



Contents lists available at ScienceDirect

Energy Research & Social Science

journal homepage: www.elsevier.com/locate/erss



Original research article

Through the energy efficiency looking glass

Loren Lutzenhiser*

Toulan School of Urban Studies and Planning, Portland State University, P.O. Box 751-USP, Portland, OR 97207-0751, United States

ARTICLE INFO

Article history:

Received 28 January 2014
Received in revised form 14 March 2014
Accepted 14 March 2014
Available online xxx

Keywords:

Energy efficiency
Efficiency industry
Organizational vocabularies
Institutional discourse

ABSTRACT

Energy efficiency is an important approach to mitigating climate change, minimizing energy system costs and improving system reliability. There is a role for the social sciences in these sorts of efforts to reduce energy waste. However, a singularly narrow theoretical and policy model of energy use and energy savings governs energy efficiency activities in the United States (and, to some degree, in Europe), as conducted by regulated utility companies and state actors. Firmly established in recent decades, an energy efficiency industry (EEI) is guided by this narrow model, which supplies a unifying conceptual frame, analytic paradigm and discursive context. That model is not hospitable to the social sciences and is extremely limited from a climate action point of view. The partial perspectives offered tend to misdirect attention and hamper the best efforts. This paper considers, in some detail, the organizational and regulatory systems that have given rise to, and sustain, this framework. It also offers a social science research agenda that might allow society to move beyond conventional thinking and the limitations of ineffective climate policy that follow from EEI business as usual.

© 2014 Elsevier Ltd. All rights reserved.

1. The problem

In the United States over the past forty years, a social movement focused on the efficient use of energy has grown into a self-described “industry.” During that time, energy use per capita has indeed declined about 7%, although the total societal energy consumption of an expanding population has increased by 36% [1]. The U.S. energy system is arguably cleaner and more efficient today than it was in the 1970s. Nonetheless, the increasing volume of greenhouse gases in the atmosphere (deposited from continuously expanding global use of fossil energy) is seen as the source of numerous past and future disruptions of the natural environment, and the human societies embedded within it [2]. Although there are many proposed partial “solutions” to the climate change problem (e.g., changes in energy supply sources and technologies, land-use practices, and the capturing of carbon), improving energy efficiency (EE) is identified as an important ingredient for any mix of “mitigation strategies” [3,4].

This paper offers a primer to social scientists who might make contributions to energy efficiency knowledge and industry

practices. To date, there have been potentially important social science contributions, and encouragement for more work of this sort from science policy experts [3,5–7]. But the uptake and impacts of these contributions on theory, policy and practice have been minimal. The world of the energy efficiency industry is an odd and often inhospitable place, particularly for academics. While the experiences of social scientists in that world are likely no more strange than in other “applied problems/policy” worlds (e.g., the worlds of crime and punishment, medicine, social services, or the military), the energy world is a much less familiar terrain and its curiosities warrant a comparison to Alice’s adventures in a different Wonderland. It is hoped that, after taking the journey in this paper, the possibilities navigating Mad Hatters, menacing Queens and the like, may seem less daunting.

1.1. Setting the stage

Physicists and environmental advocates in the 1970s were among the first to point out that considerable amounts of energy had long been wasted and pollution needlessly emitted. Many were opposing plans by governments and the energy industry for the vast expansion of fuels extraction and power plant construction. Amory Lovins, the most widely recognized advocate for improved efficiency [8], argued that it was theoretically possible for society to function at a quite reasonable level of development on a fraction of the energy consumed—then and now [9].

* Correspondence to: Toulan School of Urban Studies and Planning, Portland State University, 506 SW Mill Street, Suite 350, Portland, OR 97201, United States.
Tel.: +1 503 725 8743/4045; fax: +1 503 725 8770.
E-mail address: llutz@pdx.edu

The 1970s were a time of energy crises. There were calls for the “conservation” of energy, just as land and water had been “conserved” in earlier periods. At the time, social scientist made some initial contributions to the problem how energy was used and how it might be saved [10]. This work, however, did not build in any significant way on the small amount of earlier sociological and anthropological scholarship on energy theory [11,12] (see Rosa et al. [13] for a review). Contributions by social scientists to energy research, energy policy and energy savings efforts peaked shortly after the 1970s and began a fairly steady decline [14,15].

Energy use can be complicated. Clearly people “use” energy in a wide variety of ways. Individual consumers, households, larger social groups, organizations, networks, and systems all take part. Technologies are involved, as are buildings, environments, rules and regulations, standards and patents, and codes and conventions. Given this mix of ingredients, social scientists should have something to say about human uses of energy, and some have said a few things (Wilhite et al. [16], for instance, nicely summarize the state of affairs at the time that review was written and since). “Energy efficiency,” however, is not a concept that comes readily to social scientists. It has a normative ring to it. It also has a technical quality that at least implies the engineering of something (or someone), quite possibly in ways that may not be agreeable, or even just and useful. It is an uncomfortable utterance that cries out to be unpacked and better understood.

