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Energy Bulletin

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The Second Great Depression : Causes & Responses

By Colin J. Campbell

Financial Consequences of Peak Oil

It is becoming evident that the financial and investment community begins to accept the reality of Peak Oil, which ends the First Half of the Age of Oil. They accept that banks created capital during this epoch by lending more than they had on deposit, being confident that Tomorrow's Expansion, fuelled by cheap oil-based energy, was adequate collateral for Today's Debt. The decline of oil, the principal driver of economic growth, undermines the validity of that collateral which in turn erodes the valuation of most entities quoted on Stock Exchanges. The investment community however faces a dilemma. It desires to protect its own fortunes and those of its privileged clients while at the same time is reluctant to take action that might itself trigger the meltdown. It is a closely knit community so that it is hard for one to move without the others becoming aware of his actions.

In this situation, interest shifts to commodities and to short term trading to benefit from daily or hourly fluctuations in price, implying that there are few valid genuine long-term investments left.

The scene is set for the Second Great Depression, but the conservatism and outdated mindset of institutional investors, together with the momentum of the massive flows of institutional money they are required to place, may help to diminish the sense of panic that a vision of reality might impose. On the other hand, the very momentum of the flow may cause a greater deluge when the foundations of the dam finally crumble. It is a situation without precedent.

The following is the summary of a presentation to the Edinburgh Conference by C.J.Campbell, which extreme as it may sound, seems consistent the [new posture adopted by the International Energy Agency](#).

The Second Great Depression : Causes & Responses

SUMMARY

Oil was formed but rarely in time and place in the geological past, which tells us that it is subject to depletion. It also has to be found before it can be produced. Finding oil is primarily a matter of geology, notwithstanding the technical, political and economic factors. So, an understanding of petroleum geology forms the bedrock for forecasting future production.

Depletion itself is easy to grasp as every beer drinker knows: the faster he downs his draught, the sooner it is gone. However, the issue is not about finally running out of oil, which will not happen for many years. What does concern us – and most gravely– is the long downward slope that opens on the other side of peak production. Oil and Gas dominate our lives, and their decline will surely change the World in radical and unpredictable ways.

How has this self-evident reality been so successfully confused and denied? In short, oil companies under-reported discovery to comply with strict Stock Exchange rules, and revised reserves upwards over time, delivering a comforting but misleading image. But those days are over, forcing the major companies to find reserves by merger rather than in the ground. Some OPEC countries, for their part, started reporting original, not remaining reserves, as they vied with each other for quota, explaining why their reported reserves have barely changed for 20 years. Furthermore, definitions of the several categories of oil and gas are confused. Public data are grossly unreliable.

Production has to mirror discovery after a time lapse, as amply demonstrated in one country after another. The peak of production comes broadly when half the total has been consumed. Deciphering the conflicting evidence as well as possible indicates that approximately 944 Gb (billion barrels) of Regular Conventional oil have been produced; 764 Gb remain in known fields (Reserves); and 142 Gb are Yet-to-Find. If so, the midpoint of depletion was passed in 2003, meaning that peak production is imminent. On present estimates, the overall peak of all categories of oil arrives in 2006, with that of oil and gas combined coming about two years later.

A widely held myth proclaims that technology will deliver more, when its main impact has been to hold production higher for longer, accelerating depletion. The observed growth in reserves has been an artifact of reporting, not technology, save in special cases.

The First Half of the Age of Oil now closes. It lasted 150 years and saw the rapid expansion of industry, transport, trade, agriculture and financial capital, allowing the population to expand six-fold. The financial capital was created by banks with confidence that Tomorrow's Expansion, fuelled by oil-based energy, was adequate collateral for Today's Debt.

The Second Half of the Age of Oil now dawns, and will be marked by the decline of oil and all that depends on it, including financial capital. It heralds the collapse of the present Financial System, and related political structures, speaking of a Second Great Depression.

But there are survival strategies. Governments may be persuaded to sign the [Depletion Protocol](#) whereby imports are cut to match world depletion rate, such that world prices fall into reasonable relationship with cost, and profiteering from shortage avoided; the current monumental waste of energy may be reduced; renewable energies from wave, tide, wind, solar, hydro and geothermal sources may be brought in; and the nuclear option re-evaluated.

