44.
Stephens, Jennie, Matthew Burke, and Brock Gibian et al. 2018. "Operationalizing Energy Democracy: Challenges and Opportunities in Vermont's Renewable Energy Transformation." *Frontiers in Communication* 3:43.
Sweeney, Sean. 2013. *Resist, Reclaim, Restructure: Unions and the Struggle for Energy Democracy*. New York: Rosa Luxemburg Stiftung.
Szulecki, Kacper. 2018. "Conceptualizing Energy Democracy." *Environmental Politics* 27(1):21-41.
Szulecki, Kacper and Indra Overland. 2020. "Energy Democracy as a Process, an Outcome and a Goal: A Conceptual Review." *Energy Research & Social Science* 69:101768.
Van Veelen, Bregje. 2018. "Negotiating Energy Democracy in Practice: Governance Processes in Community Energy Projects." *Environmental Politics* 27(4):644-65.
Van Veelen, Bregje and Dan van der Horst. 2018. "What is Energy Democracy? Connecting Social Science Energy Research and Political Theory." *Energy Research & Social Science* 46:19-28.
Wahlund, Madeleine and Jenny Palm. 2022. "The Role of Energy Democracy and Energy Citizenship for Participatory Energy Transitions: A Comprehensive Review." *Energy Research & Social Science* 87:102482.
Warren, Charles and Malcolm McFadyen. 2010. "Does Community Ownership Affect Public Attitudes to Wind Energy? A Case Study from South-West Scotland." *Land Use Policy* 27(2):204-13.
Wasserman, Harvey. 1999. *The Last Energy War*. New York: Seven Stories Press.

Energy transition

Introduction

While the notion of an energy transition is used in many social, economic and political fields, this subject remains absent in recent environmental sociology handbooks (Legun 2020; Schaefer Caniglia et al. 2021). Nevertheless, climate-energy processes and policies have been approached through cultures, lifestyles, practices, mobilizations, or institutions in broader literature and, more generally, in the literature in energy sociology.

The notion of energy transition and even the reality of it are controversial among academic works. Its multiple dimensions, systemic effects, and uneven developments – for instance, in relation to health, agriculture, or biodiversity concerns – also make these processes complex ones to study. After an introductory section that brings together some definitions and their critics, we focus on issues of justice and democracy in relation to specific processes of an energy transition. In so doing, we propose to introduce the reader interested in sociology and related social sciences (such as geography, economy, or anthropology) to key results and debates that are particularly vivid in this field.

A preliminary observation is that this entry is devoted to contemporary energy transition processes under climate constraints. Compared to other historical processes of energy change, which may have been driven by the modernization of industrial sectors or the diversification or change in energy resources, contemporary energy transition processes are steered mainly by techno-centric forward-looking climate-energy scenarios. Beyond the simplified representations of space, time and society conveyed by these scenarios, the study of ongoing energy transition processes at different scales is key to highlighting how justice and democracy matter.

Energy transition: definitions and critics

The notion of energy transition commonly refers to a deliberate transformation of present sociotechnical energy systems necessary for the emergence of more sustainable, less

carbon-dependent, and less energy-intensive energy systems.

Two main bodies of academic work are essential to understand the challenges raised by such a preliminary definition. The first body focuses on unfolding energy systems' historical evolution and energy uses over several centuries (Leach 1992; Marchetti 1977; Smil 1994, 2010). This history is organized around the narrative of successive transitions from traditional agriculture, the pre-industrial age, the Industrial Revolution, and the hydrocarbon civilization (Fischer-Kowalski and Haberl 1997). This overview is useful in uncovering large energy systems and the non-energetic factors that influence their course (technical innovation, mass consumption, social practices). Albeit some specific works consider national trajectories (Nye 1998, in the case of the United States; Wrigley 2010, in the case of the UK), the dominant focus of this body of works is global and tends to overlook the role of cultures and places in the development of societies. It also reduces these transitions to mere substitutions among energy sources: coal for wood, hydrocarbons for coal, then to the increasing consumption of primary energy transformed into electricity. The idea that there is a contemporary "energy transition" is contested by these works (Fressoz 2013), as it hides the relations of domination underlying the still-vivid supremacy of fossil fuels and marginalizes the historical opportunities for alternative experiments.

The second body of work approaches energy transition processes from the perspective of technical change. A set of concepts (phases, path dependency, lock-in) is forged to explain, most often, why the deployment of these processes is so slow. For example, Hughes (1983) distinguished several long-lasting "phases" (invention, technology transfer, system growth, expansion, spatial differentiation) in the development of urban public lighting. More recently, the work of the multi-level perspective (MLP) (Geels and Schot 2007) distinguished between three interacting levels – the "niche" the "regime" and the "landscape" – in technological change management. The question at the heart of this approach is how long it takes to move from one technical system to another (Sovacool 2016). The evolutionary and managerial conception of innovation, the standardization of decision scales, the lack of attention paid to power issues, and the role of space in these works have triggered much criticism in sociology and geography (Becker, Moss, and Naumann 2016; Bridge et al. 2013; Coenen, Benneworth, and Truffer 2012; Shove and Walker 2007).