To ease any concerns about social engineering and autocratic (or technocratic) agendas, it is first reasonable to assume that energy efficiency is most likely a positive goal. Its origins are honestly arrived at from concerns about energy systems and environmental decline—particularly concerns about nuclear energy risks and costs in the 1970s. Energy efficiency continues to be a key element in environmental policy and climate change action planning at all levels of government.

To use energy inefficiently is to waste something that is precious and in short supply (at least some of the time). And, of course, waste is a bad thing (well, most of the time, anyway). The truth is that *how* we should evaluate energy efficiency—as it has come to be defined—is often ambiguous. It depends on context, conditions and culture.

In the circles where energy efficiency (EE) is promoted and practiced, it is, unsurprisingly, considered an unequivocal good. Over the past thirty years, we have developed centers for energy efficiency, policies for energy efficiency and an array of energy efficiency programs.¹ These are all good things. We also have businesses that sell energy efficiency services and products, engineers whose designs pursue efficiency outcomes and energy economists who provide estimates of efficiency benefits. As a result, energy use in Western society is considerably more efficient than during most points in the Industrial Revolution. And over the past thirty years, the pursuit of energy efficiency has been institutionalized in a complex of regulations, laws, practices, technologies, understandings, analytics, organizations, and professions. While these are generally socio-technical improvements over earlier arrangements, they are not without problems. Some of these are paradoxical and interesting (grist for the sociologist’s mill), while others are sobering and risky in ways that we have not yet fully appreciated.

The focus of this paper is an *energy efficiency institutional complex* that can be generally referred to (as its members sometimes do) as the “energy efficiency industry” (EEI). The EEI encompasses

the coordinated actions of utility companies, government agencies, business firms, and non-profit advocacy groups in the process of *producing EE as an output*. It is a strange output, since it is an *absence* of something (in this case, energy flows that did not occur), rather than a tangible outcome, material object or visible service. It is an EEI truism, first noted by academic anthropologists (e.g., Kempton and Montgomery [17]), that energy and energy use are essentially invisible to persons. If it were possible for something to be doubly invisible, that something would be energy efficiency—the invisible, unnotable, generally imprecisely estimable phenomenon that did not occur.

The balance of this paper explores that realm. We look through the paradigmatic lenses of its practitioners and find a parallel universe that is, in some ways, a much simpler and clearer world than that conjured by social scientists or occupied by politicians, business people, workers, teachers, mothers, bosses, and other everyday persons. It is an abstract world, mostly without conflict and the messiness of ordinary affairs. It is a technical world of physical forces and economic verities. It is governed by rationality; so puzzlement abounds when reason fails to materialize.

The observations and ideas presented in this paper are derived from fieldwork in the EEI universe over several decades. Documentary and ethnographic data have also been collected from official sources and interviews in EEI organizations, business networks and public policy processes. Some of the findings have been reported in earlier research monographs and scholarly articles. Other findings are derived from ongoing work. The difference between the analysis presented in this paper and earlier work is the application of a critical, social scientific perspective to matters within the EEI frameworks and relationships that otherwise require some deference to both. The current analysis captures issues for a social science audience that may be of central importance for the future of global efficiency efforts and the EE movement. There are, however, issues that the EEI finds difficult to grapple with given the combination of scientific, legal and organizational rationalities that co-construct its particular paradigmatic view of the efficiency problem.

1.2. Thinking about Energy Consumption

Everyday life is powered by commercial forms of energy—electricity, natural gas and petroleum—and further upstream in the energy system by large amounts of coal (an extremely dirty fuel and a primary source of greenhouse gases). Powered by energy, everyday social goings-on are generally oblivious to the energetic bases of action. As has been noted, energy is essentially *invisible* to persons “using” it, while indispensable to what they are doing. There is some sociological theory in this area [11,13,18,19]. But anthropologists have probably best captured the everyday aspects of consumption, and European scholars of socio-technical systems have considered in greater detail the macro-systemics that are produced by micro-action in households and firms (and simultaneously shape them).² Within these traditions, everyday energy-involved action is seen as multi-faceted, complex, nuanced, and interpretively challenging. It involves (at least) a composite of social actors, technical devices, meanings, energy flows, institutions, and organizations in *heterogeneous systems*.³ As Sovacool points out in the introduction to this journal issue, strengthening social science knowledge in this domain is overdue [21], with particular attention to improved theorizing of

¹ The “we” here refers to U.S. Federal initiatives (and comparable ones in the Europe and parts of Asia), as well as state programs and policies, university centers and institutes, energy company/utility ventures, non-profit and industry organizations, and related entities.

² Applicability to the EE case considered in some detail by Heather Chappells [20].

³ For early statements of actor-network analytics, see [24].

Download English Version:

<https://daneshyari.com/en/article/6559054>

Download Persian Version:

<https://daneshyari.com/article/6559054>

[Daneshyari.com](https://daneshyari.com)