

The book “Hubbert’s Peak” by Kenneth S. Deffeyes

About the shortage of oil expected in this decade.

[From Scientific American](#)

You have to wonder about the judgment of a man who writes, "As I drive by those smelly refineries on the New Jersey Turnpike, I want to roll the windows down and inhale deeply." But for Kenneth S. Deffeyes, that's the smell of home. The son of a petroleum engineer, he was born in Oklahoma, "grew up in the oil patch," became a geologist and worked for Shell Oil before becoming a professor at Princeton University. And he still knows how to wield a 36-inch-long pipe wrench.

In *Hubbert's Peak*, Deffeyes writes with good humour about the oil business, but he delivers a sobering message: the 100-year petroleum era is nearly over. Global oil production will peak sometime between 2004 and 2008, and the world's production of crude oil "will fall, never to rise again." If Deffeyes is right--and if nothing is done to reduce the increasing global thirst for oil--energy prices will soar and economies will be plunged into recession as they desperately search for alternatives.

It's tempting to dismiss Deffeyes as just another of the doomsayers who have been predicting, almost since oil was discovered, that we are running out of it. But Deffeyes makes a persuasive case that this time it's for real. This is an oilman and geologist's assessment of the future, grounded in cold mathematics. And it's frightening. Deffeyes's prediction is based on the work of M. King Hubbert, a Shell geologist who in 1956 predicted that U.S. oil production would peak in the early 1970s and then begin to decline. Hubbert was dismissed by many experts inside and outside the oil industry. Pro-Hubbert and anti-Hubbert factions arose and persisted until 1970, when U.S. oil production peaked and started its long decline.

The Hubbert method is based on the observation that oil production in any region follows a bell-shaped curve. Production increases rapidly at first, as the cheapest and most readily accessible oil is recovered. As the difficulty of extracting the oil increases, it becomes more expensive and less competitive with other fuels. Production slows, levels off and begins to fall.

Hubbert demonstrated that total U.S. oil production in 1956 was tracing the upside of such a curve. To know when the curve would most likely peak, however, he had to know how much oil remained in the ground. Underground reserves provide a glimpse of the future: when the rate of new discoveries does not keep up with the growth of oil production, the amount of oil remaining underground begins to fall. That's a tip-off that a decline in production lies ahead.

Deffeyes used a slightly more sophisticated version of the Hubbert method to make the global calculations. The numbers pointed to 2003 as the year of peak production, but because estimates of global reserves are inexact, Deffeyes settled on a range from 2004 to 2008. Three things could upset Deffeyes's prediction. One would be the discovery of huge new oil deposits. A second would be the development of drilling technology that could squeeze more oil from known reserves. And a third would be a steep rise in oil prices, which would make it profitable to recover even the most stubbornly buried oil.

In a delightfully readable and informative primer on oil exploration and drilling, Deffeyes addresses each point. First, the discovery of new oil reserves is unlikely--petroleum geologists have been nearly everywhere, and no substantial finds have been made since the 1970s. Second, billions have already been poured into drilling technology, and it's not going to get much better. And last, even very high oil prices won't spur enough new production to delay the inevitable peak.

"This much is certain," he writes. "No initiative put in place starting today can have a substantial effect on the peak production year. No Caspian Sea exploration, no drilling in the South China Sea, no SUV replacements, no renewable energy projects can be brought on at a sufficient rate to avoid a bidding war for the remaining oil."

The only answer, Deffeyes says, is to move as quickly as possible to alternative fuels--including natural gas and nuclear power, as well as solar, wind and geothermal energy. "Running out of energy in the long run is not the problem," Deffeyes explains. "The bind comes during the next 10 years: getting over our dependence on crude oil."

The petroleum era is coming to a close. "Fossil fuels are a one-time gift that lifted us up from subsistence agriculture and eventually should lead us to a future based on renewable resources," Deffeyes writes. Those are strong words for a man raised in the oil patch. For the rest of us, the end of the world's dependence on oil means we need to make some tough political and economic choices. For Deffeyes, it means he can't go home again.

Paul Raeburn covers science and energy for Business Week and is the author of Mars: Uncovering the Secrets of the Red Planet (National Geographic, 1998).

Stuart Young, Nature

"If [Deffeyes] is right we have, two or three years in which to ... accelerate our move from oil as fuel."

45 of 49 people found the following review helpful:

The wolf is at the door, November 2, 2001

Reviewer: **Dohn K. Riley** from Tahoe City, CA United States

Deffeyes hits the nail on the head when he clearly details what petroleum industry insiders already know - it's not "if" global oil production will peak, it's "when." After years of warning about the imminent demise of cheap oil supplies, experts are now splitting hairs about whether or not inexpensive oil production will peak in this decade or the next. The author's easy-going, occasionally humorous prose makes the bad news easier to take, but either way, a serious global oil crisis is looming on the horizon.