In fact, beyond the term "transition" – which too often suggests a gradual, almost tension-free evolution during which one form of energy would substitute for another – multiple processes must be addressed, which often raise justice issues and have ambiguous careers.

Beyond a techno-centred approach of energy transition: unfolding energy justice issues

The critics of the evolutionist or techno-centred definitions of the energy transition invite us to acknowledge the diversity of contemporary energy transition processes and learn from their social, political, and ecological effects (Labussière and Nadaï 2018). As highlighted by Calzadilla and Mauger (2018), the seventh goal of the United Nations' 2030 agenda for sustainable development cannot be reached while developing energy alternatives that generate new situations of injustice.

This section introduces the reader to critical results regarding vulnerability, spatial and temporal justice, and mobilizations in relation to energy transition processes. While these domains of research overlap, they successively focus on: the political-economic and material processes driving energy vulnerability, the spatial and temporal complexity of injustice associated with energy systems, and the responsibilities and capabilities of actors to act politically across these systems.

Energy vulnerability

Energy vulnerability cannot be reduced to a single metric. Energy policies that focus on individual practices fail to recognize the multifaceted nature of energy poverty and the unequal capacity of people to act on it, depending on their living conditions and socio-spatial trajectories (Bickerstaff, Walker, and Bulkeley 2013; Hall, Hards, and Bulkeley 2013, Middlemiss et al. 2019).

Individuals or groups become vulnerable to energy changes in space and time. They may be affected by the impacts of energy

prices and policy changes as well as by their living conditions or the material devices they use. Energy vulnerability is no longer an inherent attribute of particular households or individuals. Instead, situations of vulnerability are a multiple and dynamic phenomena, varying according to life trajectories, socio-technical assemblages, or temporal qualities (like seasons). Energy vulnerability issues can thus be approached at different scales, that of everyday experience, that of the material configurations of the building and its equipment, that of the neighbourhood and the city, and finally, that of the legacies of economic and energy policies (Boardman 2009; Buzar 2007; Day and Hitchings 2011). These dimensions can be approached from various angles, such as political ecology (Bouzarovski 2022), assemblage thinking (Day and Walker 2013), or capability approach (Day, Walker, and Simcock 2016; Middlemiss et al. 2019).

In industrialized countries, the progressive opening of energy systems to prosumers – both consumers and producers of energy – generates opportunities to invent new modes of production, mutualization, and consumption of energy that can be led by liberal or collective ends. This calls for a revision of the interactions between the different material layers of the city, the planning, and the governance modalities of the new local energy services (Bulkeley et al. 2015; Rutherford and Coutard 2015). Not all urban areas face the same challenges. In emerging countries, challenges are much more in terms of security and reliability of supply, growth in energy demand and limited metropolitan infrastructure governance (Jaglin and Verdeil 2017).

Energy justice

The notion of justice refers to philosophical debates in which the meaning of equality is foundational. A formal conception of equality requires that all citizens are treated alike – the equal treatment of citizens before law is a classic example of it. This view clearly applies to 'procedural justice' in which non-discriminatory process matters. A substantive definition of equality refers to the outcomes of the process, of ensuring that all participants receive equal outcomes or parts. This may require positive discrimination in favour of disadvantaged people to take into account historical relations of power that generated a lack of dignity and unfair living conditions.

Energy justice has emerged in the course of a long history of concerns about environmental movements and justice issues, with works especially interested in establishing facts about why minority communities are located in and around technological hazards or deadly sources of exposure (Cutter 1995; Taylor 2000) – see the entry on environmental justice in this *Encyclopedia*.

The pioneering definition of Guruswamy (2010) proposed that "[e]nergy justice seeks to apply basic principles of justice as fairness to the injustice evident among people devoid of life sustainable energy… Energy justice is an integral and inseparable dimension of the universally accepted foundational principle…of international law and policy: Sustainable Development ('SD')" (Guruswamy 2010:233). McCauley et al. (2013) substantively contributed to organizing the field with the distinction of three tenets of energy justice: distributional, recognition-based, and procedural. These tenets can be introduced through the questions: "Where are the injustices?", "Who is ignored?", "Is there a fair process?" (Jenkins et al. 2016).

