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Peak Oil – True or False

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The arguments are so one-sided, it's practically a given that "peak oil" is real and threatening. Or is it? This article examines both sides. It lets readers decide and deals only with supply issues, not crucial environmental ones and the need to develop alternative energy sources. First some background.

The name most associated with "peak oil" is M. King Hubbert. He became the world's best known geologist when he worked for Houston-based Shell Oil Company from 1943 to 1964. His theory goes something like this. Oil is a finite resource. Peak oil, or Hubbert's peak, is the point at which maximum world production is reached, after which its rate terminally declines.

Hubbert first presented his theory in a February 4, 1949 Science magazine article called "Energy from Fossil Fuels." He gained prominence, however, from his 1956 American Petroleum Institute presentation titled "Nuclear Energy and the Fossil Fuels." In it, he predicted that US production would peak between the mid-1960s and early 1970s, and he was largely right (for the wrong reasons at the time) about cheap or what's called light sweet oil.

Most analysts believe US output peaked in 1970 and has since declined. Others, like economist and author F. William Engdahl, disagree. He's been researching oil issues since the early 1970s and believes US output peaked at the time but not because of resource depletion. It's "because Shell, Mobil, Texaco and the other partners of Saudi Aramco were flooding the US market with dirt cheap Middle East imports, tariff free, (and) at prices so low (that) many Texas domestic producers could not compete and" had to shutter their operations.

But Hubbert went further as well. He predicted a worldwide peak in "about half a century" that would progress in bell-shaped curve fashion, now called "Hubbert's curve." Here's how it works for all fossil fuels. Hubbert theorized that after discovery, production increases exponentially, but at some point peak output is reached, after which an exponential decline ensues. Hubbert's curve is symmetrical, it peaks when half of all oil (or other fossil fuel) has been produced, and there's only a single peak after which output declines.

Hubbert's analysis was at a time oil nominally cost under $3 a barrel. Inflation-adjusted that's around $23 in 2008 dollars. Today it's around $100, and some analysts see it heading much higher as the supply of cheap oil declines in the face of growing demand. True or false will only be known in the fullness of time, but consider what Hubbert, in fact, said in his 1956 paper. He estimated:

— a "total ultimate potential reserve of 150 billion barrels of crude oil for both land and

offshore areas of the United States" and acknowledged he was "in substantial agreement with Pratt's figure of 170 billion barrels….;"and

— a potential of 1.250 trillion "barrels (for) the whole world."

So far, Hubbert was referring to what's called "light sweet" or cheap oil. But he went further as well, yet his comments have been largely ignored. He mentioned other type oils and estimated:

— "the oil obtainable from oil shales in the United States" is one trillion barrels based on current (1956) US Geological Survey figures; outside the US, he estimated oil shale potential in Brazil at between 300 to 500 billion barrels with "negligible" amounts present in other countries;

— the Athabaska tar sands in northeastern Alberta, Canada are the "largest known deposit(s)….in the world;" its "extractable oil content….is still not accurately known, but current estimates range from about 300 to 500 billion barrels….;" and

— "other large (nonconventional oil) deposits of uncertain magnitude exist in eastern Venezuela and in Mesopotamia (Iraq);" these and others like them in the world "might be as much as (another) 800 billion barrels."

Hubbert then stated: "….the culmination of world (oil) production (of the cheap variety)….should occur within about half a century (and within) the United States….within the next few decades." However: "This does not necessarily imply that the United States or other parts of the industrial world will soon become destitute of liquid (oil) and gaseous fuels, because these can be produced from other fossil fuels (including tar sands, heavy and extra-heavy oils and shale) which occur in much greater abundance." In 1956, his and other estimates of their amounts were far below today's figures. More on that below.

