

ENERGY: THE MASTER RESOURCE. BY ROBERT L. BRADLEY
AND RICHARD W. FULMER. DUBUQUE, IOWA: KENDALL/
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Despite its obvious economic and social importance, energy (broadly understood) is an understudied field. True, among academics, one can find several engineers and geologists, along with some economists, geographers, legal scholars, and political scientists, who devote much of their research efforts to devising and/or analyzing various energy-related technologies, supply sources, markets, and institutions. By and large, however, very few individuals have tried to understand how all the various parts of the energy puzzle fit—or not—together, and much—if not most—of the public discussion of the issue is agenda-driven and ignorant of basic physical and economic principles.

One part of the problem is, of course, the sheer scope of energy-related issues. Another is the fact that, despite often significant regulatory obstacles and ill-advised policies, energy markets have functioned rather smoothly over the last two centuries and have provided consumers with an ever growing, affordable and reliable supply of fossil fuels and electrical power. Indeed, widespread popular and academic interest in “big picture” energy studies has historically been limited to short-lived crisis episodes.

As readers of this review are surely aware, however, we are currently at the end of a half-decade that has witnessed, among other things, a second Gulf war, the California energy crisis, the Enron debacle, massive grid failure and power outages in the northeast United States, Scandinavia, and Italy, and the ratification of a gigantic and highly publicized energy-rationing scheme known as the Kyoto Protocol.

Capitalizing on these and other concerns, several popular books on energy have hit the bookshelves in the last few years, usually promoting one of two theses. According to proponents of the first and dominant perspective, the world will soon run out of cheap oil, which will drag our economies down the drain. Authors belonging to the second—and smaller—group argue to the contrary that fossil fuel abundance, and its concomitant carbon dioxide emissions, will result in a human-induced climate change of epic—and catastrophic—proportions. In both fields, one is likely to learn that a new generation of subsidized renewable energy technologies has come of age and could replace, with some “political will,” the polluting output of “big oil” firms.

Almost nowhere, however, are lay readers presented with a more sober and realistic perspective according to which the institutional framework of market economies has always been conducive to greater resource creation than depletion, that increased carbon dioxide concentrations will have benefits as well as costs, and that past and current energy crisis can typically be traced back to political interventions rather than

physical shortages or market failures. Of course, one can always find some reasonable textbook (Boyle, Everett, and Ramage 2003) and work on synthesis (Smil, 2003) that will hint at this perspective, but they are not targeted at a broad audience.

It is in this context that Robert L. Bradley and Richard W. Fulmer's primer, *Energy: The Master Resource* is so valuable. Unlike almost every other popular book on the subject, it is squarely rooted in the optimistic tradition that was best exemplified by the late Julian Simon. Indeed, the title reflects Simon's observation that, if human ingenuity is the "ultimate resource" that created all others, energy is the "master resource" that enables human beings to convert one material into another.

Bradley and Fulmer deal succinctly with the basic physical concepts, history, technology, economics, and public policy of energy. They discuss both long term trends and recent controversies in a nontechnical and abundantly illustrated way that will appeal to students, policymakers, and the interested public.

As the authors point out, virtually all energy-related long term trends in advanced economies are positive. For example: Our energy supply is becoming more abundant and affordable, not less. Despite the dire predictions of generations of energy pessimists, so-called "non-renewable" energy sources have become more abundant. In 1944, crude oil proved reserves were 51 billion barrels worldwide. After 58 years of production, reserves had grown to 1,266 billion barrels. Today, the average laborer can buy a week's worth of gasoline and electricity for about 90 minutes of work, while the same amount of energy cost a full workday in 1920.

Creative engineers and technicians are forever finding new ways to extract more power out of a given set of inputs. In the United States, the amount of electricity produced by nuclear plants has increased by 25 percent during the 1990s while the number of nuclear plants fell from 112 to 104. This was made possible by raising the average capacity utilization factor of the remaining plants to 89 percent from 69 percent.

Our cities are getting cleaner, not more polluted. In the "good old days" of the horse and buggies era, animal power turned city streets into "filthy breeding grounds for disease, reeking of manure and urine and swarming with flies" and in every big city 10,000 to 15,000 horse carcasses had to be cleared from the streets every year. Between 1970 and 2002, market incentives, improved technologies and new laws and regulations helped reduce emissions of the so-called "criteria air pollutants" in the United States from anywhere between 17 percent (nitrogen oxides) and 98 percent (lead). In the future, technological improvements and capital turnover (the replacement of older vehicles, machines, and power plants with newer, more efficient equipment) promise to continue to improve the quality of our air and water even as energy consumption increases.

The authors also discuss objectively the limitations of "alternative" power sources. They remind the reader that biomass, wind, and solar electricity generation have been around for a very long time and were displaced by fossil fuels in the nineteenth century because of physical and economic limitations that have yet to be overcome.

Bradley and Fulmer are also at their best in explaining in a succinct way the political causes of the recent energy crisis, from price controls to badly designed regulations, and in providing a fairly balanced discussion of energy and climate change complete with technology-based alternatives to the Kyoto Protocol. As someone who teaches an undergraduate interdisciplinary course on "Energy and Society," I can personally attest that this latter section will prove eye-opening to students who have been

fed years of doom-and-gloom environmental discourse and who would not be receptive to a “do nothing” approach to the issue.

Austrian economists have so far contributed very little to energy studies. While few readers of this journal might feel an inclination to pursue detailed inquiries in this area, I suspect that several energy-related cases discussed in this book would provide nice illustrations of basic economic principles such as opportunity cost, decision-making in the face of uncertainty, and the unintended, but utterly predictable, consequences of short-sighted governmental interventions. This book could therefore go a long way in providing a new set of concrete economic examples and principles for use in classroom discussions. I strongly recommend it to anyone with an interest in public policy issues who would like to get a quick, but well-rounded, education on energy matters.

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REFERENCES

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