Distributional justice addresses "both the physically unequal allocation of environmental benefits and ills and the uneven distribution of their associated responsibilities" (ibid.:176). It considers unfair allocations through space and time, when, for instance, specific localities and minorities are affected by cumulative impacts of infrastructures or industrial activities (Walker 2009). In the literature, this unfair allocation of benefits and risks is appreciated in relation to different energy sectors (e.g., oil, gas, nuclear, or renewables) through different analytical strategies. The first strategy consists in shedding light on the environmental and social impacts generated by extractive economies to supply industrial countries with energy resources distant in space and time – see O'Rourke and Connolly (2003) for the impacts of oil production and consumption; Hecht (2012) for the Nigerian uranium and nuclear; Forget and Bos (2022) for Peruvian lithium and electric mobility. Debates about defining the Anthropocene also led to reconsidering race, slavery, and the organization of the geological space by extractivist economies over centuries (Yusoff 2018). In the wake

of the development of renewable energies in the late 1990s, many works have addressed the accelerated transformation of landscapes and cultures as well as our capacity to face the local impacts of these new energies (Pasqualetti 2000). Wind power development has generated many works about the reasons for local opposition to it. Some of them pointed out that injustice may result from conflicting global and local values (Warren et al. 2005). While the development of renewables up-scaled, analyses flagged renewable infrastructure developments sometimes associated with processes of land grabbing, social coercion, dispossession, and displacement of communities – for example, Dunlap (2018) for wind power in Mexico; Yenneti, Day, and Goluchikov (2016) and Stock and Brikenholtz (2019) for solar in India; Munro, Van der Horst, and Healy (2017) for fuel wood in Sierra Leone. These not only questioned the siting of infrastructures but also the access to affordable, safe and reliable energy (Castán Broto et al. 2018).

Recognition justice accounts for processes of "disrespect, insult, and degradation that devalue some people and some places identities in comparison to others" (Walker 2009:615). It refers to issues of cultural and political domination, often based on ill-conceived categories, that are disrespectful and convey a hierarchy of values (Jenkins et al. 2016). Normative and exclusionary approaches of users or groups are widespread in contemporary debates about the processes of the energy transition. Paradigmatic of this is the notion of "Not In My Back Yard" (NIMBY), which portrays opposition to renewable infrastructures as deviant, uninformed, and driven by individual or selfish interests. Within the wind power literature, a broad consensus has emerged that NIMBY explanations alone are inadequate to understanding public attitudes and responses to wind power developments (Aitken 2010; Devine-Wright 2005, 2009).

Another example is the idea that the "energy poor" suffer from a "knowledge deficit" and need to be "educated" about the "right practices". Focusing on individuals as "empty vessels" to be filled with energy-related information ignores the collective experience and learnings that help households face energy vulnerabilities (e.g., Catney et al. 2014; Middlemiss et al. 2019). In the context of developing countries, Castán Broto et al. (2018) emphasized the neocolonial heritage underlying the normative approach to energy access. They called for "opening up a dialogue with postcolonial critiques of development" (Castán Broto et al. 2018:645). Winther, Ulsrud, and Saini (2018) emphasized gender issues in the construction of electricity access in rural Kenya. The notion itself of recognition of justice is still under discussion. Van Uffelen (2022:7) proposes that it is a matter of "adequate recognition of all actors through love [e.g., care, concern and emotive connections embedded in social arrangements], law [e.g., dignity and intrinsic value of human and non-human] and status order [e.g., needs, concerns and epistemic contributions of communities]". This broadens the scope of recognition issues and intersects other research agendas like the one on gender, sexuality and feminist issues (Cannon and Chu 2021). More than adding claims, this invites us to analyse intersecting and historical forms of injustice.

Procedural justice concerns issues of "access to decision-making processes… It manifests as a call for equitable procedures that engage all stakeholders in a non-discriminatory way" (Jenkins et al. 2016:178). To Sovacool and Dworkin (2015:435), "energy justice presents a useful decision-making tool that can assist energy planners and consumers in making more informed energy choices". In practice, the fairness of procedures refers to multiple issues. The literature on wind power development is representative of these issues. It has been interested in challenging the usual modes of participation. It discussed the extent to which processes of public consultation and project or plans development were opened to multiple values and experiences associated with landscape (Aitken, McDonald, and Strachan 2008; Cowell 2010; Ellis et al. 2009; Nadaï and Labussière 2009; Wolsink 2009), or integrated local knowledge about non-humans, such as migratory birds (bird-watchers' knowledge, Nadaï and Labussière 2010) or reindeer populations (Sami peoples' knowledge, McCauley, Rehner, and Pavlenko 2015). As proposed by Jenkins et al. (2016), procedural justice also addresses the representation of gender, ethnic or marginalized communities in decision-making as well as getting access to impartial and full information from government and industry.

Democratic and inclusive procedures are not enough to guarantee justice. Paying attention to informal aspects like practices, norms, values and behaviours is also necessary (Hall 2013).