Current Opposing Views on Peak Oil

The German-based Energy Watch Group (EWG) believes peak oil is real. It's an "international network of scientists and parliamentarians" that published an October 2007 report with that view. It stated world oil production peaked in 2006, output is now declining by several percent a year, and by 2020 to 2030 global oil reserves will be substantially lower than today and a supply gap will exist.

Daniel Yergin's Cambridge Energy Research Associates (CERA) disagrees. Its analysis finds that "the remaining global oil resource base is actually 3.74 trillion barrels – three times as large as the (claimed) 1.2 trillion barrels by (peak oil) proponents." CERA argues further that peak oil reasoning is faulty and, "if accepted, (may) distort critical policy and investment decisions and cloud the debate over the energy future." It states as well that the "global resource base of conventional and unconventional oils….is 4.82 trillion barrels and likely to grow" and bases its analysis on fields now in production and those "yet-to-be produced or discovered."

Its chairman, Daniel Yergin, noted that: "This is the fifth time that the world is said to be running out of oil. Each time….technology and the opening of new frontier areas has banished the specter of decline. There's no reason to think that technology is finished this time."

The Paris-based International Energy Agency (AIE) agrees. It's an energy policy advisor to its 27 member countries that was founded by the OECD in 1974 in the wake of that period's oil crisis. It believes peak oil notions are extreme, says there's "no shortage of available oil and gas in the ground," but new technologies must be found to curb "the world's thirst for them (and to) tap reserves" to increase production. AIE believes as much as 10 trillion barrels of "oil equivalent" conventional oil and gas exist and at least as much non-conventional oil.

In a 2005 report it stated that: "The hydrocarbon resources in place around the world are sufficiently abundant to sustain likely growth in the global energy system for the foreseeable future. The doomsayers are again conveying grim messages through (the media). The AIE has long maintained that none of this is cause for concern."

AIE considers all type oils – the easy to find and produce "light sweet" kind that's likely running out plus potentially huge untapped deposits of heavier oils that will become more important when it does. With this in mind, the Middle East doesn't have two-thirds of world oil reserves as many analysts, the industry, and US Department of Energy claim. It has two-thirds of "proved" cheap oil reserves.

The US Geological Survey (USGS) collects data on all type oils and estimates their amounts. For the year 2000, the US Department of Energy (DOE) and oil industry estimated remaining "proved" light sweet reserves at slightly over one trillion barrels. USGS, however, placed "identified" reserves at 1.1 trillion barrels and "recoverable" reserves at nearly 2.3 trillion or more than double the industry and DOE amounts. In addition, USGS estimates combined non-conventional heavy and tar sands deposits at around 4.250 trillion barrels with about 3.6 trillion of them in the two countries with most of them – Canada and Venezuela.

Other "unconventional" oil estimates differ widely, so take your choice on who to believe. Dutch economists Peter Odell and Kenneth Rosing had an earlier view in their 1980 book "The Future of Oil." They noted predictions of total world reserves ranged from two to 11 trillion barrels and said three trillion was "the more realistic figure" for conventional oil plus another two trillion from unconventional heavy oil and tar sands.

Petroleum Economist magazine calls itself "the authority on energy." It says tar (or oil) sands reserves are huge, they occur in over 70 countries, and Canada has most of them (around 81%) in four regions: Athabasca, Wabasca, Cold lake and Peace River in areas covering around 77,000 km. It estimates technically recoverable reserves at between 280 – 300 billion barrels with total non-recoverable (based on current technology) amounts at between 1.7 – 2.5 trillion barrels. Other than shale, USGS categorizes oil as light, heavy, extra-heavy and natural bitumen or tar/oil sands.

Some analysts believe oil sands can replace conventional oil when its supply runs out while others disagree. One of them is Richard Heinberg, who's written extensively on ecological and peak oil issues. He says that although estimated oil sands reserves equal or exceed all conventional oil extracted to date, processing them reduces their potential for reasons geologist Walter Youngquist explains: because "it takes the equivalent of two out of each three barrels of oil recovered to pay for all the energy and other costs involved in getting oil from the oil sands."

