



Two Energy Books of Interest

Posted by [Gail the Actuary](#) on April 18, 2012 - 6:50am

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Today, I'd like to write about two fairly different books related to limited energy supply. Both are excellent, but intended for fairly different audiences, and focusing on different aspects of our dilemma.

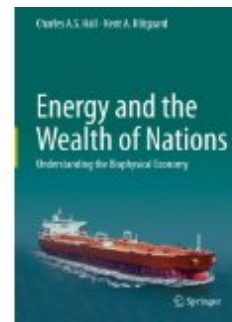
1. [“Power Plays: Energy Options in the Age of Peak Oil”](#) by Robert Rapier.

This book is written at a fairly introductory level, giving information about the many energy options we have, and the trade-offs we make as the result of our choices of energy options. The book is not about peak oil per se, but includes a chapter on peak oil as well as a chapter on climate change. The book ends with the chapter, “The Road Ahead.” The book is inexpensive—\$16.15 from Amazon.



2. [“Energy and the Wealth of Nations: Understanding the Biophysical Economy”](#) by Charles Hall and Kent Klitgaard

This book is focused on energy and economics. This book seems to be aimed as a text book, or at an audience who is already familiar with some of the issues, and wants to dig deeper. This book is in two column format with questions at the end of each chapter to facilitate classroom discussion. It covers in depth a wide range of topics, from energy's role throughout history, to the relationship of energy to wealth production, to energy return on investment, to how to do biophysical economics, to peak oil. It ends with the chapter, “Living a Good Life in a Lower EROI Future.”



Below the fold, I will talk a little more about each.

Before discussing the books individually, one thing I should probably mention: in such a new and changing field, there probably aren't any recent books that I would agree with 100%. These books are no exception, but the purpose of this post is not to highlight differences in my views.

Robert Rapier's Power Plays

Rapier's chapters pretty much outline his book:

1. All about energy
2. Fossil fuels and nuclear power
3. Renewable energy
4. Energy production
5. Global warming

6. Peak oil
7. Nuclear power
8. Risk and uncertainty
9. Reducing the risk
10. Investing in Cleantech – a guide to due diligence
11. The race to replace oil – alternative transportation fuels
12. Oil-free transportation
13. Corn ethanol
14. U. S. Energy Politics
15. The Road Ahead

With 15 to 20 page chapters on each of these subjects, it isn't possible to go into much depth. What the book aims to do is give a good introductory overview, with easy-to-read charts and graphs illustrating main points. Rapier's writing style is easy to follow—fairly short sentences and short paragraphs—so that the whole book is quite easy to read, despite the technical material.

Rapier makes a point to talk about the tradeoffs for each alternative, making it clear that we don't have perfect solutions waiting for us. In his words, "When it comes to energy, there is no free lunch." As a person who has written about alternatives, I could often think of a much longer list of both advantages and disadvantages, but after I thought about it, his "hit the high-points" approach works better for an easy-to-understand overview. Someone who wants to know more can dig more deeply into blog posts or research books.

As an example of Rapier's writing, when he talks about assessing risk, he talks from the point of view of someone who has undertaken such assessments. He writes

Risk assessments are done by people, and people have blind spots. People make mistakes. People cut corners. People sometimes underestimate consequences. . .

But if we accept that there are no risk-free energy options, we must then observe a very important rule of risk assessment: never accept a risk for which you cannot afford the consequences. Whether drilling for oil deep in the Gulf of Mexico, operating a nuclear power plant, or deciding not to carry homeowner's insurance, one has to be prepared to live with the worst-case scenario.

I thought Rapier's chapter on Peak Oil was very good, even though it does not exactly follow the traditional peak oil narrative. Rapier says, "Peak oil," effectively, is the inability of oil supply growth to stay ahead of oil demand growth." He talks about "Peak Lite," and about peak oil being about flow rates and net energy. He makes the connection between high oil prices and recession.

In planning for the future, he emphasizes that we don't know what the future will bring, so we have to plan for various possibilities. In his view, we need to plan for contingencies, not for calamity or business as usual. He says,

On various occasions, I have been asked for my opinion on whether someone should forego college or having children because of energy-related calamities that surely await us. I always respond to these queries in the same way: "We don't know for sure what the future holds, so don't put your life on hold waiting for a calamity. Go live your life, and if adversity lies ahead, we will work hard to deal with it."