Energy justice is a burgeoning field that progressively extends, specifies and rearticulates its dimensions (Sovacool et al. 2017). Based on a critical review, Droubi, Heffron, and McCauley (2022) have distinguished three forms of justice: distributive, procedural and restorative. This last one encompasses "any injustice caused by the energy sector [that] should be rectified" (Droubi et al. 2022:6), and measures such as managing waste, decommissioning infrastructures or returning an energy site to former use. For these authors, recognition of justice along with cosmopolitan justice, is one of two universal forms of justice. Cosmopolitan justice "is based on the principle that everyone is a citizen of the world" (ibid.:10) and thus acknowledges the cross-border effects of our energy production and consumption.

Solidarities and social movements

Facing energy vulnerabilities and injustices gives rise to multiple individual and social processes and answers. We briefly introduce the reader to some of them and their analysis.

Inspired by Sen (1987, 1992), the capability approach considers the diversity of people's values, needs and preferences, and the situation in which they are embedded. This framework offers a strong alternative to utilitarianism that tends to reduce behaviour to rational and personal interest. The capability approach not only refers to valuable achievements but also encompasses the ability and the freedom to conceive and, most importantly, achieve them (Sen 1987:59). This significantly changes the understanding of situations of vulnerability and injustice, too often centred on the individual. For instance, Middlemiss et al. (2019) pointed out the role played by informal solidarities (e.g., people who develop good connections with others, do not feel ashamed, and have opportunities to participate) in accessing adequate energy services. Other works about renewable energy development showed that capabilities are unequally distributed among genders by this development (see Gill-Wiehl, Ferrall, and Kammen 2022 for Tanzania) or that energy justice principles need to be contextualized and defined by local communities to let them specify why wind power development threatens their capabilities (e.g., health, family solidarities, having a job) and better understand their needs and claims (Velasco-Herrejon and Bauwens 2020).

The development of community-based energy initiatives since the beginning of the 1990s has also been a topic of interest in exploring energy transition processes. While renewable energies have been associated with political ideals of energy democracy (Scheer 2007; Stephens 2019), their dominant development path has largely been inspired and influenced by the institutions of fossil energies (Raman 2013; Walker and Cass 2007). In certain contexts, it was an opportunity for neoliberal governments to praise local action and delegate public missions and objectives to local actors (Marvin and Guy 1997; Park 2012). In this context, community-based energy projects, a type of grassroots initiative, have demonstrated a potential to deploy alternative transition paths (e.g., Nadaï et al. 2015; Seyfang, Park, and Smith 2013; Seyfang and Smith 2007) and experiment with social innovation (Haggett and Aitken 2015). They created multiple benefits (for communities, the environment, or renewable energy development) (Aitken 2010; Walker and Devine-Wright 2008) and strengthened "trust" between local people and those in charge of carrying out these energy projects (Walker et al. 2010). Academics have also shown the multiple entanglements (social, financial, territorial) underlying their emergence (Chezel and Labussière 2018; Cointe 2019; Hargreaves et al. 2013; Rydin et al. 2014; Walker 2008).

A research agenda is under construction in relation to a diversity of social movements and claims for ecological, climate and social responsibilities (Sovacool 2022). Some of these claims are normative ones. For instance, energy citizenship is a widespread official discourse that puts the responsibility for the energy transition onto the "citizen-as-consumer" while leaving individuals largely disempowered (Lennon et al. 2020) – a situation that calls for thinking about the material and collaborative conditions to enable this citizenship to be realized (Ryghaug, Skjølsvold, and Heidenreich 2018). Finally, emerging energy justice issues are developed in relation to displaced people, including for reasons of war,

famine, violence and persecution, climate change or natural disasters. Different works propose to approach these issues in places like refugee camps or migrant communities through the notion of humanitarian energy (Rosenberg-Jansen 2022).

Olivier Labussière and Alain Nadaï

References

Aitken, Mhairi. 2010. "Why We Still Don't Understand the Social Aspects of Wind Power: A Critique of Key Assumptions Within the Literature." *Energy Policy* 38:1834-41.

Aitken, Mhairi, Seonaidh McDonald, and Peter Strachan. 2008. "Locating 'Power' in Wind Power Planning Processes: The (Not So) Influential Role of Local Objectors." *Journal of Environmental Planning Management* 51(6):777-99.

Becker, Sören, Timothy Moss, and Matthias Naumann. 2016. "The Importance of Space: Towards a Socio-material and Political Geography of Energy Transitions." Pp. 93-108 in *Conceptualizing German Energy Transition: Institutions, Materiality, Power and Space*, edited by Ludger Gailing and Tim Moss. London: Palgrave Macmillan.