Then, there's the environmental cost. It takes two tons of sand mined to yield one barrel of oil, and extracting it requires huge amounts of natural gas and water. In addition, each

barrel recovered yields 2.5 barrels of oily waste that must be disposed of. It's done by pumping it into huge ponds, and Heinberg describes a Syncrude Canada Ltd. one that's 14 miles in circumference in which 20 feet of murky water floats on a 130-foot-thick slurry of sand, silt, clay and unrecovered oil.

It's nightmarish and so environmentally destructive that northern Alberta residents want all oil sands plants shuttered because they've displaced native people, destroyed boreal forests, caused livestock deaths and increased the level of miscarriages. Moreover, Heinberg believes it would take about 700 plants the size of a Syncrude Athabasca one to process enough tar sands to replace conventional oil, and their environmental damage would be unimaginable and too great a cost to bear.

Another resource assessment comes from Petroleum Equities. It's a management consulting firm specializing in oil and gas exploration and production. It estimates combined heavy oil and tar sands worldwide reserves at around 5.4 trillion barrels with 80% of them in the western hemisphere.

For extra-heavy oil alone, the US Department of Energy (on its web site) estimates Venezuela has 1.36 trillion barrels, or 90% of the world total. That's more than all "proved" world reserves combined and in addition to Venezuela's "proved" light sweet resources of around 80 billion barrels that alone ranks it seventh in the world behind the five largest Middle East producers and Canada.

Potential Arctic Oil Reserves

On its web site (arcticoag.com), the Arctic Oil and Gas Corporation states it's "an oil exploration venture company that has filed for the exclusive exploitation, development, marketing and extraction rights to the oil and gas resources of the seafloor and subsurface contained within the 'Arctic Claims.' " It calls the Arctic "the last giant oil frontier on Earth (with its) vast reserves of untapped oil and natural gas (that will) become accessible (when) new deep-sea drilling and hydrocarbons production technology (is) available."

In addition, it states that a preliminary USGS assessment "suggests the Arctic seabed may hold as much as 25 per cent of the world's undiscovered oil and natural gas reserves (or around 400 billion barrels of oil alone.)" It further says that Arctic oil source rocks may contain "untold billions of tons of organic sediments" and calls the 80 million acre Arctic Ocean Commons Prospect Claim "the world's largest (potential) material prize."

Here's what USGS, in fact, said in October 2007. It called the above claim "a reporter's mistake" but doesn't rule out that it's true. It explained that the 25% figure came from an assessment of seven oil and gas basins that weren't precisely in the Arctic. One of them in East Siberia lies entirely south of it. Exclude it and what's left is 14%. However, because a 2000 USGS assessment didn't include undiscovered resources from all north of the Arctic basins (numbering many more than seven), the area's potential is vast but undetermined.

USGS explained that it didn't fully assess the area in 2000 because it lacked enough data at the time. However, it's now investigating all Arctic regions, using available geologic information and "a methodology adapted to a general shortage of well and seismic data." USGS concludes that the region's potential is vast, it's largely unexplored, its resources are "poorly understood," and it can only produce a "broad view" of the region's potential "because the (area's) geologic uncertainties are very high and the technical uncertainties

(of) oil and gas extraction (feasibility) even higher."

Two Notable Peak Oil Proponents

There's no shortage of peak oil proponents, many are prominent figures, two among them stand out, and one is a media regular on his views, right or wrong. He's Matthew Simmons, chairman and CEO of Simmons & Company, an industry-insider, close associate of Dick Cheney and advisor and possible secret member of Cheney's Energy Task Force representing Big Oil interests. He's also a major Republican donor and author of the 2005 book "Twilight in the Desert: The Coming Saudi Oil Shock and the World Economy."