The survivors, whose numbers may not greatly exceed those of the pre-oil age, may find silver linings as they rediscover rural living, regionalism, diversity and local markets, coming to live in better harmony with themselves, each other, and the environment in which Nature has ordained them to live. But the transition will be a time of great tension, including international tension as consumers vie for access to dwindling supplies, and as city life becomes unsustainable.

~~~~~ Editorial Notes ~~~~~

*This article is a combination of two items from the Association for the Study of Peak Oil & Gas (ASPO) Newsletter #53 available here:*

[www.peakoil.net](http://www.peakoil.net)

*Past ASPO newsletters are archived here:*

[www.asponews.org](http://www.asponews.org)

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*Article found at :*

<http://www.energybulletin.net/5944.html>

**Original article :**

<http://www.peakoil.net>

# Energy Bulletin

*Published on Tuesday, May 3, 2005 by The Cape Times (Sth Africa)*

## 'US invasion of Iraq was a resource war'

**By Melanie Gosling**

Cape Town - With the rapid decline of global oil supplies, the United States is heading for an economic crash unlike anything since the 1930s. And the collapse of the dollar will affect every nation on earth.

This is the chilling warning from academic Richard Heinberg of the New College of California. Heinberg is in Cape Town, South Africa, this week to share his views on what governments and societies need to do to mitigate the imminent global crisis after world oil production peaks.

"It's too late to maintain a 'business as usual' attitude. What is required is to manage the change that peak oil will bring in a way that causes the fewest casualties. This must be done at an economic and geopolitical level, to fend off resource wars. The US invasion of Iraq is clearly a resource war," Heinberg said on Monday.

Global oil discovery peaked in the 1960s and oil production is likely to peak as soon as 2007. With a world economy based on fossil fuel, the economic and social consequences will be dire.

In his most recent book, *Power Down: options and actions for a post-carbon world*, Heinberg describes the options available to avoid catastrophe.

Wearing a T-shirt that read: "Wake up! You are here," with an arrow pointing to a graph of a peak in oil production, Heinberg said world governments were aware of the pending crisis. The United States department of energy had commissioned a report on the probable impacts of "peak oil", the point at which global oil production will no longer meet demand, which was released in February.

"The report was compiled mainly by ex-CIA people. The CIA has always kept a close watch on resources. They found that peak oil would provide the US and the world with an 'unprecedented risk and management problem'.

"They say if they have 10 years to prepare, the economic and social chaos could be minimised. But if it's less, the US will face a serious problem and the government will have to manage it without public input. For that, read martial law. The report found oil price volatility will increase to unprecedented levels," Heinberg said.

The US response is not to cut oil consumption by making major lifestyle changes, and scale back on economic activity, but to use the military to maintain control over oil in the Middle East.

"The long-range plan is for the West to control the Middle East by the military so it can control the price of oil."

This was formalised as far back as 1979 by former US president Jimmy Carter, in what became known as the Carter Doctrine, which stated that America would use the military to maintain access to the oil reserves in the Middle East.

Clearly we need to find substitutes for oil, says Heinberg, but the available energy alternatives are not reassuring.

Natural gas extraction will peak a few years after oil, extraction rates for coal will peak in decades, nuclear energy is dogged by unresolved problems of waste disposal and solar and wind energy will have to undergo rapid expansion if they are to replace even a fraction of the energy shortfall from oil. And the enthusiasm about a hydrogen economy comes from politics rather than science, he said.

"Our real problem is that we are trapped in a perpetual growth machine. As long as modern societies need economic growth to stave off collapse (given existing debt-and-interest-based national currencies), we will continue to require ever more resources yearly. But the Earth has limited resources.

"The energy conundrum is thus intimately tied to the fact that we anticipate perpetual growth within a finite system," Heinberg said.

He sketches four main options available in response:

- Following the US leadership in competing for remaining resources through wars;
- Wishful thinking that the market or science will come to the rescue;
- Assuming that we are already in the early stages of disintegration, devoting our energies to preserving the most worthwhile cultural achievements of the past few centuries.
- "Powering down" - reducing energy resource use drastically through economic sacrifice, reducing the population size and developing alternative energy sources.

"The sooner we choose wisely, the better off we and our descendants will be," Heinberg said.

**Article found at :**

<http://www.energybulletin.net/newswire.php?id=5865>

**Original article :**

[http://www.iol.co.za/index.php?sf=2813&click\\_id=2813&art\\_id=vn20050503072119511C128182&set\\_id=6](http://www.iol.co.za/index.php?sf=2813&click_id=2813&art_id=vn20050503072119511C128182&set_id=6)

# Energy Bulletin

*Published on Tuesday, May 10, 2005 by Mother Jones*

## The Global Struggle for Energy

**By Michael T. Klare**

From Washington to New Delhi, Caracas to Moscow and Beijing, national leaders and corporate executives are stepping up their efforts to gain control over major sources of oil and natural gas as the global struggle for energy intensifies. Never has the competitive pursuit of untapped oil and gas reserves been so acute, and never has so much money as well as diplomatic and military muscle been deployed in the contest to win control over major foreign stockpiles of energy.

To an unprecedented degree, a government's success or failure in these endeavors is being treated as headline news, and provoking public outcry when a rival power is seen as benefiting unfairly from a particular transaction. With the officials of numerous governments coming under mounting pressure to satisfy the needs of their individual countries -- at whatever cost -- the battle for energy can only become more inflamed in the years ahead.

This struggle is being driven by one great inescapable fact: the global supply of energy is not growing fast enough to keep up with skyrocketing demand, especially from the United States and the developing nations of Asia. According to the U.S. Department of Energy (DoE), global energy consumption will grow by more than 50% during the first quarter of the 21st century -- from an estimated 404 to 623 quadrillion British thermal units (BTUs) per year. Oil and natural gas will be in particular demand.

By 2025, global oil consumption is projected to rise 57%, from 157 to 245 quadrillion BTUs, while gas consumption is projected to have a 68% growth rate, from 93 to 157 quads. It appears increasingly unlikely, however, that the world's energy firms will actually be able to deliver such quantities of oil and gas in the coming decades, whether for political, economic, or geological reasons.

With prices rising all over the world and serious shortages in the offing, every major consuming nation is coming under increasing pressure to maximize its relative share of the available energy supply. Inevitably, these pressures will pit one state against another in the competitive pursuit of oil and natural gas.

### **Frenzied Search**

In the past, such zero-sum contests between major powers over valuable resources have often led to war. Whether that will prove to be true in the case of oil and gas remains to be seen. But the pressure to maximize supplies is already shaping the foreign policy decisions of many states and generating fresh international tensions. Consider, for example, the following recent developments:

\* A decision by Japan to initiate natural gas production in a disputed area of the East China Sea sparked massive anti-Japanese protests in China on April 16, the worst outpouring of such animosities in over 30 years. Although leaders of both countries sought to diffuse the crisis by promising fresh efforts at reconciliation, neither side has backed off its claims to the offshore territories. While other issues also fed into Chinese popular discontent, notably Japan's reluctance to express regret for atrocities committed by its forces in China during World War II, Tokyo's unilateral move to extract natural gas from the East China Sea was the precipitating factor.

At stake potentially is the ownership of a vast undersea gas field in disputed waters lying between China's central coast and Japan's Ryukyu island chain. Because the offshore boundary between China and Japan has not been established, neither side is willing to countenance the extraction of gas by the other in the disputed "national territory." Thus, when Tokyo announced on April 13 that it would allow drilling by Japanese companies in waters claimed by China, Beijing had no compunctions about allowing an unprecedented, weekend-long display of nationalistic fervor.

\* During her first visit to India as Secretary of State, Condoleezza Rice called on New Delhi to back away from a plan to import natural gas by pipeline from Iran, claiming that any such endeavor would frustrate U.S. efforts to isolate the hard-line clerical regime in Tehran. "We have communicated to the Indian government our concerns about the gas pipeline cooperation between Iran and India," she said on March 16 after meeting with Indian Foreign Minister Natwar Singh in New Delhi.<sup>1</sup>

But the Indians let it be known that their desire for additional energy supplies trumped Washington's ideological opposition to the Iranian regime. Declaring that the proposed pipeline will be necessary to meet India's soaring energy needs, Singh told reporters, "We have no problem of any kind with Iran."

\* One month after her meetings in New Delhi, Rice flew to Moscow and pressured President Vladimir Putin to open up Russia's energy industry to increased investment by American firms. Noting that Moscow's crackdown on the privately-owned energy giant, Yukos, along with proposed restrictions on foreign investment in Russian energy projects would discourage U.S. companies from collaborating in the development of Russia's vast oil reserves, Rice implored Putin to adopt a more inviting posture. "What Russia can do is to adopt policies in its energy sector in terms of the development of its energy sector that will increase the supply of oil both in the short term . . . and the long term," she avowed.

But while embracing Rice's call for enhanced U.S.-Russian relations, Putin evinced no inclination to back off from his plans to bolster state control over Russian energy companies and to use this authority to advance Moscow's geopolitical objectives.<sup>2</sup>

\* On April 25, President George W. Bush met with Crown Prince Abdullah of Saudi Arabia at his ranch in Crawford, Texas, and exhorted him to substantially expand Saudi petroleum output so as to bring down American gasoline prices. "The Crown Prince

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<sup>1</sup> <http://www.iranexpert.com/2003/indoirangas24december.html>; <http://www.iranexpert.com/2004/india3february.htm>  
<http://www.gasandoil.com/goc/news/nts51486.htm>;

<sup>2</sup> The Russian oil industry between public and private governance (July'04)  
([http://www.upmf-grenoble.fr/iepe/textes/CL\\_EnergyPolicyJuly04.pdf](http://www.upmf-grenoble.fr/iepe/textes/CL_EnergyPolicyJuly04.pdf))

understands that it is very important to make sure that the price is reasonable," Bush observed before the meeting. "A high oil price will damage markets, and he knows that." Bush and Abdullah also discussed the Israeli-Palestinian conflict and the continuing threat of terrorism, but it was oil demand that dominated the Crawford summit.

Highlighting the degree to which energy issues had come to overshadow more traditional security concerns, both Secretary of State Condoleezza Rice and National Security Adviser Stephen Hadley emphasized the importance of boosting world oil output in their comments on the meeting. "Obviously, with the states like China, India, and others coming on line, there is concern about demand and supply," Rice observed. "And these issues have to be addressed."

Developments like these, and Rice's comments on the Bush-Abdullah meeting, capture the essence of the current energy equation: Demand is rising around the world; supplies are not growing fast enough to satisfy global requirements; and the global struggle to gain control over whatever supplies are available has become more intense and fractious. Because the first and second of these factors are not likely to abate in the years ahead, the third can only grow more pronounced.<sup>3</sup>