Bickerstaff, Karen, Gordon Walker, and Harriet Bulkeley. 2013. *Energy Justice in a Changing Climate: Social Equity and Low-carbon Energy*. London: Zed Books.

Boardman, Brenda. 2009. *Fixing Fuel Poverty: Challenges and Solutions*. London: Routledge.

Bouzarovski, Stefan. 2022. "Just Transitions: A Political Ecology Critique." *Antipode* 54(4):1003-20.

Bridge, Gavin, Stefan Bouzarovski, Michael Bradshaw, and Nick Eyre. 2013. "Geographies of Energy Transition: Space, Place and the Low-carbon Economy." *Energy Policy* 53:331-40.

Bulkeley, Harriet, Vanesa Castán Broto, Mike Hodson, and Simon Marvin. 2015. *Cities and Low Carbon Transitions*. London: Routledge.

Buzar, Stefan. 2007. *Energy Poverty in Eastern Europe: Hidden Geographies of Deprivation*. Aldershot: Ashgate.

Calzadilla, Paola and Romain Mauger. 2018. "The UN's New Sustainable Development Agenda and Renewable Energy: The Challenge to Reach SDG7 While Achieving Energy Justice." *Journal of Energy and Natural Resources Law* 36(2):233-54.

Cannon, Clare and Eric Chu. 2021. "Gender, Sexuality and Feminist Critiques in Energy Research: A Review and Call for Transversal Thinking." *Energy Research and Social Sciences* 75:102005.

Castán Broto, Vanesa, Idalina Baptista, and Joshua Kirshner. 2018. "Energy Justice and Sustainability Transitions in Mozambique." *Applied Energy* 228(15):645-55.

Catney, Philip, Andrew Dobson, and Sarah Hall et al. 2014. "Community Knowledge Networks: An Action-orientated Approach to Energy Research." *Local Environment* 18(4):506-20.

Chezel, Edith and Olivier Labussière. 2018. "Energy Landscape as a Polity: Wind Power Practices in Northern Friesland (Germany)." *Landscape Research* 43(4):503-16.

Coenen, Lars, Paul Benneworth, and Bernhard Truffer. 2012. "Toward a Spatial Perspective on Sustainability Transitions." *Research Policy* 41(6):968-79.

Cointe, Béatrice. 2019. "Mutualising Sunshine: Economic and Territorial Entanglements in a Local Photovoltaic Project." *Local Environment* 24(11):980-96.

Cowell, Richard. 2010. "Wind Power, Landscape and Strategic, Spatial Planning: The Construction of 'Acceptable Locations' in Wales." *Land Use Policy* 27:222-32.

Cutter, Susan. 1995. "Race, Class and Environmental Justice." *Progress in Human Geography* 19:107-18.

Day, Rosie and Russell Hitchings. 2011. "'Only Old Ladies Would Do That': Age Stigma and Old People's Ways of Dealing with Winter Cold." *Health and Place* 17(4):885-94.

Day, Rosie and Gordon Walker. 2013. "Household Energy Vulnerability as 'Assemblage'." Pp.14-29 in *Energy Justice in a Changing Climate: Social Equity and Low-carbon Energy*, edited by Karen Bickerstaff, Gordon Walker, and Harriet Bulkeley. London: Zed Books.

Day, Rosie, Gordon Walker, and Neil Simcock. 2016. "Conceptualising Energy Use and Energy Poverty Using a Capabilities Framework." *Energy Policy* 93:255-64.

Devine-Wright, Patrick. 2005. "Beyond NIMBYism: Towards an Integrated Framework for Understanding Public Perceptions of Wind Energy." *Wind Energy* 8(2):125-39.

Devine-Wright, Patrick. 2009. "Rethinking NIMBYism: The Role of Place Attachment and Place Identity in Explaining Place-protective Action." *Journal of Community & Applied Social Psychology* 19(6): 426-41.

Droubi, Sufyan, Raphael Heffron, and Darren McCauley. 2022. "A Critical Review of Energy Democracy: A Failure to Deliver Justice?" *Energy Research and Social Science* 86:1-15.

Dunlap, Alexander. 2018. "The 'Solution' is Now the 'Problem': Wind Energy, Colonisation and the 'Genocide–Ecocide Nexus' in the Isthmus of Tehuantepec, Oaxaca." *The International*

