

Peak Oil Is Coming, and We Must Prepare

A world of steadily declining oil resources is a challenge to all.

By Roscoe G. Bartlett

Are you comfortable that you understand oil and the central role that it plays in your life and will play in the future of your children?

It's important to understand recent energy developments in the context of the larger underlying problem of global peak oil. For our national and economic security, the problem of peak oil requires us to dramatically change America's energy policies.

Consider some symptoms:

- Oil prices have increased more than 2.5 times since 2003.
- Oil prices spiked to \$71 per barrel after Hurricane Katrina. Prices increased to \$73 per barrel after Iran's supreme leader, Ayatollah Ali

Khamenei, warned, "If you [the United States] make a wrong move regarding Iran, definitely the energy flow in this region will be seriously endangered."

Already, the price of oil reflects a \$15-per-barrel security-risk premium because of limited spare capacity and the potential for supply disruptions,

oil expert Daniel Yergin of the Cambridge Energy Research Associates said in May 4 testimony before the House Energy and Commerce Committee.

• The United States is addicted to oil, said President George W. Bush in his 2006 State of the Union address. And as Secretary of State Condoleezza Rice told the Senate Foreign Relations Committee on April 5, "Nothing has really taken me aback more as secretary of state than the way that the politics of energy is . . . warping diplomacy around the world. We have simply got to do something about the warping now of diplomatic effort by the all-out rush for energy supply."

WHAT IS PEAK OIL?

Peak oil is the concept that oil-field production follows a bell curve rising to a maximum capacity—or peak—when about half the oil is extracted. After that, production declines.

American Shell Oil scientist M. King Hubbert first identified peak oil half a century ago. In 1956, Hubbert predicted U.S. oil production would peak in 1970. It did and has declined every year since 1971.

Oil from Prudhoe Bay in Alaska and the Gulf of Mexico did not reverse declines in domestic oil production. In 1985 the United States pumped 9 million barrels per day. In 2005, despite steady price increases since the fall of 2003, the United States pumped 5.1 million barrels per day.

World oil production will also peak. Oil production is declining in 33 of the world's 48 largest oil-producing countries. Experts agree global peak oil is inevitable. Many predict it's imminent. But the peak can't be predicted exactly; it's observed only after it has occurred.

Neither high oil prices nor technological advances have reversed production declines after peak—in the United States, Norway, Great Britain, or any other country. Despite periods of high prices and new technologies, world oil discoveries have steadily declined for 40 years. You can't pump what you haven't found.

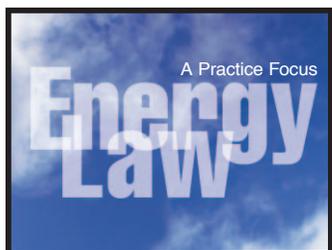
Since 1980, the world has been consuming more oil than it has discovered. That means that we've been depleting world reserves for more than 25 years. Two-thirds of world reserves are concentrated in Middle Eastern countries. Other countries that control reserves and are not necessarily friends to the United States include Russia, Nigeria, Venezuela, and Sudan.

The United States has only 2 percent of world oil reserves. We contribute 8 percent of world production. We consume 25 percent of world oil production. We're pumping our reserves four times faster than the rest of the world. Before the Arab Oil Embargo in 1973, we imported one-third of the oil we used, but today we import about two-thirds of the oil we use.

U.S. natural gas production has also peaked. The United States is now the world's largest importer of both oil and natural gas.

SPENDING OUR INHERITANCE

Both the United States and the world have grown dependent upon oil. A September 2005 Army Corps of Engineers report, *Energy Trends and Their Implications*, U.S. Army Installations, noted that "Oil is the most important form of energy in the world today. . . . Historically, no other energy source equals oil's intrinsic qualities of extractability, transportability, versatility, and cost."



We all benefit every day from oil. The energy density in one barrel of oil is the equivalent of 12 people working full time for one year. A barrel of oil yields 42 gallons of gasoline. Think about how far one gallon of gas takes your car. How long would it take you to pull your car that far?

America is like a young couple whose grandparents died and left a big inheritance. The couple spend the money freely, become dependent upon it for their lifestyle, and then wake up one morning to discover that it's running out. They have to do one of two things: spend less or make more. We have established a lifestyle where 85 percent of all our energy comes from fossil fuels, which will peak, run down, and then run out. Only 15 percent comes from other sources. A bit more than half of that 15 percent, 8 percent, comes from nuclear. Only 7 percent comes from true renewables, to which we will ultimately have to transition.