### **Insatiable Demand**

Economies -- all economies -- run on energy. Energy is needed to produce food and manufacture goods, power machines and appliances, transport raw materials and finished products, and provide heat and light. The more energy available to a society, the better its prospects for sustained growth; when energy supplies dwindle, economies grind to a halt and the affected populations suffer.

Since World War II, economic growth around the world has been fueled largely by abundant supplies of hydrocarbons -- that is, by petroleum and natural gas. Since 1950, worldwide oil consumption has grown eightfold, from approximately 10 to 80 million barrels per day; gas consumption, which began from a smaller base, has grown even more dramatically. Hydrocarbons now satisfy 62% of the world's total energy demand, approximately 250 quadrillion BTUs out of a total supply of 404 quads.

But no matter how important they may be today, hydrocarbons are sure to prove even more critical in the future. According to the Department of Energy, oil and gas will account for 65% of world energy in 2025, a larger share than at present; and because no other source of energy is currently available to replace them, the future health of the global economy rests on our ability to produce more and more of these hydrocarbons.

The future availability of oil and gas also affects another key aspect of the global economic equation: the growing challenge to the older industrialized nations posed by dynamic new economies in East Asia, South Asia, and Latin America. At present, the industrialized countries account for approximately two-thirds of total world energy use.

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<sup>3</sup> China is now largest Saudi oil client (October 14, 2004) -- <http://www.gasandoil.com/goc/news/nts44196.htm>  
Experts ask if Saudis can keep up with oil demand (N.Y. Times News Service - 02/29/2004)  
([http://www.mywesttexas.com/site/news.cfm?newsid=11043649&BRD=2288&PAG=461&dept\\_id=474107&rfi=6](http://www.mywesttexas.com/site/news.cfm?newsid=11043649&BRD=2288&PAG=461&dept_id=474107&rfi=6))

Because these countries, for the most part, possess mature and efficient economies, their demand for energy is expected to increase by a relatively modest 35% between 2001 and 2025, a conceivably manageable rate.

But demand in the developing world is soaring. By 2025, developing countries are projected to hold a startling half-share in total world energy consumption. When their added demand is combined with that of the industrialized countries, the net world increase jumps 54% over the same set of years, a far more demanding challenge for the global energy industry.

The competition for hydrocarbon supplies will be particularly intense. According to the Department of Energy, oil consumption by the developing world will increase by 96% between 2001 and 2025, while consumption of natural gas will rise by 103%. For China and India, the rate of growth is even more dramatic: China's oil consumption is projected to jump by 156% over this period and India's by 152%.

The struggle these countries, and other developing powerhouses like South Korea and Brazil, face in obtaining additional oil and gas for their growing economies will naturally pit them against the older industrialized countries in the competitive pursuit of energy. As suggested by Rice, "with the states like China, India, and others coming on line, there is concern about demand and supply."

### **Questionable Supply**

Accommodating the growing Chinese and Indian demand would not be a significant problem if we had great confidence that the energy industry is capable of generating the necessary additional amounts. In fact, the Department of Energy wants us to believe that this is indeed the case. Future oil and gas supplies, DoE claims, will be more than adequate to satisfy anticipated world demand.

But many experts dispute this view. World oil and gas supplies, they argue, will never achieve such elevated levels. This is true because much of the world's known hydrocarbon reserves have already been exhausted and not enough new fields have been discovered in recent years to make up for the depletion of older reservoirs.

Take the case of oil. The DoE predicts that global petroleum output will reach 120.6 million barrels per day in 2025 -- 44 million barrels more than at present and just a tad shy of the anticipated world demand of 121 million barrels per day. For this to occur, however, the major oil firms must discover massive new reserves and substantially increase their output from existing fields. (See [below](#))

However, few new large fields have been discovered during the past 40 years, and only one, the Kashagan field in the Caspian Sea, has been found in the past decade. At the same time, many older fields in North America, Russia, and the Middle East have experienced significant declines in daily production. As a result, many geologists now believe not only that the global petroleum industry will not be capable of rising to the 120 million barrel level but will fall far below it.<sup>4</sup>

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<sup>4</sup> [Iran discovered 19 oil and gas fields in past 7 years](#); [Iran discovers two new oil and gas fields in Khuzestan](#)  
Saudi Aramco Discovers New Oil Field In Eastern Province (Dow Jones Newswires 05-09-05 10:42ET)

Predictions that global oil output will peak between now and 2025, far short of the DoE's projections, are highly controversial. This is not the place to consider clashing assessments in detail. But one way to get at this issue is to consider the all-important case of Saudi Arabia, the world's leading supplier and the most likely prospect for higher production in the future.

According to the DoE, Saudi Arabian oil output will more than double between 2001 and 2025, jumping from 10.2 to 22.5 million barrels per day. If Saudi Arabia could, in fact, raise its output by this amount we would have some degree of confidence that total world supplies could satisfy anticipated demand even at the end of this period. But there are growing indications that Saudi Arabia is not capable of coming anywhere close to that figure.

In a much-discussed 2004 article in the New York Times, business analyst Jeff Gerth reported that "[o]il executives and government officials in the United States and Saudi Arabia... say capacity will probably stall near current levels, potentially creating a significant gap in the global energy supply."<sup>5</sup>

In response to Gerth's assertions, Saudi officials insisted that their country is fully capable of boosting daily production by a sufficient amount to satisfy anticipated world requirements. "Should [higher world demand] actually materialize... we're going to be ready to meet it," Saudi Oil Minister Ali I. Al-Naimi declared in February 2004. In particular, "we have looked at scenarios of 12 million [barrels per day] capacity, we have looked at 15 million capacity, and those are all feasible." Such pronouncements have provided some relief to those alarmed by Gerth's report. But note that Al-Naimi spoke only of "scenarios" for reaching 12 to 15 million barrels per day -- hardly an ironclad guaranty -- and even an increase of that size would fall far short of the 22.5 million barrels projected by the Department of Energy.

Many energy analysts have suggested, moreover, that any drive by Saudi Arabia to boost its daily output above 10 million barrels for any length of time will cause irreparable harm to its fields and result in an inevitable long-term drop in production. As noted by one senior Saudi oil executive, an attempt to reach 12 million barrels per day would "wreak havoc within a decade."

The question of Saudi Arabia's future oil output is terribly important to this discussion because it is highly unlikely that any other supplier, or combination of suppliers, can make up the difference between Saudi Arabia's sustainable yield of 10-12 million barrels per day and the DoE's 22.5 million-barrel goal for Saudi output in 2025. Other big

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<sup>5</sup> Jeff Gerth, "Forecast of Rising Oil Demand Challenges Tired Saudi Fields," February 24, 2004 New York Times, Late Edition -- Final, Section A, Page 1, Column 3

<http://www.peakoil.net/Newspapers/20040224NYTTiredSaudiFields.doc>

Saudi Arabia's Ghawar - Trouble in the world's largest oil field -- <http://www.gasandoil.com/goc/news/ntm43590.htm>

Saudi oil output capacity seen at 22.5-mil bpd by 2025- EIA (Platts)--11Jan2005

Saudi Arabia's oil officials say capacity is now 11 million b/d. (Dow Jones Newswires 11-30-04 12:43ET)

suppliers -- Iran, Iraq, Kuwait, Nigeria, Russia, and Venezuela -- are expected to have a hard enough time maintaining their own output at current levels, let alone filling in for the "missing" Saudi oil.

This being the case, it appears highly unlikely that the global oil industry will be capable of satisfying anticipated world demand in the years ahead; instead, we should expect chronic petroleum shortages, higher prices, and persistent economic hardship.

Precisely because of this prospect, many national leaders are now placing greater emphasis on the acquisition of increased natural gas supplies. Because gas was developed later in the industrial cycle than oil, its principal sources of supply have not yet been fully exhausted, and new fields -- such as those in Iran and the East China Sea -- await full-scale development. Like oil, natural gas will eventually reach a global peak in output, but this is not likely to occur for a decade or so after oil has peaked.

As petroleum output declines, therefore, natural gas is expected to take up some of the slack -- but only some, because there is not enough gas in the world to fully replace petroleum in all its myriad uses. And it is for this reason that many governments seek to gain control over or access to major gas reserves now, before they are locked up by someone else.

### **Intensifying Struggle**

What can we expect from this intensifying struggle over valuable energy resources? Certainly, national leaders are placing ever greater emphasis on the competitive pursuit of energy as Condoleezza Rice made clear in her recent jaunts around the world. Whether in India, Russia, or Latin America, she has raised the energy issue at every turn, pressing America's allies and business partners both to supply us with more oil and to ignore the appeal of "rogue" producers like Iran and Venezuela.

Other world leaders like Vladimir Putin of Russia and Junichiro Koizumi of Japan have behaved in a similar fashion. Striking, in fact, is the degree to which the quest for energy has been elevated into the realm of national security, on an equal plane with efforts to combat nuclear proliferation and international terrorism. Thus, it was the President's adviser for national security affairs, Stephen Hadley, who briefed reporters on the outcome of the Crawford summit between Bush and Abdullah. "The news that came out of the meeting today ought to be good news for the [energy] markets," he declared on April 25 -- not good news in the war against terror or in the drive to promote peace between Israel and the Palestinians.

Secretary of State Rice, however, offered the most telling observations after the April 25 meeting. The problems arising from insufficient supply to meet rising world oil demand, she said, "have to be addressed, not by jawboning, but by having a strategic plan for dealing with the problem." Anyone familiar with the Bush administration lexicon cannot help but be troubled by this call for a "strategic plan" to obtain additional energy, redolent as it is of the administration's bellicose, pre-emptive strategy for dealing with terrorism, "rogue states," and weapons of mass destruction. Just exactly what Rice means is not yet entirely clear, but it certainly suggests that energy issues will be paramount in U.S. foreign and military policy in a Bush second term.

And what is true for the United States is also likely to prove the case for other major oil-

importing countries. Warning that China has outperformed India in the pursuit of new oil and gas reserves, Indian Prime Minister Manmohan Singh declared in January that New Delhi would have to accelerate its efforts in this area. "I find China ahead of us in planning for the future in the field of energy security," he told a convention of Indian oil and gas executives. "We can no longer be complacent and must learn to think strategically, to think ahead, and to act swiftly and decisively."<sup>6</sup>

Japanese leaders, too, have stressed the need for decisive action. Energy-poor Tokyo's decision to proceed with drilling in contested areas of the East China Sea is just one indication of this outlook.<sup>7</sup> Equally striking is Japan's effort to convince the Russians to extend a new Siberian oil pipeline to Nakhodka on the Sea of Japan. Originally, Moscow had expected to terminate the pipeline at Daqing in China as part of a plan to strengthen Sino-Russian energy cooperation.<sup>8</sup>

But after Prime Minister Koizumi flew to Moscow and offered billions of dollars in additional aid and technology to Russia, President Putin indicated a preference for the Nakhodka route, which will, of course, facilitate oil deliveries to Japan. This has not deterred Chinese leaders from seeking a reversal of this decision, claiming that the "strategic partnership" between Moscow and Beijing outweighs the purely mercantile interests of Japan.<sup>9</sup>