Journal of Human Rights 22(4):550-73.
Ellis, Geraint, Richard Cowell, and Charles Warren et al. 2009. "Wind Power: Is There a 'Planning Problem'?; Expanding Wind Power: A Problem of Planning, or of Perception?; The Problems of Planning – A Developer's Perspective; Wind Farms: More Respectful and Open Debate Needed, Not Less; Planning: Problem 'Carrier' or Problem 'Source'?; 'Innovative' Wind Power Planning'." *Planning, Theory and Practice* 10(4): 521-47.
Fischer-Kowalski, Marina and Helmut Haberl. 1997. "Tons, Joules, and Money: Modes of Production and Their Sustainability Problems." *Society & Natural Resources: An International Journal* 10(1):61-85.
Forget, Marie and Bos Vincent. 2022. "Harvesting Lithium and Sun in the Andes: Exploring Energy Justice and the New Materialities of Energy Transitions." *Energy Research and Social Sciences* 87:1-11.
Fressoz, Jean-Baptiste. 2013. "Pour une histoire désorientée de l'énergie." *Entropia* 15:173-87.
Geels, Frank and Johan Schot. 2007. "Typology of Sociotechnical Transition Pathways." *Research Policy* 36:399-417.
Gill-Wiehl, Annelise, Isha Ferrall, and Daniel Kammen. 2022. "Equal Goods, but Inequitable Capabilities? A Gender-differentiated Study of Off-grid Solar Energy in Rural Tanzania" *Energy Research & Social Science* 91:102726.
Guruswamy, Lakshman. 2010. "Energy Justice and Sustainable Development." *Colorado Journal of International Environmental Law and Policy* 21:231-75.
Haggett, Claire and Mhairi Aitken. 2015. "Grassroots Energy Innovations: The Role of Community Ownership and Investment." *Current Sustainable/Renewable Energy Reports* 2(3):98-104.
Hall, Sarah. 2013. "Energy Justice and Ethical Consumption." *Local Environment* 18(4):422-37.
Hall, Sarah, Sarah Hards, and Harriet Bulkeley. 2013. "New Approaches to Energy: Equity, Justice and Vulnerability. Introduction to Special Issue." *Local Environment* 18(4):413-21.
Hargreaves, Tom, Sabine Hielscher, Gill Seyfang, and Adrian Smith. 2013. "Grassroots Innovations in Community Energy: The Role of Intermediaries in Niche Development." *Global Environmental Change* 23(5):868-80.
Hecht, Gabrielle. 2012. *Being Nuclear: Africans and the Global Uranium Trade*. Cambridge, MA: MIT Press.
Hughes, Thomas P. 1983. *Networks of Power: Electrification in Western Society, 1880–1930*. Baltimore, MD: Johns Hopkins University Press.
Jaglin, Sylvie and Eric Verdeil. 2017. "Emerging Countries, Cities and Energy: Questioning Transitions." Pp. 106-20 in *The Routledge Research Companion to Energy Geography*, edited by Stefan Bouzarovski, Martin J. Pasqualetti, and Vanesa Castán Broto. London: Routledge.
Jenkins, Kirsten, Darren McCauley, and Raphael Heffron et al. 2016. "Energy Justice: A Conceptual Review." *Energy Research and Social Science* 11:174-82.
Labussière, Olivier and Alain Nadaï. 2018. *Energy Transition: A Sociotechnical Inquiry*. London: Palgrave Macmillan.
Leach, Gerald. 1992. "The Energy Transition." *Energy Policy* 20(2):116-23.
Legun, Katharine, Julie Keller, Michael Carolan, and Michael Bell. 2020. *The Cambridge Handbook of Environmental Sociology*. Cambridge, UK: Cambridge University Press.
Lennon, Breffní, Niall Dunphy, and Christine Gaffney et al. 2020. "Citizen or Consumer? Reconsidering Energy Citizenship." *Journal of Environmental Policy and Planning* 22(2):184-97.
Marchetti, Cesare. 1977. "Primary Energy Substitution Models: On the Interaction Between Energy and Society." *Technological Forecasting and Social Change* 10(4):345-56.
Marvin, Simon and Simon Guy. 1997. "Creating Myths Rather than Sustainability: The Transition Fallacies of the New Localism." *Local Environment* 2(3):311-18.
McCauley, Darren, Raphael Heffron, Stephan Hannes, and Kirsten Jenkins. 2013. "Advancing Energy Justice: The Triumvirate of Tenets." *International Energy Law Review* 32(2):107-10.
McCauley, Darren, Robert Rehner, and Maria Pavlenko. 2015. "Assessing the Justice Implications of Energy Infrastructural Development in the Arctic." Pp. 335-70 in *Delivering Energy Law and Policy in the EU and US*, edited by Raphael J. Heffron and Gavin F.M. Little. Edinburgh: Edinburgh University Press.
Middlemiss, Lucie, Pepa Ambrosio-Albalá, and Nick Emmel et al. 2019. "Energy Poverty and Social Relations: A Capabilities Approach." *Energy Research and Social Sciences* 55:227-35.
Munro, Paul, Greg van der Horst, and Stephen Healy. 2017. "Energy Justice for All? Rethinking Sustainable Development Goal 7 Through Struggles over Traditional Energy Practices in Sierra Leone." *Energy Policy* 105:635-41.
Nadaï, Alain and Olivier Labussière. 2009. "Wind Power Planning in France (Aveyron): From State Regulation to Local Experimentation." *Land Use Policy* 26(3):744-54.
Nadaï, Alain and Olivier Labussière. 2010. "Birds, Turbines and the Making of Wind Power Landscape in South France (Aude)." *Landscape*

