

Book Review Essay

The Political Economy of Sustainable Energy Transitions

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Halff, Antoine, Benjamin K. Sovacool, and Jon Rozhon, eds. 2014. *Energy Poverty: Global Challenges and Local Solutions*. Oxford: Oxford University Press.

Patt, Anthony. 2015. *Transforming Energy: Solving Climate Change with Technology Policy*. New York: Cambridge University Press.

Princen, Thomas, Jack P. Manno, and Pamela L. Martin, eds. 2015. *Ending the Fossil Fuel Era*. Cambridge, MA: MIT Press.

Few people would disagree about the need for a sustainable energy transition, and sooner rather than later. Many also agree that technology and economics are not all that matters, and that politics, institutions, and culture too often are neglected. But there is far less agreement on how the energy transition is to be achieved and how wide-ranging the changes need to be for it to happen. These three books illustrate exactly the latter point. They all touch upon many of the same topics, address the political economy of energy, and identify more or less the same obstacles to change, but they vary greatly in their recipes and approaches.

Two of the books, Anthony Patt's *Transforming Energy* and Princen, Manno, and Martin's *Ending the Fossil Fuel Era*, take on more or less exactly the same problem. As the titles suggest, these are climate change books about ending the fossil fuel era by transforming energy. Halff, Sovacool, and Rozhon's *Energy Poverty* touches on climate change to a far lesser extent. Instead, this is a book on how to achieve energy access in the energy-poor world—yet another energy transition. Thus, the three books primarily overlap with respect to the political economy of sustainable energy transitions, identifying both obstacles to such transitions and the means to overcome them.

The *Energy Poverty* volume aims “to offer the first authoritative resource documenting all aspects of energy poverty, a state-of-the-art reference tool for energy entrepreneurs, policymakers, NGOs, development economists and all

others interested in the field” (p. 3). This book is different from the other two reviewed here in several respects. First, development is at least as important to its topic as energy transition. Energy poverty is typically not included in measures of human poverty, and energy access never became part of the United Nations Millennium Goals. Still, as of 2010, 1.2 billion people were without electricity (p. 78). The book therefore deals with such questions as whether the alleviation of energy poverty is possible without sending the planet into a carbon coma. It *is*: energy access for all by 2030 would only increase global electricity generation by 2.5 percent, and CO₂ emissions by only 0.6–0.7 percent. The development of developing countries is not what would push us over the edge in terms of climate change.

The book aims to be a reference tool (a goal at which it largely succeeds) rather than focusing on how to forge an energy transition. Granted, it has chapters on different countries, as well as topical chapters, including one on energy subsidies, revealing not only that fossil fuel subsidies dwarf renewable energy subsidies, but also that energy subsidies have been a distinctly ineffective way of extending energy access to the energy poor. But because the book aims to be a reference tool, it is harder to find one overarching perspective throughout—the editors only account for two of the twenty-two chapters. Instead, here you will find chapters on different cases and on different energy-poverty-related topics, but no concluding chapter, even if the final chapter, on alleviating energy poverty in Africa, touches upon core themes.

This ties in with the third respect in which this book is different—namely, in being an edited volume. Granted, Princen et al. also acted as editors, but they themselves wrote all of the chapters in Parts 1 and 3, with Part 2 consisting of a number of cases studies deliberately picked to illustrate the book’s argument. Thus, Princen et al. and Patt have far stronger overarching perspectives, with one coherent narrative rather than a multiplicity of related ones.

In fact, the latter two books make for a highly complementary pair. In terms of how they define the problem, identify the most important actors and ways in which they interact, and identify the obstacles to energy transition, the books are extremely similar. Their main solutions are also related: fix the energy system! However, what makes them interesting to read side by side is that their two approaches are very different, as are the extents to which they advocate wide-ranging change.

Princen et al. claim that what is necessary is nothing less than a revolution: “An environmental science of transformation, of transition out of that which is demonstrably unsustainable and unjust, requires going to the source—physically, culturally, ethically, even spiritually. It requires conceiving of a politics of extractive resistance ... of imagining the good life after fossil fuels” (pp. viii–ix). It requires forming a new language, not one “of extraction and empire, not of efficient production and satisfied consumers, not of globalized commodity flows and high-tech hucksterism ... [but] a language of regeneration and partnership, of sufficiency and a productive citizenry, of living in place and living within our means.

And it will be a language of resistance because the extractors will not go away” (p. 345). This *is* a book of resistance. The tone is often confrontational (at times conspiratorial). Here we find imagery such as fossil fuel actors hiding in the shadows and pulling the levers, of shadow movements taking on the power and fighting big oil. Climate change becomes just one symptom of a larger problem, namely a system of excess, of extraction, expansion, and exploitation. The case studies show that in several countries, the legitimacy of the existing “materialist, consumerist, growth-obsessed, debt-driven culture” (p. 336) is challenged: by environmental resistance, by underground movements, and by indigenous peoples. Again, we meet a language of resistance, a language almost of environmental guerilla warfare against the might of fossil fuel empire—of oppressed against oppressors.