In it, Simmons is alarmist about the world's largest producing country, and he's widely heard and believed. Right or wrong, he states that Saudi oil fields are "at or very near (their) peak sustainable volume (and they'll) likely….go into decline in the very foreseeable future." In addition, there's little chance of discovering new fields to make up the difference. These views make headlines and move markets. So with oil prices around $100 a barrel and Simmons an industry insider and prominent doomsayer, consider the possibility there's something rotten in the oil patch allowing Big Oil to profit hugely.

Further confirmation comes from a February 28 Arabian Business article. In it, Simmons calls $100 oil "cheap" because "the supply is showing some very troubling signs that we might well have already peaked and started (to slow) down….Demand on the other hand shows absolutely no sign of slowing down," so oil prices could top $300 a barrel within five years." Simmons repeats this view on US television.

Geologist Colin Campbell is another peak oil proponent and author of many papers on the subject. He's just as bleak in his outlook and states it in "The Coming Oil Crisis and Oil Depletion – The Heart of the Matter," that he wrote for The Association for the Study of Peak Oil and Gas (ASPO). He's their founder, former president and currently their honorary chairman.

Campbell believes world output peaked, and in another of his papers, "Peak Oil: an Outlook on Crude Oil Depletion," stated: Peak Oil "is a turning point for Mankind, which will affect everyone….its discovery peaked in the 1960s….gas….will likely peak around 2020….non-conventional oil delays peak only a few years….we're not facing a re-run of the (1970s) Oil Shocks. They were like….tremors….we now face (an) earthquake….It is not a temporary interruption but the onset of a permanent new condition."

Campbell also wrote "Understanding Peak Oil" on APSO's web site in which he further says that debating the precise date of peak oil "misses the point." What really matters is "the long remorseless decline (that's) on the other side of it. The transition to decline threatens to be a time of great international tension. Petroleum Man will be virtually extinct this Century, and Homo sapiens faces a major challenge in adapting to his loss. Peak Oil is by all means an important subject." These type comments and more from Campbell's 2005 book "Oil Crisis" can scare anyone. They also explain today's geopolitics, the strategic importance of oil, the reason its price is so high, and why the US is waging global wars "that won't end in our lifetime."

A Peak Oil Contrarian

F. William Engdahl once accepted peak oil analysis, but no longer does. He explains why in

his writing, and this section summarizes his reasoning. It's based on the Russian-Ukrainian theory that oil originated from deep carbon deposits dating as far back as the earth's formation. It's not a fossil fuel or of biological origin, and its potential may be far greater than current hydrocarbon estimates.

According to Engdahl and others sharing this view, peak oil adherents believe oil is a fossil fuel, its origin is biological, its supply finite, and it's only found in areas where it was "geologically trapped millions of years ago….in underground reservoirs (around) 4-6000 feet below the surface of the earth." At times, large amounts may also be in shallow water offshore rock formations in places like the Gulf of Mexico, North Sea or Gulf of Guinea. In any event, prevailing reasoning is that it's running out, and it's a just a matter of deciding how much is left and when it no longer will be available in amounts needed to sustain world economies. Peak oil proponents believe the time is fast approaching.

Petroleum science dates from the year 1757 when Russian scholar Mikhailo Lomonosov hypothesized that oil's origin might be biological. In the early 19th century, two scientists disagreed – German naturalist and geologist Alexander von Humboldt and French chemist and thermodynamicist Louis Joseph Gay-Lussac. Together they proposed that oil is primordial matter, it erupted from deep within the earth, and it has no connection to biological material nearer the surface. Later in the century, others held similar views – most notably the Russian chemist Dmitri Mendeleev (the father of the Periodic Table of chemical elements) and French chemist Marcellin Berthelot. Mendeleev, in particular, believed that "petroleum was born in the depths of the earth (called "deep faults"), and it is only there that we must seek its origin."