I think many individuals, even those who have been reading about oil-related problems for some time, will find Rapier's book helpful. His background is chemistry, the oil industry and alternative fuels, and his chapters that relate to these issues are especially good.

Charles Hall and Kent Klitgaard's Energy and the Wealth of Nations

In this book, Hall and Klitgaard have set out to document many of the energy and economics issues that they teach about, explaining in detail how energy plays an important role in the wealth of nations. As result, the book covers a lot of ground. There are five major parts to the book:

1. Energy and the Origins of Wealth This section gives much interesting historical and prehistorical information about the influence of energy on the economy and on history. It also provides an introduction as to why oil is important, and to the concepts of peak oil and net energy.

2. Energy Economics and the Structure of Society This section explains how economics can be viewed from an energy perspective, and compares it to economics from a neoclassical point of view. It also discusses the rise in oil usage in the US after 1850, and how this affected markets and the economy in general, eventually leading to freer trade practices and globalization. The last chapter in this section examines the evidence on limits to growth.

3. Energy and Economics: The Basics This section gives an introduction to the math, chemistry, physics, and ecology needed to understand biophysical economics. It finishes with a short chapter on why economics, as it is usually taught, is more of a social science than a real science.

4. The Science Behind How Real Economies Work This section explains Energy Return on Investment, the expected impact of peak oil on our financial future, and the role of models. The last chapter in this section explains how to set up a biophysical economics model for a country or region.

5. Understanding How Real Economies Work This section goes more into the expected economic and environmental consequences of declining oil supply and declining energy return on investment. It finishes with a chapter on the future.

With respect to the future, Hall and Klitgaard see a range of possibilities. According to them:

We think we have to go into the future with the following model, and something like the following probabilities (you can choose your own percentages): we will go off the cliff, energetically, economically, or environmentally (25%), we can make a transition to a new energy source that will benevolently replace oil (25%), or we will muddle along, gradually getting materially poorer, but adjusting to that (50%). The point is that we do not think that anyone knows those percentages, so we must go into the future with a huge amount of uncertainty. That in itself might be pretty difficult. Some would trust the market to adjust, others might not, or might have other mechanisms. Many people who think about these things retreat to a bunker mentality and are stocking their country houses with food and ammunition. We, on the other hand, think that is a little foolish; we will probably weather the storm all together or not at all.

There is a whole chapter of discussion following this paragraph, talking about the issues involved, and alternative ways of measuring happiness, and Howard Odum's view of the [prosperous way down](#). The authors conclude

Thus a good future and even, if needed, a prosperous way down is, we believe, quite possible for economic and political reasons, but very unlikely due to psychological and conditioning issues relating to the attitude of American people relating to advertisement, growth, and wealth as status. We conclude that what we need most is to create a biophysically based approach and model for economics, one that would serve on at least an equal footing with the present firm-household-market based model. The actual implementation of any such project mostly remains for the future and a very different book.

Readers will find that the *Energy and the Wealth of Nations* contains a wealth of information and a lot of useful references. There is also an extensive index. The chapters are discrete enough that many of them can be read without reference to other chapters, if a person is looking for, say, more explanation of Energy Return on Energy Investment.

When reading the book, it is helpful to come with some prior background on the subject. A lot of material is presented at once in some sections, making the uptake a little difficult for a totally new reader. The book is well written and edited though, so that even this is not too much of an obstacle. Many sections are more historical in nature, or more narrative, and are easy for anyone to understand.

A Couple of Thoughts on Both Books

I thought it was interesting that both books, in the end, came up with a probabilistic approach to looking at what the future will bring. We don't know what is ahead, so we have to look at a range of possibilities.

I also thought it was interesting that neither book makes an argument for limiting population growth as a way of bringing energy demand better back in to line with resources. One reason may be that we seem to be so close to reaching oil limits that any reduction in population at this time will be tiny at best. Another reason may be that this is an unpopular issue with potential readers, so bringing it up is likely to alienate readers. A third reason may be that discussion of population levels is fairly far afield of the intended purpose of each of these books.

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