So far, none of these efforts has led to more than verbal sparring -- "jawboning," to use Rice's term -- along with high-stakes bidding wars and the occasional outbreak of street protests, as in Shanghai and Beijing. But if history is any guide, such friction -- when combined with other sources of animosity like China's smoldering resentments over Japanese atrocities during World War II -- can lead to more violent forms of competition. This is certainly the case in the East China Sea, where Chinese and Japanese planes and gunboats have already made threatening passes at one another.

Tensions are sure to rise, moreover, if Japan actually commences drilling in waters claimed by China. "If real exploration starts, we cannot totally exclude the possibility of Japanese private company ships having to face Chinese military ships," Junichi Abe, an analyst at the Kazankai Foundation in Tokyo, told a reporter for the New York Times. And if this were to occur, the Japanese government would come under enormous political pressure to protect those private vessels with planes and warships of its own, thereby setting the stage for an armed confrontation with China, whether intended or not.

Similar escalation could occur in other cases of disputed energy claims. In the Caspian Sea, for example, Iran seeks control over offshore oil and gas fields also claimed by Azerbaijan, an ally of the United States. In July 2001, an Iranian gunboat steamed into the contested area and chased off an oil-company exploration vessel operating there

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<sup>6</sup> India trails China in energy race --By Chietigj Bajpae  
[http://www.atimes.com/atimes/South\\_Asia/FJ20Df04.html](http://www.atimes.com/atimes/South_Asia/FJ20Df04.html)

<sup>7</sup> Talks Between China & Japan Over East China Sea Dispute Fail (6/1/2005)  
[http://www.rigzone.com/news/article.asp?a\\_id=22884](http://www.rigzone.com/news/article.asp?a_id=22884)

<sup>8</sup> Russian approves Siberian oil pipeline to the Pacific port of Nakhodka (09-01-04)  
[http://www.atimes.com/atimes/Central\\_Asia/FI01Aq01.html](http://www.atimes.com/atimes/Central_Asia/FI01Aq01.html)

<sup>9</sup> Japan to invest in Angarsk-Nakhodka oil pipeline -- <http://www.gasandoil.com/goc/news/ntr32070.htm>

under Azerbaijani auspices. In response, the United States has pledged to help Azerbaijan build a small Caspian navy, to better protect its offshore energy claims.

On April 11, John J. Fialka of the Wall Street Journal revealed that the U.S. Department of Defense will spend \$100 million over the next few years to establish the "Caspian Guard," a network of police forces and special-operations units "that can respond to various emergencies, including attacks on oil facilities." Russia is also expanding its Caspian Fleet, as it too presses its claims to offshore fields in the region. Under such circumstances, it is all too easy to imagine how a minor confrontation could erupt into something much more serious, involving the U.S., Russia, Iran, and other countries.

Territorial disputes of this sort with significant energy dimensions can be found in the Red Sea, the South China Sea, the Persian Gulf, the Gulf of Guinea, and the Bakassi Peninsula (a narrow stretch of land claimed by both Nigeria and Cameroon) among other regions. In each of these areas, opposing claimants have employed military force on occasion to assert their control or to drive off the forces of a challenger. None of these incidents has led to a full-scale conflict, but lives have been lost and the risk of renewed fighting persists. As the global struggle for energy intensifies, therefore, the danger of escalation will grow.

It is important to recognize that energy-related pressures are bound to increase as global demand continues its upward course and the supply of oil and natural gas fails to keep pace. The Bush administration, in particular, is aware of these pressures, having analyzed the global energy equation in its May 2001 report on U.S. energy requirements. While administration officials have repeatedly denied that oil played any role in the 2003 decision to invade Iraq, they clearly believed that control of the country would provide the United States with enormous advantages in any coming struggle with competitors like China over Persian Gulf energy.

Indeed, once a problem like energy security has been tagged as a matter of national security, it passes from the realm of economics and statecraft into that of military policy. Then, the generals and strategists get into the act and begin their ceaseless planning for endless "contingencies" and "emergencies." In such an environment, small incidents evolve into crises, and crises into wars. Expect a hot couple of decades ahead.

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# EIA: US Reliance On Foreign Oil Growing To 70% By 2025



## EIA: US Reliance On Foreign Oil Growing To 70% By 2025

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NEW YORK -(Dow Jones)- U.S. dependence on foreign oil producers for petroleum will grow to 70% of U.S. petroleum demand by 2025, a larger increase than previously forecast, the federal Energy Information Administration said Tuesday.

EIA's early release of its 2004 Annual Energy Outlook projects U.S. dependence on oil imports will be 2% greater over the forecast period than EIA's previous annual outlook. U.S. petroleum imports accounted for 54% of U.S. petroleum demand in 2002, up from 37% in 1980 and 42% in 1990, said EIA, which is the U.S. Department of Energy's statistics and analysis branch.

"U.S. dependence on imported oil has grown over the past decade, with declining oil production and growing demand," EIA said. "This trend is expected to continue."

Domestic crude oil production is projected to peak at 6.1 million barrels a day in 2008 amid increased offshore production, particularly in the deep waters of the Gulf of Mexico. But U.S. oil output will decline beginning in 2009 to 4.6 million barrels a day by 2025, EIA said.

Total domestic petroleum supply (including crude oil, natural gas plant liquids, refinery processing gains and other refinery inputs) also is seen peaking in 2008, at 9.7 million barrels a day, and then dropping to 8.6 million barrels a day by 2025.

That decline would be greater without a projected increase of 590,000 barrels a day in production of natural gas plant liquids, which are seen rising consistently with projected growth in U.S. natural gas production, EIA said.

U.S. reliance on both the Organization of Petroleum Exporting Countries as well as non-OPEC producers is projected to be greater than previously forecast.

## OPEC oil output

OPEC oil output is seen reaching 54 million barrels a day by 2025, nearly 80% higher than its 2002 production, EIA said.

## Non-OPEC oil output

Non-OPEC oil output is expected to increase to 63.9 million barrels a day by 2025, from 44.7 million barrels a day

in 2002.

Among non-OPEC producers, the major sources of growth in oil output will be Russia, the Caspian Basin, non-OPEC Africa, and South and Central America, EIA said.

## Russian oil output

Russian oil output is expected to reach 10.9 million barrels a day in 2025, or 43% above 2002 levels. Caspian production is seen topping 6 million barrels a day by 2025, compared with 1.7 million barrels a day in 2002. South and Central American production is seen reaching 7.8 million barrels a day in 2025, up from 4.3 million barrels a day in 2002. A large share of that increase - 900,000 barrels a day - is expected to come from nonconventional crude production in Venezuela, EIA said.

## Oil prices

The growing supplies are expected to keep the rise in "real-world" oil prices to an average rate of 0.6% a year. But in nominal dollars, the average world oil price is seen rising from about \$29 a barrel in 2010 to about \$52 a barrel in 2025, EIA said.

## U.S. petroleum consumption

U.S. petroleum consumption is seen rising through 2025, but at a slower pace than previously forecast. That's because EIA sees higher fuel-economy standards for light trucks affecting growth in demand for transportation fuels.

"On the demand side, the increase in consumption that we're forecasting is largely driven by the increase in the transportation sector," said EIA energy information specialist Jonathan Cogan. "Although we see some higher efficiencies in this fleet, we also see more vehicles as the population grows."

## New fuel-economy standards

New fuel-economy standards for light trucks, including sport utility vehicles, require that light trucks sold by a manufacturer have a minimum average fuel economy of 21 miles per gallon for model year 2005, 21.6 miles per gallon for model year 2006 and 22.2 miles per gallon for model years 2007 and beyond. The old standard was 20.7 miles per gallon. EIA projects average fuel economy for all new light-duty vehicles will rise to 26.9 miles per gallon by 2025, up from its previous forecast of 26.1 miles per gallon by 2025.

## World oil demand

World oil demand also is seen increasing, but at a slower pace than forecast in the previous EIA annual outlook, to 118 million barrels a day in 2025 from 78 million barrels a day in 2002. The previous EIA forecast estimated world demand would rise to 123 million barrels a day in 2025.

-By Leia Parker, Dow Jones Newswires; 201-938-4426; leia.parker@dowjones.com

[Dow Jones Newswires](#)

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# Energy Bulletin

*Published on Wednesday, May 25, 2005 by Bulletin of the Atomic Scientists*

## Oil: Caveat empty

**By Alfred J. Cavallo**

Without any press conferences, grand announcements, or hyperbolic advertising campaigns, the Exxon Mobil Corporation, one of the world's largest publicly owned petroleum companies, has quietly joined the ranks of those who are predicting an impending plateau in non-OPEC oil production. Their report, *The Outlook for Energy: A 2030 View*, forecasts a peak in just five years.

In the past, many who expressed such concerns were dismissed as eager catastrophists, peddling the latest Malthusian prophecy of the impending collapse of fossil-fueled civilization. Their reliance on private oil-reserve data that is unverifiable by other analysts, and their use of models that ignore political and economic factors, have led to frequent erroneous pronouncements. They were countered by the extreme optimists, who believed that we would never need to think about such problems and that the markets would take care of everything. Up to now, those who worried about limited petroleum supplies have been at best ignored, and at worst openly ridiculed.

Meanwhile, average consumers have taken their cue from the market, where rising prices have always been followed by falling prices, leading to the assumption that this pattern will continue forever. In truth, the market price of crude oil is completely decoupled from and independent of production costs, which average about \$6 per barrel for non-OPEC producers and \$1.50 per barrel for OPEC producers. This situation has nothing to do with a free market, and everything to do with what OPEC believes will be accepted or tolerated by the United States. The completely affordable market price--what consumers pay at the gasoline pump--provides magisterial profits to the owners of the resource and gives no warning of impending shortages.

All the more reason that the public should heed the silent alarm sounded by the ExxonMobil report, which is more credible than other predictions for several reasons. First and foremost is that the source is ExxonMobil. No oil company, much less one with so much managerial, scientific, and engineering talent, has ever discussed peak oil production before. Given the profound implications of this forecast, it must have been published only after a thorough review.

Second, the majority of non-OPEC producers such as the United States, Britain, Norway, and Mexico, who satisfy 60 percent of world oil demand, are already in a production plateau or decline. (All of ExxonMobil's crude oil production comes from non-OPEC fields.) Third, the production peak cited by the report is quite close at hand. If it were twenty-five years instead of five years in the future, one might be more skeptical, since new technologies or new discoveries could change the outlook during that longer period. But five years is too short a time frame for any new developments to have an impact on this result.

Also noteworthy is the manner in which the Outlook addresses so-called frontier resources, such as extra-heavy oil, "oil sands," and "oil shale." The report cites the existence of more than 4 trillion barrels of extra heavy oil and "oil sands"--producing potentially 800 billion barrels of oil, assuming a 20-25 percent extraction efficiency. The Outlook also cites an estimate of 3 trillion barrels of "oil shale." These numbers have figured prominently in advertisements that ExxonMobil and other petroleum companies have placed in newspapers and magazines, clearly in an attempt to reassure consumers (and perhaps stockholders) that there is no need to worry about resource constraints for many decades.

