

Book review—Energy efficiency: towards the end of demand growth

In this week's Nutwood, Malcolm Keay, senior research fellow at Oxford Institute for Energy Studies, reviews *Energy Efficiency: Towards the End of Demand Growth*—a collection of articles edited by Fereidoon P. Sioshansi.

In the mid-1970s, in the wake of the first oil crisis, the UK government set up a ministerial committee whose mission was “to stimulate interest in energy efficiency”. Unfortunately, when the formal record was produced, the first “t” in the word “stimulate” was omitted. Perhaps it was a Freudian slip—certainly, over the decades since then it has often seemed that governments and utilities have been simulating, not stimulating, interest in energy efficiency. Is energy efficiency now being taken more seriously? The question is at the heart of this compilation, which argues that the potential and scale of global energy efficiency opportunities are finally being realised and that the end of energy demand growth is in sight.

The topic is significant; the case, if proven, of enormous importance. This review will consider how far the book gets in establishing its case. First, though, it is worth giving an idea of the range and coverage of the contributions. There are 23 separate chapters and they cannot all be described in detail. However, they might broadly be classified into categories (this is not the organisation used in the book itself).

The first group is of what might be called survey articles looking at the evidence from various sources to consider the overall development and impact of energy efficiency. For instance, there is an introduction from the editor Fereidoon Sioshansi, which looks at the question “Will Energy Efficiency Make a Difference?” and concludes that, while it depends on the choices we make, the answer is yes.

Similarly, a review of US utility energy efficiency programmes by Steven Nadel concludes that savings have been made and can be sustained in future—though another review, of the evolution of demand-side management in the US by Frank Felder, raises questions about how such programmes should be structured. (In most of the volume, the focus is on electric utilities rather than energy in general—transport, for instance, is hardly addressed and there is no discussion of industrial heat and process use.)

Then there is a group of more analytical articles which look at the evidence on particular aspects of the issue. For instance, a group of economists from Tilburg University in the Netherlands look at long term trends and the evidence for an environmental Kuznets effect—a slowing down of demand growth at higher income levels. Other analytical articles look at specific issues (for instance, Hunt Allcott and Michael Greenstone ask whether there is an energy efficiency gap; Robert Smith looks at the drivers of electricity demand in Australia); or describe demand growth scenarios for particular countries (China) or regions (South East Asia).

Another group of articles looks at utility business models and pricing structures; while progress in changing traditional approaches to regulation has been slow, there is considerable potential for moving utilities' focus away from sales growth, towards seeing energy efficiency as an earnings driver.

The largest single set of essays looks at particular projects or technological opportunities. A number look at the prospect of zero net energy buildings or communities, focusing on the need for decentralised approaches and more active engagement by consumers.

An interesting article by Clark Gellings of EPRI looks at the potential for savings during the process of producing and delivering electricity, which turn out to be considerable. Another chapter, by a group of researchers from CSIRO in Australia, suggests that after the “low-hanging fruit” of efficient lighting, attention will need to turn to the heating and cooling of buildings.

A final group of chapters looks at particular aspects of energy efficiency policies and practices—for instance, trading in energy efficiency via White Certificates and the like; new energy efficiency finance mechanisms; consumer engagement; demand response; and the interaction between energy efficiency and the increasing penetration of renewable energy.

As this overview demonstrates, the volume covers many different aspects of the issue and provides an excellent update on latest developments; it can be recommended to readers wanting to take stock of recent trends. But when it comes

to its wider ambitions, the response has to be more cautious. It is always difficult for a compilation to advance a coherent thesis, or provide a comprehensive overview, so it is not necessarily a criticism to say that the volume fails to do so. However, it is particularly problematic in this case. Energy efficiency is a notoriously slippery concept; drawing any robust conclusions about its potential and impacts requires considerable analytical rigour.


Yet the different chapters do not have a consistent basis. The focus in some is price response. In others, it is technological change; the overall energy intensity of an economy; government or utility energy efficiency programmes; or particular local initiatives. Clustering all these different issues under the heading of “energy efficiency” does not produce clarity. Furthermore, the authors of the different chapters seem not to take much account of their colleagues’ views. The analytical articles referred to above take a more rigorous approach, but also come to somewhat different conclusions from the rest of the book. For instance, Allcott and Greenstone conclude that “the actual magnitude of the energy efficiency gap is small relative to the assessments from engineering analyses”; Smith concludes that “it has not been possible to gauge the extent to which structural changes due to energy efficiency policies, technological change, or customer behaviour are underpinning the recent slowdown”; the Tilburg analysis concludes that global energy consumption seems set to increase over “the next decade and beyond”. There is no attempt to set these hard-headed analyses against the generally upbeat tone of the other chapters and investigate where the balance lies.


There is also a problem of coverage; the main focus of the compilation is on the US, more specifically on regulated US companies. On issues such as pricing, for instance, little attention is given to competitive markets; the emphasis is on various forms of incentive regulation for “utilities” rather than the different approaches which might be needed for the wholesale market, transmission, distribution, and supply, in an unbundled industry.

Even more fundamentally there is little attempt to reconcile the twin goals of energy efficiency and decarbonisation. The underlying, but unexamined, assumption in nearly all the chapters in the collection is that electricity is produced from fossil fuels and that saving electricity is much the same as reducing fossil fuel consumption. But in a low carbon world these assumptions will not necessarily be valid and we may need to rethink some of our basic concepts—for instance, do we need to change our traditional approach to energy efficiency and redefine it in terms of carbon reduction?

In short, while the volume contains useful studies on many aspects of energy efficiency, it does not get very far in addressing the wider questions its sub-title raises. There remain major questions about the impact of energy efficiency policies and their future role in competitive but decarbonised energy markets. The debate is by no means over.

Cornwall Energy customers are eligible to receive a 30% discount on the retail price. [Order your copy via Elsevier now.](#)





Energy brokerage in the business and industrial energy supply markets

Keep track on the main route to new customers for energy suppliers

Do you know who the most important business energy brokers are? Will they have to change because of regulation? Why is the brokered market so important to suppliers?

Get a definitive analysis on how brokers operate in the business and industrial supply markets with Cornwall Energy’s new service. To find out more on this essential new service download the [prospectus](#) or contact Robert Buckley on 01603 604404.