The Army Corps of Engineers report noted that 70 percent of U.S. oil consumption is used in transportation. Oil is also a feedstock to other vital industries, including chemicals and pharmaceuticals—everything plastic. Peak oil will cause a liquid-fuel crisis because we can't fill our gas tanks with and run our vehicles on coal, nuclear, wood, or wind.

A February 2005 report commissioned by the Department of Energy, Peaking of World Oil Production: Impacts, Mitigation and Risk Management (known as the Hirsch report), warned, "Oil peaking will be abrupt and revolutionary." It concluded that a crash program to produce liquid-fuel alternatives at the maximum feasible rate must start 20 years before peak to avoid significant supply shortages and unprecedented economic, social, and geopolitical challenges.

THE END OF CHEAP OIL

The reduction in oil supply after peak oil will have even more dramatic effects because of the rising demand for oil. That is because developing countries around the world are increasing their demand for oil consumption at rapid rates. For example, the average consumption increase from 2003 to 2004 for the countries of Belarus, China, and Singapore was 15.9 percent.

Politicians cannot repeal the economic law of supply and demand. After we hit peak oil, \$70 for a barrel of oil and \$3.50 for a gallon of gas will seem cheap. In its September 2005 report, Oil Shockwave, the National Commission on Energy Policy & Securing America's Future Energy projected that a sustained 4 percent global shortfall in daily oil supply would raise oil prices above \$160 per barrel. Prices that high would inflict a ruinous worldwide recession.

And this type of recession could be caused by a single hostile country that has already threatened to use oil as a weapon against the United States. Remember that Iran is the fourth-largest oil producer and supplies about 5 percent of the world's oil.

LIMITED SUBSTITUTES

Unfortunately, current alternatives to oil won't be able to solve our energy problems quickly and easily.

Biofuels from agriculture currently contribute 2 percent of U.S. gasoline consumption. To produce 10 percent by 2010, the American corn crop would have to double and be dedicated solely to the production of ethanol without any fossil-energy input. But it takes the equivalent of three-fourths of a gallon of fossil fuels to produce one gallon of ethanol with current techniques.

America has 250 years of coal reserves at current use rates. Double our consumption, combined with growing energy demands, and that shrinks to 80 years. Use energy to convert coal to liquid fuel and the 250 years is only 50 years.

Since 2000, solar and wind power production together have increased 30 percent each year in the United States. Yet today they still contribute only a little more than one-fourth of 1 percent of our energy use. If solar and wind continue to grow at the same high rate, that percentage would increase to a little more than 1 percent three years from now.

The oil reserves in tar sands and shale are vast but are in no way comparable in quality or volume to petroleum in the short term. It will require substantial investments of time, energy, and money to produce significant quantities of liquid fuel from these sources.

Some look to hydrogen because hydrogen in a solid fuel cell is two times more efficient than a conventional liquid-fuel reciprocating engine and produces no pollution, only water. But hydrogen is not an energy source. Hydrogen is, in effect, a battery. We won't know without more research and development if we will ever get economically feasible fuel cells and if a hydrogen battery has the potential to be more efficient than current electron batteries.

A NEW POLICY

Current American energy policy is a recipe for catastrophe because it is designed to fill what will be a growing gap between the amount of oil we want to use and the decreasing supply that will be available as a result of peak oil.

We should recognize that it is futile to attempt to fill the gap with more oil production or alternatives. To the extent that we fill the gap without reducing our oil consumption, we will deny our children and our grandchildren access to these finite energy sources. That is why I oppose drilling in the Arctic National Wildlife Refuge. If we pump ANWR tomorrow, what will we do the next day? Right now it's like money in the bank collecting very high interest.

We should take steps to transition to a far more efficient and sustainable use of energy.

First, and most urgent, we must raise awareness about the impending crisis from global peak oil. Rep. Tom Udall (D-N.M.) and I have formed a Peak Oil Caucus in the House of Representatives to educate our colleagues and our country about global peak oil.

Second, we have introduced H. Res. 507, a bill that states "The United States, in collaboration with other international allies, should establish an energy project with the magnitude, creativity, and sense of urgency that was incorporated in the 'Man on the Moon' project to address the inevitable challenges of 'Peak Oil.'"

In particular, an energy policy to address peak oil ought to consider these specific actions. Most urgently, we should develop contingency plans to deal with disruptions of the oil supply. In the short term, we should reduce energy consumption dramatically to save money, buy time, and free up energy to invest in alternatives. And in the long term, the world needs to move to reliance upon renewable sources of energy rather than fossil fuels.

If every American contributes to meeting the challenge of peak oil, I am confident we will have a bright future.

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