Modern petroleum science dates from the end of WW II when the Cold War began and the former Soviet Union faced isolation from the West. At the time, its scientists believed the country was in trouble. It had limited reserves and was shut out of many parts of the world for supply. It thus became imperative to find new deposits inside the country.

So its scientists at the Institute of the Physics of the Earth of the Russian Academy of Sciences and the Institute of Geological Sciences of the Ukraine Academy of Sciences set out to do it. They studied oil's origin, how reserves are generated, and the most effective exploration methods to extract it.

In 1951, Nikolai Kudryavtsev proposed the first modern deep abiotic oil origins theory at the All-Union petroleum geology congress. He discounted claims about oil's biological origin and was joined by other Russian and Ukrainian geologists, including Vladimir Porfir'yev.

In 1956, Porfir'yev announced their conclusions that even now are largely unacknowledged in the West: that "Crude oil and natural petroleum have no intrinsic connection with biological matter originating near the surface of the earth." They're "primordial materials which have been erupted from great depths," and believing their supply is limited is a hoax to keep prices high at times like now.

The theory rests on the abiotic origin of oil. It's mirror opposite orthodox geology, and, if right, here's what it means – that available oil is only limited by deep earth organic hydrocarbon constituents at the time of the planet's formation, and technological advances will eventually tap them in ultra-deep reservoirs and from old fields believed to be barren.

The theory defies conventional science, but it's paying off. It let Soviet Russia develop huge

oil and gas fields in regions previously thought unsuitable. In the 1990s, it was also successfully used in the Dnieper-Donets Basin between Russia and Ukraine in areas considered barren. Sixty-one wells were drilled of which 37 (60%) proved out. Engdahl compares this to US wildcat drilling that produces 90% dry holes.

Russia's success was largely unknown in the West until Pentagon strategists, just recently, considered a disturbing possibility – that the country's geophysicists might know "something of profound strategic importance." If Russian energy know-how exceeds the West, it holds "a strategic trump card of staggering geopolitical import." It also explains why Washington surrounds the country with military bases and targets it with anti-ballistic missiles and radar for offense, not defense. It's "to cut her pipeline and port links to western Europe, China and the rest of Eurasia" as part of a new millennium Great Game to control the world's resources.

In the 1990s, Russia extended its technology to the West, but its offers were spurned and then withdrawn after the US attacked Iraq. Nonetheless, ExxonMobil nearly got a $25 billion stake in Yukos Oil that only unraveled after its chief executive Mikhail Khodorkovsky's arrest and conviction quashed the deal. Had it gone through, Exxon would have had access to the world's largest resource of abiotic-trained deep drilling experts, now unavailable to their scientists and the West.

It now comes down to this. Western technology is built around fossil fuel development. If the future is abiotic, as Engdahl and Russian scientists believe, "Moscow holds a massive energy trump card." It also faces a hostile US and possible new Cold War confrontation for its advantage and unwillingness to be accommodative the way Boris Yeltsin was in the 1990s.

If abiotic theory proves false or overrated, however, and orthodox geology is right, then controlling world oil reserves is even more important. It means peak oil is real, cheap oil is running out, heavier oils are more important, and cornering what's left will be Priority One for all major world powers.

There you have it – peak oil or vast untapped amounts of the abiotic kind awaiting new technology to access it. Readers can weigh the evidence, find more on their own, and decide what's true or false. In the fullness of time we'll know, but for now we must rely on our best judgment with plenty of ammunition on both sides of the argument to consider.

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Stephen Lendman lives in Chicago. He can be reached at lendmanstephen@sbcglobal.net. His new book as editor and contributor is titled "Flashpoint in Ukraine: US Drive for Hegemony Risks WW III." http://www.claritypress.com/LendmanIII.html Visit his blog site at sjlendman.blogspot.com. Listen to cutting-edge discussions with distinguished guests on the Progressive Radio News Hour on the Progressive Radio Network. It airs three times weekly: live on Sundays at 1PM Central time plus two prerecorded archived programs.