While Princen et al. want a revolution, Patt is happy with an energy transformation. He explicitly argues that lifestyle change is neither a sufficient nor a necessary condition for climate mitigation. It may be a good idea, but it has little to do with the actual problem of climate change. His setup is seductive, simple, and attractive, elegantly explaining how the conventional wisdom on climate policy is all wrong. The strategies proposed back in 1988 (primarily by economists) and that we have pursued ever since have yielded precious little. But this is where we are still putting in the effort, even though we positively know that other solutions work better.

Why are these solutions—carbon taxes, emissions trading, global treaties such as the Kyoto Protocol—no good? They are not bad per se, but they shift our focus away from what works and toward what economists tell us works, which really has not. Take carbon taxes. Qualitative studies have suggested some success, but the one well-known quantitative study found no significant effects (at the 0.05 level), not even in Sweden, where the tax is by far the steepest. On emissions trading, the evidence is disappointing, with permits being priced so low that they have only marginal impacts on emissions. Economists tell us to put in our effort where it is the most cost-effective, which is why they are unanimous on the importance of carbon taxes and caps. But Patt’s reply is forceful: Starting with the low-hanging fruits may seem rational. However, if you already know that you have to pick all the apples from a tree (and Patt says, we do; if we take the 2° C target seriously, we pretty much have to reduce emissions by 100 percent—i.e., to pick all the apples), there is no advantage to starting with the low-hanging ones. Doing so may even be counterproductive, making you believe that you have progressed farther than you have. Patt’s book contains a few of these arguments, and they are intuitive and striking. The Kyoto Protocol has also delivered little in terms of emissions reductions. A treaty is a commitment to wanting a goal, not to creating the means by which to achieve it. In other words, these solutions reduce emissions somewhat, but they do not lead to systemic change. They are essentially nothing but distractions.

Princen et al. agree with Patt on most counts. For political reasons, carbon taxes will never become steep enough to matter, which also goes for carbon trading. They also agree on finding alternatives to end-of-pipe solutions; these

are a way of holding the polluter responsible, but they constitute a punishment for wrongdoing, not a reward for decarbonizing, and thus are not transformative. *Abstinence* from polluting happens only when states see decarbonization as in their own interest, not as a punishment. To paraphrase Patt, technology policy is implemented not to fix the old energy system, but to create a *new* one.

A superficial reading yields many similarities between Patt's and Princen et al.'s arguments. They describe similar economic and political processes, actors and dynamics. They reject the climate policies of the past on similar grounds. They advocate systemic change. But these are superficial similarities. Is it possible to decouple economic growth and emissions? Both say no, but the implications they draw are completely different. For Princen et al., we need to say goodbye to consumerism; we need an ethical and spiritual revolution and a new consciousness. Patt, on the other hand, is quite clear: "There is nothing wrong with using energy. The problem is burning fossil fuels" (pp. 261–262). Granted, he advocates both less and smarter energy use, but a wholesale revolution is not required. Rather, we need to create a new technological system and a new energy system. The core challenge is *not* reducing emissions, but "accelerating a set of societal and technical transitions that are already taking place" (p. 284). Only a technological shift, giving rise to a new paradigm of energy production, can square the circle.

Their different takes can be seen, for instance, in their case studies on Germany. Patt describes how a technology policy solution—the feed-in tariff (FIT)—worked because it was a *clumsy* solution. That is, it was not perfect for any one group, but perfectly reasonable for many, and thus was able to garner society-wide support. The German FIT was a success while it was clumsy, a compromise between those wanting to stimulate the economy and those wanting to help the environment. But when China destroyed the German photovoltaics industry, the economic argument for the FIT disappeared. Consequently, its future is in jeopardy. Princen et al. have a completely different take. The themes of old energy interests entrenched in the state apparatus, using their influence to swing policy, are here as well. But this Germany chapter has far more local color, being about open-pit brown coal mining in eastern Germany. It explores the close links between the Vattenfall company and local government, the cross-pressures faced by the locals as they choose between having their town relocated (as it is swallowed up by the mine) and poverty (coal mining being the primary source of revenue). The focus is on the local, on indigenous resistance (and apathy), and on the pressure from big energy.

Thus, the timbres of these two books are very different. Princen et al. offer an essentially romantic book. It is not a particularly optimistic one, and thus could easily end up as tragedy rather than romance (the authors hope for a happy ending, but are not convinced). Patt's book is far more optimistic, but its plot structure is very much antiromantic. Indeed, to him romantics have mostly gotten it wrong.