However, as with all advertisements, it's best to read the fine print. ExxonMobil's world oil production forecast shows no contribution from "oil shale" even by 2030. Only about 4 million barrels of oil per day from Canadian "oil sands" are projected by 2030, accounting for a mere 3.3 percent of the predicted total world demand of 120 million barrels per day. What explains this striking disconnection between the magnitude of the frontier resources and the minimal amount of projected oil production from them? Canadian "oil sands" are actually deposits of bitumen (tar), which are the result of conventional oil degradation by water and air. Tar sands are of a completely different character than conventional oil deposits; making tar sands usable is a capital-intensive venture that requires special procedures such as heating to separate the tar from the sand, mixing the tar with a diluting agent for pipeline transport, and constructing specially equipped refineries for processing.

The most serious constraint, though, is natural gas supplies. Production of oil from tar sands requires between 400 and 1,000 cubic feet of natural gas per barrel of oil produced, depending on the extraction method used. Natural gas production, despite a near doubling of drilling activity, is flat or decreasing both in Canada and in the United States--which has prompted prices to triple over the past few years. Given these high gas prices, it almost makes more sense just to sell the natural gas directly rather than use it to produce oil from tar sands.

Extracting oil from the 3 trillion barrels of oil shale cited in the Outlook presents its own challenges. The term "oil shale" is also quite misleading, since there is no oil in this mineral, but rather an organic material called kerogen, which is a precursor of petroleum. To extract oil, the shale (typically between 5 and 25 percent kerogen) must first be mined, then transported to a plant where it is crushed, then heated to 500 degrees Celsius, which pyrolyzes, or decomposes, the kerogen to form oil. After processing, most of the shale remains on the surface in the form of coarse sand, so large-scale mining operations will produce immense amounts of waste material. An estimated 1-4 barrels of water are required for each barrel of oil produced, both for cooling the products and stabilizing the sand waste. To satisfy these water requirements, petroleum companies once contemplated diverting the Columbia River--a feat that can be excluded today on political and environmental grounds.

With non-OPEC oil production reaching a plateau and frontier resources not viable, ExxonMobil proposes that increased demand be met in two ways. The first is greater fuel efficiency. (That alone should convey the seriousness of this report: When have you ever heard a petroleum company make a plea for vehicles that use less gas?) New cars in the United States are expected to go 38 miles on a gallon of gas in 2030, instead of the current value of 21 miles per gallon. This goal is actually quite modest, as new cars

sold in Europe since 2003 already achieve 35 miles per gallon.

The other way ExxonMobil believes demand will be satisfied is from vastly and rapidly increased OPEC production: "After 2010, the call on OPEC increases quickly, requiring OPEC to add more than 1 MBD [million barrels per day] of capacity every year," notes the Outlook. "OPEC's resources are large enough to achieve this rate of expansion, and we expect that investments will be made in a timely manner."

This assessment is somewhat ominous. OPEC has not expanded production capacity much at all recently. Moreover, such production increases are only possible from Iraq, Saudi Arabia, Kuwait, and the United Arab Emirates. For these countries, and indeed for most OPEC members, petroleum and petroleum products are their only significant export. As such, they have a vested interest in obtaining the best possible price for their non-renewable resources. OPEC nations would be quite unlikely to increase production as rapidly as needed unless compelled to do so. To put this shortfall in perspective, in 2003 Algeria produced 1.1 million barrels per day; a new Algeria would need to be brought on line in the Persian Gulf each and every year beyond 2010 just to keep up with the projected increase in demand. Consequently, once non-OPEC production reaches a peak, conventional world oil production could peak shortly thereafter, and prices (never explicitly mentioned in the Outlook) would rise in accordance with the laws of supply and demand.

What all this means is that the petroleum industry is approaching a turning point. Conventional petroleum production will soon--perhaps in five years, ten at best--no longer be able to satisfy demand. For their part, American consumers would do well to take a cue from their Western European counterparts, who enjoy a comfortable lifestyle despite a per capita use of petroleum that is half of that in the United States. The sooner the United States begins this transition away from oil, the easier it will be. That's a far more attractive option than trying to squeeze oil from stone.

*Alfred J. Cavallo is an energy consultant based in Princeton, New Jersey. His article "[Oil: Illusion of Plenty](#)," appeared in the January/February 2004 Bulletin.*

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~~~~~ Editorial Notes ~~~~~

Thanks to Stu at peakoil.com for the lead.

-BA

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Energy Bulletin

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Peak oil, energy, and local solutions: reports from recent conferences

By Megan Quinn (The Community Solution)

The world's economy will falter and collapse as global oil production peaks and heads into a permanent decline. That was the message brought home to 300 participants at an oil depletion conference in Lisbon in May.

Two weeks later in Cleveland, at a national energy conference which attracted 800 participants, neither economic decline nor the imminent oil peak was on the agenda. Speakers, instead, championed their own, sometimes far off, technological fixes, as the solution to our energy woes.

Between these two conferences was a gathering of 25 people at an E.F. Schumacher Society training seminar on building sustainable local economies, held in the western hills of Massachusetts. Here participants discussed how to prepare for a post peak oil age and address other social concerns through local economic development, local currencies, and community land trusts.

"We began the training by imagining an economic system based on the values of cooperation, fair distribution of wealth, mutual aid, ecological responsibility, social accountability, respect for cultural differences, human scale, and local production for local consumption," said Susan Witt, director of the Schumacher Society. At the Lisbon oil conference, such an economic system was heralded as a way to deal with the coming era of scare and expensive oil.

ASPO Conference in Lisbon

The IV International Workshop on Oil Depletion was hosted by the Association for the Study of Peak Oil (ASPO), a European-based group of scientists and academics. The broad spectrum of speakers included petroleum geologists, oil industry analysts, university scientists, investment bankers, government officials, and current and former parliamentarians.

In his opening talk, ASPO founder and petroleum geologist Colin Campbell said, "We are at the end of the first half of the age of oil. We started running out with the first barrel and the last barrel is far in the future. But production begins to decline when half is gone and that is the issue." Campbell explained that declining energy equals a declining economy since economic growth is predicated on cheap, abundant energy supplies.

Campbell's stance was reiterated throughout the two day conference. Manuel Collares-Pereira, a physicist at the University of Lisbon, emphasized that the end of cheap oil means the end of the global economy as we know it and the beginning of

"deglobalization." Charles Hall and Robert Ayes, also scientists, analyzed the foundations of economic growth and expressed the need for an economic system based on biophysical realities such as energy.

Estimating the date of Peak Oil

So just when is the global peak? NASA scientist Marcel Schoppers examined the uncertainty of different models, ultimately coming up with the year 2009 plus or minus 6 years. Other speakers pointed toward the year 2007. The overall consensus was that a peak is imminent.

To determine the date the organization factors in the depletion rate of countries that have already peaked, forecasts of imminent production peaks, and global demand. U.S. oil production peaked in 1970 at slightly more than 9.4 million barrels per day and has been declining since. Production in countries like the UK, Indonesia, and Venezuela are declining by 7-9%. Russian oil production, which represented 50-95% of non-OPEC growth from the period '01 - '04 is now slowing. Meanwhile, global oil demand is soaring.

Many presenters noted the increasing appetite for oil in developing countries, specifically China and India. Last year, global oil demand was 3.5%, up from an average rate of a 1-2% increase per year. This new demand could have the effect of bringing the peak sooner.

Saudi Arabia over-optimistic?

In addition, countries like Saudi Arabia may not have the abundant reserves their governments so frequently tout. Two presentations revealed the uncertainty that Saudi Arabia can continue to maintain such high production levels. With one-fourth of the world's remaining oil and the only country with spare production capacity, Saudi Arabia is the fulcrum on which global oil production and the world economy rests.

Jack Zagar, a Colorado-based petroleum consultant, contended that state owned oil company Saudi Aramco overestimates their reserves and their ultimate recovery rate. He is skeptical that they can continue to increase production to meet the growing world demand, as Saudi Crown Prince Abdullah promised to President Bush last month.

Matthew Simmons, an oil investment banker who advised Bush on energy issues in the 2000 presidential campaign, gave a dismal forecast for future Saudi production. He said the five extremely mature fields that produce 90% of Saudi production are at the risk of unplanned production collapse. Simmons explained that these fields are being overproduced with the injection of seawater and steam to maintain high production levels. His just published book, "Twilight in the Desert: The Coming Saudi Oil Shock and the World Economy," focuses on his deep concerns.

"Oil is not renewable and will peak," Simmons continued, "Discovering the date is the only open question." The estimates of the Association for the Study of Peak Oil are often called "pessimistic" by governments and oil companies. Yet others within these sectors are beginning to recognize the possibility of an imminent peak.

T. Boone Pickens, former CEO of Mesa Petroleum, was quoted last month as saying, "Global oil is 84 million barrels a day. I don't believe you can get it any more than 84

million barrels." Republican congressman Roscoe Bartlett has given four speeches to the House of Representatives on Peak Oil. At the ASPO conference current and former government officials sat on a special panel. Present were a former Canadian governor, a former British environmental minister, a representative from Switzerland, and a French parliamentarian.

Edward Schreyer, the former Canadian governor, said, "Peak is starting to become conventional wisdom," a sentiment shared by several ASPO members. At this year's conference predicting the exact date was less important than discussing the implications and alternatives. "The movement is evolving," Campbell, ASPO's founder, explained in his final statement. "The issue of peak is accepted and the media are giving it coverage." Campbell added, "It's not as important when you peak, it's the vision of the long decline that follows."

Cleveland conference touts technology, economics

Yet at a national energy conference in Cleveland on June 2, the issue of peak oil and the associated economic decline was not discussed. Presenters touted the role of technology, economic forces, and additional research dollars in making hydrogen, "clean coal," nuclear, and fuel cells viable in the future and therefore a solution to our energy problems.

"Energy: A 21st Century Perspective" was sponsored by the National Academy of Engineering and included presentations by Ohio Gov. Bob Taft, a senior scientist at BP, and a director at the Department of Energy. In contrast to the urgent and perilous tone of the ASPO conference, the mood was cheery and congratulatory as the public was reassured that these scientists could solve all of their energy problems.

The main challenges identified included the threat of global climate change, rapid demand growth in developing countries, and dependence on foreign oil. Paul Portney, President of "Resources for the Future," a Washington think tank, also stressed that the U.S. was built on cheap energy and that everything from our cars and homes to the distance we live from our work was based on this paradigm. While peak oil was mentioned in passing by two of the speakers it was identified as "pessimistic" and quickly abandoned.

Presenters admitted that their proposed solutions may take years or even decades to become a significant part of our energy mix. Professor Joan Ogden, of the University of California - Davis, noted that it takes 30 to 70 years to convert to new transportation infrastructure and that more evolution of hydrogen technology was needed before commercial products would be available. Dr. Roger McKain of the Ohio Fuel Cell Coalition said the cost of fuel cells would have to be reduced dramatically before they could become widespread. Nuclear advocate Dr. Lawrence Papay, who was skeptical that nuclear waste storage could be guaranteed for 10,000 years, identified the long process of researching, designing, and building a new breed of reactors that would reprocess spent fuel and avoid so much waste.