Research 35(2):209-33.
Nadaï, Alain, Olivier Labussière, and Ariane Debourdeau et al. 2015. "French Policy Localism: Surfing on 'Positive Energie Territories' (Tepos)." *Energy Policy* 78:281-91.
Nye, David. 1998. *Consuming Power: A Social History of American Energies*. Cambridge, MA: MIT Press.
O'Rourke, Dara and Sarah Connolly. 2003. "Just Oil? The Distribution of Environmental and Social Impacts of Oil Production and Consumption." *Annual Review of Environmental Resources* 28:587-617.
Park, Jung Jin. 2012. "Fostering Community Energy and Equal Opportunities Between Communities." *Local Environment* 17(4): 387-408.
Pasqualetti, Martin. 2000. "Morality, Space and the Power of Wind Energy Landscape." *Geographical Review* 90(3):381-94.
Raman, Sujatha. 2013. "Fossilizing Renewable Energies." *Science as Culture* 22(2):172-80.
Rosenberg, Jansen Sarah. 2022. "The Emerging World of Humanitarian Energy: A Conceptual Research Review." *Energy Research and Social Science* 92:102779.
Rutherford, Jonathan and Olivier Coutard. 2015. "Urban Energy Transitions: Places, Processes and Politics of Socio-technical Change." *Urban Studies* 51(7):1353-77.
Rydin, Yvonne, Simon Guy, and Chris Goodier et al. 2014. "The Financial Entanglements of Local Energy Projects." *Geoforum* 59:1-11.
Ryghaug, Marianne, Tomas Skjølsvold, and Sara Heidenreich. 2018. "Creation Energy Citizenship Through Material Participation." *Social Studies of Science* 48(2):283-303.
Schaefer Caniglia, Beth, Andrew Jorgenson, and Stephanie Malin et al. 2021. *Handbook of Environmental Sociology*. Cham: Springer.
Scheer, Hermann. 2007. *Energy Autonomy: The Economic, Social and Technological Case for Renewable Energy*. London: Earthscan.
Sen, Amartya. 1987. *On Ethics and Economics*. Oxford: Blackwell.
Sen, Amartya. 1992. *Inequality Reexamined*. Cambridge, MA: Harvard University Press.
Seyfang, Gill, Jung Jin Park, and Adrian Smith. 2013. "A Thousand Flowers Blooming? An Examination of Community Energy in the UK." *Energy Policy* 61(13):977-89.
Seyfang, Gill and Adrian Smith. 2007. "Grassroots Innovations for Sustainable Development: Towards a New Research and Policy Agenda." *Environmental Politics* 16(4):584-603.
Shove, Elizabeth and Gordon Walker. 2007. "CAUTION! Transitions Ahead: Politics, Practice and Sustainable Transition Management." *Environment and Planning A* 39:763-70.
Smil, Vaclav. 1994. *Energy in World History*. Boulder, CO: Westview Press.
Smil, Vaclav. 2010. *Energy Transitions: History, Requirements, Prospects*. Santa Barbara, CA: Praeger.
Sovacool, Benjamin. 2016. "How Long Will It Take? Conceptualizing the Temporal Dynamics of Energy Transitions." *Energy Research & Social Science* 13:202-15.
Sovacool, Benjamin. 2022. "Beyond Science and Policy: Typologizing and Harnessing Social Movements for Transformational Change." *Energy Research and Social Science* 94:102857.
Sovacool, Benjamin, Matthew Burke, and Lucy Baker et al. 2017. "New Frontiers and Conceptual Frameworks for Energy Justice." *Energy Policy* 105:677-91.
Sovacool, Benjamin and Michael Dworkin. 2015. "Energy Justice: Conceptual Insights and Practical Applications." *Applied Energy* 142:435-44.
Stephens, Jennie. 2019. "Energy Democracy: Redistributing Power to the People Through Renewable Transformation." *Environment: Science and Policy for Sustainable Development* 61(2):4-13.
Stock, Ryan and Trevor Birkenholtz. 2019. "The Sun and the Scythe: Energy Dispossessions and the Agrarian Question of Labor in Solar Parks." *The Journal of Peasant Studies* 48(5):984-1007.
Taylor, Dorceta. 2000. "The Rise of Environmental Justice Paradigm." *American Behavioral Scientist* 43:508-80.
Van Uffelen, Nynke. 2022. "Revisiting Recognition in Energy Justice." *Energy Research and Social Science* 92:102764.
Velasco-Herrejon, Paolo and Thomas Bauwens. 2020. "Energy Justice from the Bottom Up: A Capability Approach to Community Acceptance of Wind Energy in Mexico." *Energy Research and Social Sciences* 70:1-15.
Walker, Gordon. 2008. "What Are the Barriers and Incentives for Community-owned Means of Energy Production and Use?" *Energy Policy* 36(12):4401–5.
Walker, Gordon. 2009. "Beyond Distribution and Proximity: Exploring the Multiple Spatialities of Environmental Justice." *Antipode* 41(4):614-36.
Walker, Gordon and Noel Cass. 2007. "Carbon Reduction, 'the Public' and Renewable Energy: Engaging with Socio-technical Configurations." *Area* 39(4):458-69.
Walker, Gordon and Patrick Devine-Wright. 2008. "Community Renewable Energy: What Should It Mean?" *Energy Policy* 36(2):497-500.
Walker, Gordon, Patrick Devine-Wright, and Sue Hunter et al. 2010. "Trust and Community: Exploring the Meanings, Contexts and Dynamics of Community Renewable Energy."