How about solutions? Patt explicitly states that what we have done to mitigate climate change has mostly been wrong, geared toward finding cost-effective

solutions rather than transformative ones. We actually know what it takes to create an energy transition. Again, the core challenge is *not* to reduce emissions, but to accelerate ongoing societal and technical transitions at an intensified pace. No fundamental restructuring of economic, political, or industrial systems is necessary. What *is* needed is the rapid phasing in of renewable energy and the construction of new energy infrastructure, enabling us to utilize renewable energy in a reliable and stable renewable energy system. This means targeting massive public funding into renewable technologies, primarily wind and solar, to make them unambiguously cheaper than fossil fuels. Then we need to scale up, meaning to invest in power lines, smart grids, and storage technologies. Institutionally, the transition will require integrating national power markets, streamlining permitting processes, and enabling public and private finance for energy investment. This will need to happen globally—the technologies are there, and the amounts of energy that can be extracted from wind and solar are sufficient. The end result will be a world locked into decarbonized technologies. One example is the phase-in of electric vehicles, which is very expensive—to economists, one of the least cost-effective solutions. But Patt argues differently: The electric car is one necessary step toward transforming the energy system from fossil fuels to electric. Cost-effective solutions do not change the system; the electric car does. One solution is transformative but expensive; the other is cost-effective but leads to nothing but short-term tinkering on the margins of a system that is ultimately doomed.

Princen et al. certainly agree, but their solutions are at a higher level of abstraction. They reject the notion that enough renewable energy can be produced for the problem to go away. Herein lies a strong implicit criticism of Patt, for being overly optimistic about the pace of technological progress, the potential for renewable energy to produce sufficiently large (stable and reliable) amounts of electricity, and the speed with which institutional and infrastructural changes can realistically happen. In rejecting this, they stress that viable solutions can only be found by leaving behind consumerism and materialism, extraction and expansion. Without a normative shift and a redefinition of the good life, we will never get there. These are local processes, indigenous and contextual, with insights derived from those movements that have been (partially) successful at keeping resources in the ground. While some of the changes advocated seem radical, if not downright unrealistic (and to Patt unnecessary), Princen et al. do a good job of teasing out what they call the worldviews informing the dominant industrial paradigm, its main arguments and actors. Chapter 3, akin to a cultural history of oil, describes why oil is such a special commodity to us—thought of as having almost magical properties ever since its earliest recorded uses, and now intrinsic to a narrative of energy and economic growth internalized by everyone. This narrative explains our infatuation with oil, and our reluctance to let go. It is also a very good read, and exemplifies the approach of Princen et al. throughout the book. Still, when the argument turns to concrete solutions, they become vague. In chapter 12, on exit strategies, they discuss the conditions under which fossil fuel companies might be willing to unwind, but do not examine, for instance, British

Petroleum's (admittedly less than successful) 2001 *Beyond Petroleum* campaign, or Statoil's forays into offshore wind. While these efforts leave much to be desired, they are concrete examples of strategies through which fossil fuel companies might become part of the solution, transforming themselves from petroleum to energy companies.

To pull Halff et al. back into the comparison, they advocate solutions regarding energy access, not fossil fuel. But in their emphasis on local solutions, context, and multiple actors from multiple spheres, they come close to Princen et al.'s viewpoint. Among the major lessons is that there is no one-size-fits-all solution; no one institutional model has worked. For this reason, indigenization and flexibility of design are key to the long-term sustainability of energy access in developing countries. Princen et al. also have an affinity for third world cases, probably because this is where indigenous movements most evidently represent an alternative to the dominant paradigm. Here we see the language of resistance expressed most clearly, and the focus on justice in both Halff et al. and Princen et al.'s books. Patt is less preoccupied with justice and with indigenous movements, but his clumsy solutions, which he sees as key to success, are both local and contextual, because they need to take into account the constellations of interest actors, to create coalitions between different groups to foster support for environmental solutions that fossil fuel actors would normally oppose. These constellations—and their strengths—differ from country to country. Thus, despite Patt's insistence that we know what works, what works can only be successfully implemented if we understand local conditions and local interest constellations, and let the solutions respect the peculiarities and eccentricities of each country.

Halff et al. is an excellent reference tool: It is a book that you can look to for information, but not one you will read from cover to cover. Patt and Princen et al. are easy reads, Patt at times almost a page-turner. He is optimistic but not brash or arrogant, even when he boldly professes that most people have gotten climate mitigation wrong. The book requires little prior knowledge, and at times he almost becomes a little too preoccupied with making his examples easily comprehensible. But this is also a book that gives you the state of the art on climate change and renewable energy, and it goes systematically through the costs and prices of different types of energy solutions. Thus, it is also a repository of useful information for someone who needs an overview of an often-chaotic field. Princen et al. also provide an entertaining read, but one that offers solutions very different from Patt's. Herein lies one of the main challenges for the field. Does climate mitigation require wholesale transformation, not just of energy systems, but of the ways we live, act, and behave? One contribution professes that this is the only way if we want to escape disaster; the other, that this mindset is exactly the reason we are reluctant to deal seriously with the problem.