Decentralism and community revitalization

While conventional economic thinking continues at this type of conference, the E.F. Schumacher Society is creating a new economic paradigm based on decentralism and

community revitalization. The Schumacher Society, named after the author of "Small is Beautiful: Economics As If People Mattered," holds annual seminars on these issues, with a focus on training community leaders to implement local initiatives.

The participants at this year's seminar learned about successful citizen-driven strategies for reconnecting people, land and community, and how communities can regain economic power and create vibrant local economies. Michael Shuman, author of "Going Local: Creating Self-Reliant Communities in a Global Age," analyzed areas of capital drain from local economies and described various methods, both tried and in planning, to stop those leaks, create "import replacement," and develop strong local economies.

While peak oil is not at the forefront of the Schumacher message, they certainly share with "The Community Solution" a common vision for the future of a more cooperative, just, and equitable world of small, local communities.

Several ASPO presenters also share this vision. Collares-Pereira, the University of Lisbon physicist, listed as the benefits of a post peak oil era "more time, leisure, culture; cleaner air; and less stress." Campbell, ASPO's founder, noted several "silver linings" of the peak oil crisis, such as people "rediscover[ing] rural living, regionalism, diversity and local markets, coming to live in better harmony with themselves, each other, and the environment in which nature has ordained them to live."

Megan Quinn is Outreach Director for The Community Solution, a program of Community Service Inc., a non-profit organization in Yellow Springs, Ohio. Quinn can be reached at megan@communitysolution.org.

The Community Solution is a non-profit organization that educates about the coming global oil peak and the transition to small, local communities and low energy lifestyles. They publish a quarterly newsletter, "New Solutions" on peak oil, implications, solutions, geopolitics, Cuba, and more. It is available for a membership donation of \$25. They will host "The Second U.S. Conference on Peak Oil and Community Solutions" September 23-25, 2005. More information and comprehensive presentations are available on their website www.communitysolution.org

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Also posted on [Global Public Media](#).

For downloadable documents from the ASPO conference, see [Abstracts and communications](#) on their website.

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# Energy Bulletin

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## **BP says global oil reserves growth stalled in 2004**

**By Tom Bergin**

Growth in the world's oil and gas reserves stalled last year, a report from oil giant BP showed on Tuesday, bucking a trend that has historically seen new discoveries more than match production.

The BP Statistical Review of World Energy, compiled from official government figures, will reinforce concerns about the ability of global oil supplies to match surging consumption, which grew 3.4 percent in 2004.

The world had 1,188.6 billion barrels of oil reserves at the end of 2004, compared to 1,188.3 billion at the end of 2003, BP, the world's second largest oil firm by market capitalisation, said.

The 0.02 percent growth rate was the lowest since 1990 and compares with a 10-year average above 1.5 percent per annum.

Last year's almost imperceptible rise in oil reserves came despite high prices, which normally help by encouraging new exploration and by making previously uneconomic resources commercial.

Gas fared only slightly better with reserves growing 0.18 percent, but this was the lowest growth rate in over 20 years, and well below the 10-year average of more than 2 percent each year.

The figures contrast with BP's view, regularly voiced by Chief Executive John Browne, that the world is not facing a supply crunch.

However, the data echoes the oil majors' own difficulties in finding oil. Last year, the biggest international firms replaced around 70 percent of the oil and gas they pumped with new finds, analysts said.

Even BP, one of the better explorers in the industry, failed to achieve the 100 percent reserve replacement ratio that shows a firm's resource base is not shrinking.

The report also points to another worrying trend for the oil majors. The gap between their anaemic reserve replacement ratio and an effective 100 percent ratio globally supports investors' fears that the biggest oil companies will lose market share.

Analysts have predicted firms like BP and U.S. rival Exxon Mobil will become increasingly constrained in finding new exploration opportunities in the future because the biggest hydrocarbon reserves look set to be controlled by state-owned oil and gas

companies in Russia, Venezuela and the Gulf states.

BP cautioned that pundits have been predicting the imminent depletion of reserves for a century and added that since different governments use different methodologies to calculate proved reserves, it is hard to draw inferences from its review, which is published annually.

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Since reserve growth in recent years has only been enabled by oil co.'s not backward-dating reserve growth (to the original date of discovery of the oil field), this is like the Emporer finally noticing the sunburn on his crown jewels.

Only cynics would draw attention to the new Sarbanes-Oxley accounting laws (US) which require corporate heads to sign-off on reserve estimates, or the incredibly tiny (0.02%) but still positive reserve growth number (because we've gotta stay positive, right?).

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Energy Bulletin

Published on Monday, June 27, 2005 by Culture Change

End-Time for U.S.A. Upon Oil Collapse - A scenario for a sustainable future

By Jan Lundberg

It is becoming clear to more and more energy analysts that the United States of America as we know it will not endure for long. However, the U.S. may not last at all, if oil collapse and the birth of a sustainable culture play out freely. Primarily considering the implications of "peak oil," let us explore key unforgiving trends, dispassionately, so as to arrive at a truthful and hopefully constructive vision for the future.

Most scenarios reflect wishful thinking or influence from the mass media, academia and industrial interests. Rather than predictions such as the promise of a technologically green consumer society -- a popular preference -- a clear analysis must include all the main elements however unpalatable. To create a better world we must first deal with hard reality. What is ahead that we cannot change? When that question is faced honestly, the possibility is greater to affect future change in a positive way. And there is hope in the resurgence of community and renewed appreciation of nature.

I am a petroleum-industry analyst, although I last saw any money from the oil industry back in 1988 when I told Exxon and Mobil I was terminating my market research business. My office then became an environmental institute, and I proceeded to get a much clearer picture of oil's place in the world than from my previous sixteen years known for publishing "the bible of the oil industry," the Lundberg Letter. My understanding of oil and energy in the economy and culture has brought me to my present analysis about the end of the United States of America.

Here are my limits on my objectivity: I have no investments other than wanting to see family and friends do especially well in terms of health and happiness in the extremely turbulent phase ahead. I am further biased in wanting the Earth to have maximum biodiversity, but either the web of life holds or it will not. I will shed no tears over the disappearance of General Motors, for example, which is teetering already. Such a corporation -- found guilty for destroying dozens of cities' electric rail trolley service -- is an enemy of the planet and of the people.

The fall of the U.S. may be the swiftest empire collapse in world history. It is obvious that the U.S. population and the nation's infrastructure is heavily petroleum dependent. The U.S. peaked in oil production (extraction) in 1971. The world may be peaking now, as some evidence indicates, or in a few short years. As a severe energy shortage is on tap as soon as the gap between supply and demand is felt by the market, and the Earth gives noticeably less oil than just recently, there will be a cascade of impacts on the economy and people's lives.

So it will not matter how much oil is still in the ground, or if other ways of obtaining and using energy are more renewable and greener: A massive shut down of petroleum supply brought about by market panic and economic collapse will terminate corporate globalism and the political landscape as well. [As discussed in this essay and in links at the end, production of other forms of energy cannot substitute for petroleum and will not be maximized for readiness anyway.] Many aspects of modern society are at a breaking point already, whether one looks at the Iraq war over oil, the housing market bubble, U.S. debt and deficits, or the prospects of damaging weather from the fast distorting of the planet's climate.

Not only will the sudden oil shortage ahead mean the Final Energy Crisis, the present economy only works on growth: so even a plateau of global petroleum extraction -- what seems to be happening now, although it is being called "insufficient refining capacity for poor quality crude oil" -- would mean the house of economic cards collapses on its own. Recovery from such an event, even if not from oil shortage, would appear impossible because supplies of oil would be among the commodities suddenly scarce, and this would have a terminal effect on much economic activity and people's lives.

With so much local business and self-sufficiency destroyed by Walmartization, costs of urban sprawl, medical costs and the drain of militarism, impacts from oil collapse will be brutally thorough in the U.S. and almost as thorough in all other industrialized societies. Security, leadership and individual self-responsibility we have almost none: "We have met the terrorist and the terrorist is us," to paraphrase Walt Kelly's Pogo.

I decided to outline my scenario of the end of the United States after co-hosting a talk show on San Francisco radio with Martin Matthews. We got a call in on the air from a lady wanting to know if there were any relevant politicians to deal with peak oil. I came close to suggesting Congressman Roscoe Bartlett, who quoted me on the effects of peak oil before Congress on C-SPAN television. But the Congressman's office had told me he would not be seeking higher office. Martin and I continued our conversation over some Arab food and I outlined my end-of-the-USA outlook. Later that same day, June 16, 2005, I conferred with Lonnie Maxfield of Jivan Institute in Olympia, Washington by telephone. He asked me if I thought the U.S.A. would survive long beyond this time in history. We agree the U.S. will not last.

The social fabric has been unraveling for several decades, and the lack of solidarity or social cohesion is one of the reasons there must be a collapse in the U.S. -- after all, do you see community-spirit on the rise and an actual transition underway to a sustainable and ecogocial society? As this series of essays has explored, people are driven apart by materialism and trying to separate themselves from nature.

Susan Meeker-Lowry, author and editorial contributor to Culture Change, points out that people are noticing climate change and the prospect of tighter energy supplies, and are seriously worried about the implications such as heating their homes and paying their taxes. "But we need to be dealing with these issues as a community, not as individual family units. We need to be creating safety nets for ourselves, preparing for the day when the bills won't get paid because there's no more money and we need to defend our homes from the wealthy who will try and take them away for nonpayment of mortgage or taxes," she says.

Energy fantasy and reality

What about a "solar economy" or "the Hydrogen Economy"? Won't technology save us, when it's so clear that SUVs are so inefficient and silly? Can't the great American public meet the challenge of dwindling energy supplies and "take back America" by electing at least another Jimmy Carter who's more reasonable about energy?

