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The end of the 'age of oil'

By Daniele Ganser for ISN Security Watch
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Jorge Silva, Reuters

That oil is a finite resource is a commonly known fact. Increasingly, however, oil experts and geologists are focusing less on the question of when global oil supplies will run out, but on when the supply of regular crude will have reached its half-life - i.e., the moment when global oil production will be at its absolute maximum. This historical moment is known as global peak oil.

“Worry now. The problem is enormous,” warned Robert Hirsch, Senior Energy Program Advisor at the consulting firm SAIC, during a Pentagon-sponsored energy conference in April. Addressing the US Congress already in December last year, Hirsch claimed: “The world has never confronted a problem like peak oil.”

Experts across the globe agree that after the peak year, global production of regular conventional oil (excluding heavy, deepwater, and polar oil) is expected to decrease annually, resulting in a global energy crisis. They disagree, however, on when exactly global peak oil will hit. Some say it is happening right now, including US geologist Kenneth Deffeyes, professor emeritus at Princeton, who declared we should be thankful for 150 years of cheap and abundant petroleum - days that will never return. “I nominate Thanksgiving Day, 24 November 2005, as World Oil Peak Day," Deffeyes declared, adding: “We have to face up to reality: World oil production is going to decline, at first slowly, and then more rapidly."

Others, including the US Geological Survey (USGS), insist that Deffeyes got it wrong. They predict that much more oil is available for discovery, implying that the peak oil will not hit the world for another 30 years. The USGS confirms, however, that every oil field at some point reaches its production peak. European geologists confirm this and point out that this phenomenon is for instance illustrated by the two well-known North Sea oil fields, Brent and Forties. Their production output has taken on the shape of a bell curve, with peak production somewhere around the fields’ half-lives. After the peak, oil production at both Brent and Forties gradually declined, and as not enough new fields could be brought on stream to keep North Sea oil production at a steady level, it started to decline.

National Peak Oil

What is true of specific oil fields is also true of oil producing states: they too go through a bell curve-shaped production cycle. The US, formerly the world’s largest oil producer, is a good case in point. US geologists analyzed every oil field across the country, added up their individual peaks, and concluded that a national peak was inevitable. At an oil industry conference in 1956, Shell Oil geophysicist M. King Hubbert boldly predicted that the US would peak around the year 1970.

Amid the hubris of spectacular oil discoveries in the 1950s, Hubbert’s prediction was not taken very seriously. At the time, many observers could simply not imagine an irreversible drop in US oil production. In 1970, however, Hubbert’s theory was vindicated: the US had reached its national oil peak with a production of nine million barrels per day (Mb/d). Despite the discovery of new oil fields in Alaska and the development of more sophisticated extraction techniques, US production thereafter gradually declined to the current level of 7 Mb/d.

The gradual decline of domestic oil supply remained hardly noticed by the average US consumer. Although national oil consumption continued to steadily increase after 1970, the lacking oil supplies were simply imported from abroad. Today, the US is the world’s largest oil consumer, with a breathtaking 21 Mb/d in 2005. “America is addicted to oil,” US President George W. Bush commented in his annual State of the Union address in February.

But the US is not the only oil-producing country that is past its production maximum. In many countries across the world oil production is declining. Venezuela and Libya peaked at about the same time as the US, while Romania (1976), Indonesia (1977), and Tunisia (1981) followed suite. Norway and Britain, who in the early 1970s started to exploit the rich oil fields in the North Sea, peaked at the turn of the millennium. The UK thereby faced a dramatic decline in its yearly production, which fell from three Mb/d in the peak year 2000 to around one Mb/d today.

“Any thinking person has to recognize at some point the world is going to face a crisis,” Republican representative Roscoe Bartlett declared in front of US Congress in December 2005 and formed a Peak Oil group together with other parliamentarians to tackle the challenge. “Thirty-three of 48 major oil producing nations have now peaked,” Bartlett noted, stressing that timing was now of the greatest importance. “If we anticipate Peak Oil by ten years, we have less of a problem but still a problem,” he said, adding: "To not have a meaningful problem, we must anticipate it by 20 years. Clearly, we have probably passed that point. By most people's reckoning, we have past that point.”

Global Peak Oil

The reaching of national peaks by oil producing countries has gone largely unnoticed, as the countries

concerned have so far been able to compensate for the drop in domestic production by importing more oil from abroad. Once global oil production has reached its maximum, however, Peak Oil will concern and affect all.

Statistics about oil field discoveries do not bode well. The amount of new oil reserves discovered each year has gradually declined since the early 1960s. Today, we consume more oil than we discover. And the oil industry makes no secret about it. A Chevron ad asks: “The world consumes two barrels of oil for every barrel discovered. So is this something you should be worried about?” In 2005, that ratio took a turn for the worse: one found for six consumed.

Oil supply is less secure than it was 50 years ago. But at the same time, global demand for oil has been skyrocketing with no end in sight, considering the growing oil requirements from rapidly expanding economies such as those of China and India. "The Chinese government is well aware of peak oil," said Pang Xiongqi of the China University of Petroleum in Beijing in July 2005. Being the second largest oil consumer behind the US, the Chinese now consume seven Mm/d - a demand they cannot match by their domestic oil production of only 3.5 Mm/d. And, thus, like many other countries, they must import energy.

India, which currently relies on large quantities of dirty, low-grade domestic coal and expensive oil imports, is under similar energy stress. “We are terribly short of our energy supply and we desperately need new sources of energy,” Indian Prime Minister Manmohan Singh declared while in Washington in July 2005. Half a year later, President Bush announced in New Delhi that he would support India’s nuclear plans aimed at increasing energy production to ease some of the pressure on the demand side of the global oil market.

Today, the need to secure reliable energy supplies is playing a dominant role in the geopolitics of China and its operations in Sudan and other countries, Russia and its support for Iran, the US and its continued military presence in the Middle East, and India, which is planning to build a pipeline from Iran through Pakistan to India. The search for energy is likely to lead to an intensification of great power rivalries over oil resources in the decades to come.

Dire consequences

From a historical perspective, the increase in global oil consumption during the last 150 years is remarkable. The first oil was produced in 1859, and throughout the 20th Century, oil supplies have increased annually. Global consumption before the First World War in 1914 stood at one Mm/d, rose to six Mm/d after the Second World War in 1945, and then sharply increased to 22 Mm/d at the time of the Cuban Missile Crisis in 1962, to 61 Mm/d at the time of the Chernobyl nuclear accident in 1986, and 85 Mm/d today.

The 21st century will be different. After the peak the production of regular oil will fall and never recover. While the 20th century was characterized by increasing oil supplies, the 21st century will be shaped by decreased oil supplies and the end of the age of oil. This will fundamentally change our way of life, explains geologist Colin Campbell, who in 2001 founded the “Association for the Study of Peak Oil” (ASPO) and ever since has warned that all countries must prepare for the global peak.

The Swedes have heeded the advice and decided to make their country independent from fossil fuels by 2020. “It is a bold target,” Prime Minister Goran Persson admitted earlier this year. "If we end up being independent of oil in 2023, no one will accuse us of anything.”

“We come to the end of the first half of the 'age of oil',” Campbell told ISN Security Watch. “It lasted 150 years and saw the rapid expansion of industry, transport, trade, agriculture, and financial capital as banks lent more than they had on deposit, confident that tomorrow’s expansion was collateral for today […]. The population exploded six times in parallel with oil. The second half now dawns and will be marked by the decline of oil and all that depends on it. Much debate surrounds the date of peak, but it misses the point when what matters is the long, remorseless and terminal slope that comes into view on the other side of it," he said.

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