

## Reflections on Energy Poverty, Justice, and Equity

BY TIMOTHY C. COBURN

### Abstract

*This essay considers the state of energy poverty today, its relationship to energy justice, and difficulties energy economists and policy makers face while seeking to alleviate it. The struggle to eliminate energy poverty is compounded by growth in demand for energy worldwide, and the need to transition away from fossil fuels.*

Energy poverty is a curious and challenging phenomenon and a concept that is somewhat difficult to unpack. The contexts and state of affairs associated with energy poverty are certainly not new [1, 2], with numerous proposals, policies, and calls to action to mitigate its impacts, both locally and globally, having been promulgated for years by public and private entities, governments, and international agencies, as well as academicians and researchers alike [3]. Nonetheless, for a myriad of reasons that are more often place-specific, energy poverty still flourishes in the early 21<sup>st</sup> century without many prospects for abatement. In fact, in 2015 the World Economic Forum cited energy poverty as “the real energy crisis” [4].

Energy poverty is clearly confounded with social and economic development on the local, regional, national, and international scales, and also with technological innovation and deployment, human behavior and decision making, geopolitical scenarios and consequences, and more. Considering the magnitude and diversity of these issues, it is easy to understand how people, communities, and societies can become glib about energy poverty if they, themselves, are not currently experiencing it, or have never fallen into its clutches, either wittingly or unwittingly.

The notion of energy poverty has evolved from earlier ideas about fuel poverty introduced in the 1980s and 1990s [5, 6]. While the terms and descriptions have converged as the world’s understanding of energy has broadened and matured, fuel poverty was originally associated with the lack of sufficient resources to heat and cool a home, whereas energy poverty came to be associated with a lack of access to energy services. Today, the terms are used nearly interchangeably [7]. The overarching idea has more recently come to be known as energy insecurity [8, 9] or energy vulnerability [10]. For purposes of the present discussion, energy poverty is defined to be the absence or lack of energy, and/or the absence or lack of access to energy or energy services, which has multiple impacts on the economic, social, behavioral, and physical livelihoods of individuals and households. In this context, energy typically refers to the electricity needed for heating, cooling, and cooking, but it can also refer to different aspects, such as the fuel other than electricity needed for personal transportation.

To be clear, people who live in poverty or who have experienced it in the past may not put access to energy

at the top of their list of needs, since access to food and water are generally considered to be more basic living requirements, along with some semblance of medical care and personal hygiene. Still, people who live in poverty will likely never exit that state without access to energy, since energy drives so much of what is perceived to be a better way of life [11].

Energy poverty is also often seen through the eyes of individuals who live in developed economies; but, energy poverty exists to one degree or another in all countries across the globe. From the perspective of the developed West, for example, it is easy to consider people who have no more than dried dung with which to burn for cooking, or who cannot flip a switch to turn on lights in the evening, and declare them to be energy poor. However, those considered to be energy poor simply might not see themselves in this way, since this may be the condition in which they have lived for a long time. It is only when comparing to what others “have” that those who “have not” become dismayed.

Government agencies and social organizations often talk about food deserts, but energy deserts are not as commonly discussed. As in the case of food deserts, energy deserts can be large or small areas, and they may actually appear checkerboarded in nature. It is clearly possible to observe a community that is essentially an energy desert that is surrounded by other communities or neighborhoods that have full access to energy. This scenario plays out in urban centers around the world where wealth and destitution are immediately juxtaposed, even in countries like the United States [12].