The problem with renewable energy is that it's not so renewable. The energy production ratio of non-oil energy extraction is comparatively poor. Additionally, the present infrastructure is entirely geared toward petroleum which allows for our vast, consuming population size. Renewable energy will have its niche in local applications, but it will never power a global economy. Renewable energy will not replace a fleet of vehicles, just for the reason that not enough rubber trees can meet the demand of the necessary tires. The existence and claims of renewable energy have mainly served to obscure the urgent need to simply slash consumption of energy -- whatever the production mode. It may be too late to remake the U.S. infrastructure to run commerce and transportation on, say, renewable-energy powered trains, even if they were very energy efficient and were ready to manufacture on a huge scale.

There are short-term signs and indicators that the U.S. has worn out its already slim welcome the world over. That has not stopped the U.S. rapacious military industrial complex and its financial and political juggernaut, as depicted in John Perkins' book Confessions of an Economic Hit Man. Another "intelligence" caper and bloody coup or invasion is always in the bag of tricks of the U.S., whether or not the rest of the world wants an end to the interference and rip-offs. The prestige of the U.S. may not be of much concern to the zealot U.S. neo-conservatives or greedy marketeers, but the game is certainly all too clear -- as the Downing Street Memo and other evidence reveals. Climate change is more blood on the U.S.'s hands, as the nation is the biggest greenhouse gas emitter and will not even cut back on the easy waste in energy consumption.

Yet, world opinion and a social movement much stronger than the weak anti-war movement in the U.S. do not comprise a significant opposition to the U.S. There is not even clarity on who the enemies of the U.S. really are, when Osama bin Laden and his group had been U.S. operatives and not seriously targeted by the long arm of the (U.S.) law. So, absent a huge military/terroristic attack on the U.S. that would really bring it to its knees, which may involve nuclear weapons, I examine more certain factors and outcomes: the effects of oil collapse.

An informative analysis, Last Days of America?, by Stuart Rodman, is on the Culture Change website. It is a force-of-nature kind of exploration on how today's oil-war mongering society is going to be unsuccessful in sustaining itself, rather than a political analysis of the post-oil-collapse USA. Rodman writes,

"We live in an America long since petro-formed by the oil industry from a land of independent family farms and businesses, to a nation dependent like serfs on their lord, on the barons of oil for everything from fuel to fertilizer. Today as we watch without protest, a new Feudalism is being forged worldwide by their mighty armies, our indignation subdued by the prospect of fueling our SUVs with cheap ill begotten oil. And we... kill for them. " Rodman opens his essay with a quote by Jay Hanson, the creator of dieoff.org: "An 'energy-limited economy' is one where more energy cannot be had at any price. The global economy will become 'energy-limited' once global oil production peaks...."

There is no Plan B for coping with a terminal oil shock to the economy. Therefore, a breakdown of society must ensue, starting with "the trucks will not be pulling into Wal-Mart or Safeway," as I was quoted in Congress on May 12, 2005. When people cannot get transportation to their jobs, business stops. People will be panicking first about gasoline, and then about how much food and water they have -- tragically trying to protect those meager supplies in an unforgiving urban environment. Nature has been made to stop offering up the simple essentials of life, when the privatized fortress and paved-over toxic cities rely on money and cheap energy to move everything around the world. The world as we "know" it will end but we'll get to know the world as it really is a lot better.

Die off will kick in first in terms of riots and killings by armed marauders, and "the police and military will not be able to keep order more than a few days, if at all" [my statement in Congress]. Next will come starvation, and cannibalism can only get people so far -- especially with rampant disease and lack of clean water to drink. Starvation will take care of perhaps 95% (ninety-five per cent) of the petroleum-dependent populations in the U.S. and perhaps elsewhere in modern industrialized countries. Did I mention overpopulation? The simple fact is that population has far overshot the ecological carrying capacity of the whole planet, especially in the fossil fuelish/foolish U.S.A. And petroleum is how food is grown, distributed, packaged and prepared.

After two months, most of the starvation will have had its effect because only the largest and strongest men can fast 50 days perhaps (with good water supply). Malnutrition and poor water quality will take out millions of people afterwards, as was seen in Iraq after the Gulf War during U.S.-imposed U.N. sanctions.

The U.S. and the International Red Cross will be powerless to prevent the disintegration of the food system and the workings of equitable distribution -- already a major problem that undermines faith in the present system and nation. People will be looking to their own immediate geographical areas to secure survival, as travel will be limited to using one's feet, bicycles, horses, and sailboats. Some fuel will exist, but it will be hoarded and killed for (as it is now in an Iraq War). Already, we can see how the U.S. as we know it will be mostly powerless, helpless and irrelevant -- although still dangerous or helpful in its throes. Florida will keep its oranges and Maine its lobsters.

I don't foresee large populations of humans living in cities with large buildings if energy is a problem and food has to be grown by others, on land outside the paved-over portion, and brought in. In any event, after enough time for buildings to age, decay or come down from earthquakes, I don't see the energy and materials available for keeping huge-building-ed cities humming. We are talking about scale: smaller cities with intelligent design for density could endure and thrive. We may discover the upper limit of green cities, hopefully without again going too far beyond ecological carrying capacity. But it is worth remembering that the Agricultural Revolution that led to today's monumentally unsustainable civilization involved cities that by necessity heavily exploited people and outlying land, despite "the hanging gardens of Babylon." Cities have been romanticized, but they are an abomination compared to pristine nature.

The U.S. has been based on an orgy of resource appropriation and waste, as in a party with no tomorrow. "Party's Over!" - the first two words of my review of *Beyond Oil - The Threat to Food and Fuel in the Coming Decades* (Gever, Kaufmann, et al) published in *Population and Environment: a Journal of Interdisciplinary Studies*, Spring 1990. [An excerpt of my review written in 1988-89 is at dieoff.com/page20.htm] The party known as the U.S. is all but over except in the minds of oblivious revelers already being kicked out of the house (of nature and the world community). However, sober heads will start to prevail as the dawn breaks.

The picture starts to brighten

Before I paint my picture of hope that I believe is based on solid analysis, let us first examine the common assumption that people are going to behave as ruthlessly as ever. Here is the reason I believe we need not expect feudalism, mafia kingdoms and the like: upon oil collapse and the passing of the era of material abundance, people will have learned a lot about the failings of the previous culture. It didn't work, and anything that wants to follow in its footsteps will probably be viewed askance and be questioned and

rejected. There may even be the equivalent of a new universal religion that appreciates the Earth and the need to get along in harmony with other species and one another.

After the devastation of the petroleum-powered civilization and its broken, smoldering aftermath, there will not be any other choice than sharing the world. If not, and sustainable models do not become the rule, then humanity will not pull through to keep evolving biologically. We are flirting with extinction in several ways: climate change, nuclear holocaust, and infertility from plastics, pesticides and other threats. Only with careful, respectful "precision living" that corrects all past mistakes of significance, can the human race endure -- given we are not already too far along in bringing about extinction of other species as a prelude to our own extinction.

As soon as people try to rebuild life as working members of a community, because they found right away that they needed each other to grow, gather, hunt and prepare food, a quasi tribal social system will form that looks out for members and maintains armed defense. However, after the rediscovered practices of mutual aid and cooperation bear fruit, there is too much proof of the value of solidarity and sharing resources and skills for there to be a serious threat from the outside. Die off will have taken care of even desperados who scrounged as lone wolves for a while. Life will for a long time not be much better for members of community, as they must eat strangely such as vermin for protein, perhaps cooked over furniture fires.

There will be little threat from within the tribes and the emerging bioregional nations, when the past is rejected for its unworkable, inequitable system that brought about ruin. The excesses of the past brought about the need for a non-materialistic culture. Private property as we know it will cease. Those who imagine their "castles" will protect them and insulate them from the human family will find they need help from others once the hoarded supplies are gone. Survivors surrounding the "castles" may be in a position to take what they want without fear of police cars and the national guard showing up. And, with a low population, there will be plenty of land to try to work with, to derive food, shelter, clothing and warmth. New social norms and tribal law will help break from the past and possibly outlaw incipient reversion to the failed system of exploitation of people and nature. In any case, the "new" model of sharing and cooperation will outdo in productivity any vestiges of the old models of selfishness and trying to insulate oneself or one's family from the surrounding changed world.

The U.S. will thus cease to exist, except perhaps in name for a while, as some patriots cling to the dream or illusion of a romanticized nation. But in practical terms, distant capital cities and bureaucracies will have little to offer surviving towns and communes that got no help in erecting a new, workable political entity based on local land possession and utilization. The energy for military action to enforce a reunification, or to subjugate, will be missing. As the spirit of liberation spreads from those who came together as equals to reinvent human society, any hold outs of today's virtual slaves -- who are somehow still being fed -- may quickly abandon their masters in hope of survival and a better life.

The main long-term job for our collective hope for survival will be restoration of the wounded Earth, as in decommissioning roads and allowing streams to embrace spawning fish again. Communities will have to reward those workers engaging in this essential repair of nature. There is little that can undo climate change already launched by decades of emissions, but tree planting will sequester carbon. Another way to reduce atmospheric heating is to cut down on the urban heat island effect: pavement and rooftops raise city temperatures. This mistake of "development" will have to be undone, because painting these urban surfaces white (sunlight-reflective rather than heat-absorbing, as in icecaps versus asphalt) would be impractical. Any available energy will have to be used for jack-hammering roads and bulldozing away the road bed, for example, because depaving with hand tools is hard enough with thinner pavements of driveways and parking lots.

Just as important will be baby-sitting the nukes. Nuclear power stations cannot be neglected or be subject to lack of back-up electricity. An elite of sacrificing members of the human family will have to guard the weapons of mass destruction and the nuclear waste that we have all been saddled with for hundreds of thousands of years into a compromised future.

This is our world, take it or leave it. Most of us will leave it sometime soon, in any country that is heavily petroleum dependent. But the survivors may do well, as in the lower-populated aftermath of the Black Death in the 14th century.

- Love and peace, Jan

Further reading:

The Nature Revolution, short story by Jan Lundberg:

www.culturechange.org/e-letter-6cont.html

Energy production ratio (or net energy, or return on energy invested:

www.eclipsenow.org/Facts/alternateenergy.htm

www.abelard.org/briefings/energy-economics.asp#eroe

Ted Trainer's writings, including The Simpler Way:

www.arts.unsw.edu.au/tsw/

and Ted Trainer's Thoughts on the Transition to a Sustainable Society

socialwork.arts.unsw.edu.au/tsw/D75.ThoughtsonTrans.html

Stuart Rodman's "Last Days of America?" on this

website: www.culturechange.org/issue20/Last%20days%20of%20America.htm

Dieoff.org

The Long Emergency by James Howard Kunstler, Atlantic Monthly Press, 2005, New York, NY.

www.groveatlantic.com

Green Cities and the End of the Age of Oil

www.commongroundmag.com/2005/cg3206/greencities3206.html

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Previous Culture Change Letters:

www.culturechange.org/e-letter-archive.html