Deffeyes energizes his readers by sweeping us easily through the denser strata of the complexities and developmental progress that built "Big Oil," but he also warns of relying on technology to save us in the future. Unlike many technological optimists, this life-long veteran of the industry concludes that new innovations like gas hydrates, deep-water drilling,

and coal bed methane are unlikely to replace once-abundant petroleum in ease of use, production, and versatility. The Era of Carbon Man is ending.

A no-nonsense oilman blessed with a sense of humour, Deffeyes deftly boils his message down to the quick. Easily-produced petroleum is reaching its nadir, and although they are clean and renewable, energy systems like geothermal, wind and solar power won't solve our energy needs overnight. "Hubbert's Peak" represents an important aspect of the energy crisis, but it is only one factor in this multi-faceted problem that includes biosphere degradation, global warming, per-capita energy decline, and a science/industry community intolerant of new approaches to energy technology research and development. An exciting new book by the Alternative Energy Institute, Inc., "Turning the Corner: Energy Solutions for the 21st Century," addresses all of the components associated with the energy dilemma and is also available on Amazon.com.

Anyone who is concerned about what world citizens, politicians, and industry in the United States and international community must do to ensure a smooth transition from dependence on dangerous and polluting forms of energy to a more vital and healthier world, needs to read these books. Future generations rely on the decisions we make today.

6 of 7 people found the following review helpful:

You can smell the oil when you turn pages, March 4, 2002

Reviewer: [donald rapp](#) from So. Pasadena, CA USA

Review of Hubbert's Peak

This book was very enjoyable to read. The author presents the material in a very personal and "folksy" way that makes you feel that you are in his living room chatting with him, and not reading a dry text on oil production and oil reserves. His obvious familiarity with the realities of working in oilfields comes through effectively. On p.13 he says that when he drives past the smelly refineries in New Jersey he wants to roll the windows down and inhale. His chapters on the origin of oil, oil resources, finding and drilling for oil, oil fields, and Hubbert revisited were excellent. I used to be a professor of energy and environment science and taught courses in energy. I found this book very informative and mostly authoritative. I read it straight through in a few hours. I got so involved that I could not put it down.

On the flip side, I thought that the final two chapters on the future were a little weak. The author could have been more forceful in asserting that a world crisis is approaching and we are sublimely oblivious. Also, his continuing favouritism toward Shell Oil was a bit too parochial. His figure for solar photovoltaic conversion efficiency (10%) is low by a factor of 2.5. And I would have liked greater discussion on reserves, ultimate reserves, and projections of the graphs on pp. 143, 145, 147 and 148 to longer times.

Donald Rapp, Ph. D.

All Customer Reviews

Avg. Customer Review:

Highly Recommended!, April 10, 2003

Reviewer: [Rolf Dobelli](#) from Luzern Switzerland

When a wise old codger of rural roots warns you in humble fashion, "Pardon me, sir, but I dare say you're headed down the wrong road!" something tingling there on the back of your neck warns that you'd better listen. Even more so when the old-timer has risen beyond his oil-patch roots to become a Professor Emeritus at Princeton University. Kenneth S. Deffeyes doesn't have to impress anybody, and perhaps that's one reason he has written a book on oil that will never give you that scratchy sensation of wool being drawn over your eyes. Deffeyes returns to his Oklahoma City roots to point out, as any fellow atop a tractor or toting a pipe wrench might, that things just can't keep going up and up forever. The difference: Deffeyes has a lifetime of industry and academic experience behind him. So, how real is the coming energy shortage? Well, put it this way: we from getAbstract highly recommend this book only to those individuals and companies who rely on electricity or the internal combustion engine. Stone age denizens need not sign up.

Bottom of Form 3

2 of 2 people found the following review helpful:

Helps You to Assess an Important Topic Objectively, January 11, 2003

Reviewer: **Clive Fletcher** from Sydney, NSW Australia

This is an important book for anyone wanting an informed view of the impending oil shortage. For me the book has significant strengths and a couple of relative weaknesses. First, Deffeyes discusses the methodology for forecasting oil resources and production rates over time (including footnotes, Chap 8). Deffeyes does not provide any new estimates, but references (Ref 2, Chap 1) published predictions up to 1998. Second, Deffeyes provides a detailed description of the geology and engineering methods for oil discovery and extraction. For the lay reader this could be heavy going, but Deffeyes does a good job of providing relevant information in a stimulating manner, often through amusing asides, which work most of the time. This material establishes that it is most unlikely there is a major oil field "waiting" to be discovered. Third, the book is well referenced which encourages further exploration of this important topic. For me some questions were unanswered. It is shown (p5) that production will peak in about 2004 to 2009, but there is no discussion of how the increasing cost of oil may affect future consumption and the ultimate end of the oil era (2075, 2100 ?). As oil impacts mainly on road transport there is no discussion of hydrogen-based (eg fuel cells) alternative energy sources (Chap 10). There is very little discussion of Natural Gas (closely related to oil as a resource and able to provide efficient electricity generation) and the scope for it to ease the transition out of the oil era. The discussion of alternative energy sources (Chap 10) is rather superficial and contains no economic or environmental assessment. On balance, this is a valuable contribution to everyone's assessment of their individual and our collective futures.