Energy Policy 38(6):2655-63.
Warren, Charles, Carolyn Lumdsen, Simone O'Dowd, and Richard Birnie. 2005. "Green on Green: Public Perceptions of Wind Power in Scotland and Ireland." *Journal of Environmental Planning and Management* 48(6):853-75.
Winther, Tanja, Kirsten Ulsrud, and Anjali Saini. 2018. "Solar Powered Electricity Access: Implications for Women's Empowerment in Rural Kenya." *Energy Research & Social Science* 44(1):61-74.
Wolsink, Maarten. 2009. "Planning: Problem 'Carrier' or Problem 'Source'?" *Planning, Theory and Practice* 10(4):539-43.
Wrigley, Edward. 2010. *Energy and the English Industrial Revolution*. Cambridge, UK: Cambridge University Press.
Yenneti, Komali, Rosie Day, and Oleg Golubchikov. 2016. "Spatial Justice and the Land Politics of Renewables: Dispossessing Vulnerable Communities Through Solar Energy Mega-projects." *Geoforum* 76:90-99.
Yusoff, Kathryn. 2018. *A Billion Black Anthropocenes or Not*. Minneapolis, MN: University of Minnesota Press.

Environmental ethnography

Introduction

When I was in graduate school, I was mentored in ethnographic research methods by Gianpaolo Baiocchi, a skilled political and cultural ethnographer (Baiocchi 2005; Baiocchi et al. 2014). He described ethnography as "standing shoulder to shoulder" with the people you were working with, such that an embodied and deeply personal method of data collection can allow for better understanding of what people do, why they do things, and the meanings behind their actions and interactions. This entry is not intended to provide a history of ethnographic research, nor an abbreviated "how to" guide for aspiring ethnographers. Rather, I draw on examples from environmental sociology and adjacent fields to discuss several strengths of ethnographic research, with a focus on the types of social dynamics and processes that can be revealed through this methodological approach. In particular, I highlight how ethnography allows researchers to uncover and understand power relationships and inequalities.

Key concepts and definitions

Ethnography involves deep immersion in a social setting with all of your senses, such that your own mind and body as a researcher is closely aligned with the thing, the people, or the place you are studying. As Michal Burawoy (1991:2) writes, participant observation "is the study of people in their own time and space, in their own everyday lives." This embodied experience of participant observation makes possible research insights that can't be gathered through other methods, qualitative or quantitative. These approaches, in the words of sociologist Annette Lareau, are particularly good at studying meanings and the impacts of social structures: they "draw us into the meaning of events in the everyday lives of individuals, showing how people are affected by social structural forces" (Lareau 2021:1).

Ethnography is a *methodology* – a general approach to data collection and analysis that involves a particular sensibility or way of knowing (McGranahan 2018). It typically involves a constellation of *methods* – research tools that can be used to collect and analyze data – that include participant and non-participant observation, unstructured and semi-structured interviews, and collection of documents, visuals, archives, or other objects related to the fieldsite or group of participants. Almost by definition, immersion in a social setting involves long-term engagement because time is necessary to understand the field of players and institutions, build rapport with participants, and learn specialized skills and lingo relevant to the field. Data collected can take many forms, including jottings and fieldnotes, interview recordings and transcripts, physical and electronic documents, visual texts such as photos or art, material objects, sound recordings and videos (Emerson, Fretz, and Shaw 1995; Lareau 2021).

As the researcher moves from outsider status to something approaching that of an insider, the *ethics* of ethnography are paramount. While developing a nuanced and comprehensive understanding of the field is essential for robust interpretation of the data, such immersion comes with profound ethical challenges related to informed consent, rela-