~~~~~ Editorial Notes ~~~~~

*Jan Lundberg has been a long-time writer and activist opposing the baleful influence of petroleum and automobiles on society. I've read his Culture Change newsletters and been influenced by him. I'm sorry to see him take up the thesis of Die-off. It's quite a jump from saying that our high-energy consumerism isn't sustainable, to saying that 95% of the population will die of starvation. (Fortunately, the rest of Jan's essay is vintage Lundberg, alternately acerbic and hopeful.)*

*The Die-off concept is brilliantly documented on the [dieoff.org](http://dieoff.org) website and is discussed on multiple forums such as [peakoil.com](http://peakoil.com). As the peak-oil idea becomes diffused, the Die-off idea won't be far behind.*

*To my mind, Die-off is bad analysis, based on fear and escapism. The fatalism and hysteria implicit in Die-off lead to very bad politics. Desperate people do not make wise choices, nor will they take part in the the co-operative efforts necessary to re-create our civilization after Peak Oil.*

*I'm not sure why people in the richest, most technically advanced societies ever known on the planet are attracted to the fatalism of Die-off. Difficult times are coming, but humans have confronted difficult times before. Is there an element of self-pity in our fatalism? I think of France in 1939, with a World War raging and a Nazi victory likely, when the philosopher Jean-Paul Sartre was writing: Sartre teaches that we are constantly tempted to escape our responsibility for creating ourselves from what we have been made - there is something comforting, after all, in feeling that things are beyond our control. But, as he also teaches, to accept this is to enter into complicity with the powers that would dominate us.*

*Sartre demands that we see ourselves as active agents, even when we might prefer the irresponsibility of seeing ourselves as victims.*

*Today Sartre is still as troubling and annoying as ever. He demands that we see a world seemingly out of control as made up of human choices and the structures these create. When he demands that we take responsibility for our lives, for the shape of our world, for the situation of the least favored - for others as well as ourselves - he is expressing decisively important conditions for learning to live as responsible citizens in this globalized world.*

**Ronald Aronson in the [International Herald Tribune](#) on the occasion of the 100th anniversary of Sartre's birth.**

Update from [Big Gav at Peak Energy](#). Jay Hansen, the creator of the [dieoff.org](#) site, has emerged from retirement and is speaking out again at the [AlasBabylong discussion group](#), among other places.

-BA

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*Jan Lundberg replies (June 27):*

*I read your editorial comments about my subscribing to die-off. I agree with your sentiments, but if we don't look at the possibility or likelihood of die-off, people will say "What me worry?" I happen to think the petri dish's bacteria have mostly had their exuberant day. Do you think 6.5 billion people are sustainable? 10 billion? I think David Pimentel's finding of one billion sounds reasonable, but that's with an intact ecosystem. Holy schidt we better hang on for the ride!*

*All the best, Jan*

**Article found at :**

<http://www.energybulletin.net/newswire.php?id=6933>

**Original article :**

[http://culturechange.org/cms/index.php?option=com\\_content&task=view&id=6&Itemid=2](http://culturechange.org/cms/index.php?option=com_content&task=view&id=6&Itemid=2)