Poverty, and by extension, energy poverty, may be original, in the sense that an individual may have lived in poverty all her/his life; or, it may be induced, and possibly even temporary, resulting from unfortunate circumstances or bad behaviors and choices. An individual who must choose between paying the gas bill in favor of buying groceries to feed children or paying the rent to keep them dry and safe is likely experiencing energy poverty even though they might not exist at the government’s official poverty level. For example, it is doubtful that those who experience disconnection by the electric utility immediately become designated as energy poor. On the other hand, indigenous or rural people who live on lands far from connections to the

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grid, who have never had such access, and who lack the financial or political wherewithal to gain such access, could be described as originally (and continuously) energy poor even though they may not see themselves as such (since they live out their lives by other means). Further, having access to energy does not necessarily mean the ability to take advantage of it. In these senses, energy poverty is a term primarily used by the energy wealthy to describe the energy poor. Those living in a developed economy can readily see the effects of energy poverty from their own perspective, but those who are purported to live in energy poverty may not see it quite the same way.

For these and many other reasons, measuring/predicting/quantifying energy poverty [13-18] and counting those living in such conditions can be problematic; if for no other reason than being “energy poor” is not quite the same as being in “energy poverty.” There are no official energy poverty designations in the same sense that some governments have established official poverty levels. It is purely a definitional problem and one of degrees. One who is energy poor still might have access to some energy, but just not consistently enough to get by (in the same sense that people who are food poor might have access to some food but not consistently enough). On the other hand, one who lives in energy poverty may be regarded as having little or none, or may be considered to have access to a kind of energy (e.g., wood or dried dung to burn for cooking and heating) that is inconsistent with an established standard of living. From this viewpoint, it is somewhat easy to identify individuals and communities who consistently and continuously live in energy poverty; but, it is not so easy for individuals in those same developed economies to identify all of those, for example, who may experience intermittent or cyclical energy insecurity or vulnerability (as in the case of those whose homes are involuntarily disconnected, either temporarily or permanently, by the utility).

A variety of techniques have been used to estimate the extent of energy poverty, but most of them are indirect [19] since it is so difficult to actually count the energy poor. Various estimates put the number of people living in energy poverty at one billion [20, 21] or more, but this again depends on definitions. There are at least two different categories: those who do not have enough and those who regularly use harmful sources [21] that lead to other unintended consequences.

Among the myriad solutions that could be embraced, the deployment of renewable technologies at the local or community levels is a potentially viable option. Community microgrids incorporating energy storage capabilities, for example, can provide a way for towns, villages, hamlets, and neighborhoods to establish the energy requirements of their citizenry, govern the delivery of energy services, and better serve the needs of the energy poor within their boundaries [22-24]. Other technologies such as agrivoltaics can provide both energy and food to local communities, and also present economic opportunities that can help raise the overall living standard of their energy poor [25]. Renewables

have the potential to lead the way, particularly at the community level, since they lessen the physical infrastructure costs and requirements that constrain the expansion of fossil fuels, not to mention their more positive impacts on Earth’s climate.

These kinds of socio-technical solutions serve to promote a deeper and richer approach to energy justice. Energy justice is a more all-encompassing concept that has gained traction in recent years [26, 27]. As defined in [28], energy justice is “the goal of achieving equity in both the social and economic participation in the energy system, while also remediating social, economic, and health burdens on those historically harmed by the energy system.” Energy justice encompasses energy poverty, as well as energy insecurity, energy burden, and energy democracy [28]. While it is primarily centered on “the concerns of marginalized communities,” it seeks to make energy more accessible, affordable, clean, and democratically managed within all communities [28]. Energy justice permits energy poverty to be addressed from a broader, over-arching, and more robust perspective.

Despite these considerations, addressing energy poverty head-on from an economics standpoint remains elusive. While the literature on energy poverty is both wide and deep, the economics of energy poverty tend to be addressed in more peripheral and oblique ways. Without sound economic research that gets directly at the roots of the energy poverty conundrum, and which establishes actionable solutions and policies, the situation is likely to remain unchanged. In his 2007 address, Birol [29] challenged the energy economics community to play its part in resolving energy poverty. While there has obviously been progress on this front, the issues and circumstances that sustain and promote energy poverty remain largely unresolved. Clearly, energy poverty and economic poverty go hand in hand. For either to be resolved, the two must be addressed in tandem, with a common goal in mind.

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