

**THE ASSOCIATION
FOR THE STUDY OF PEAK OIL AND GAS
“ASPO”**

NEWSLETTER No. 72 – DECEMBER 2006

ASPO started as a network of scientists and others, having an interest in determining the date and impact of the peak and decline of the world’s production of oil and gas, due to resource constraints. Now independent national affiliates are in existence, formation or contemplation in Australia, Austria, Canada, China, Egypt, France, Germany, Ireland, Israel, Italy, Japan, Korea, Mexico, New Zealand, Norway, Portugal, Russia, South Africa, Spain, Sweden, Switzerland, United Kingdom and the United States.

Missions:

- 1. To evaluate the world’s endowment and definition of oil and gas;**
- 2. To study depletion, taking due account of economics, demand, technology and politics;**
- 3. To raise awareness of the serious consequences for Mankind.**

Foreign language editions are available as follows:

Spanish: www.crisisenergetica.org

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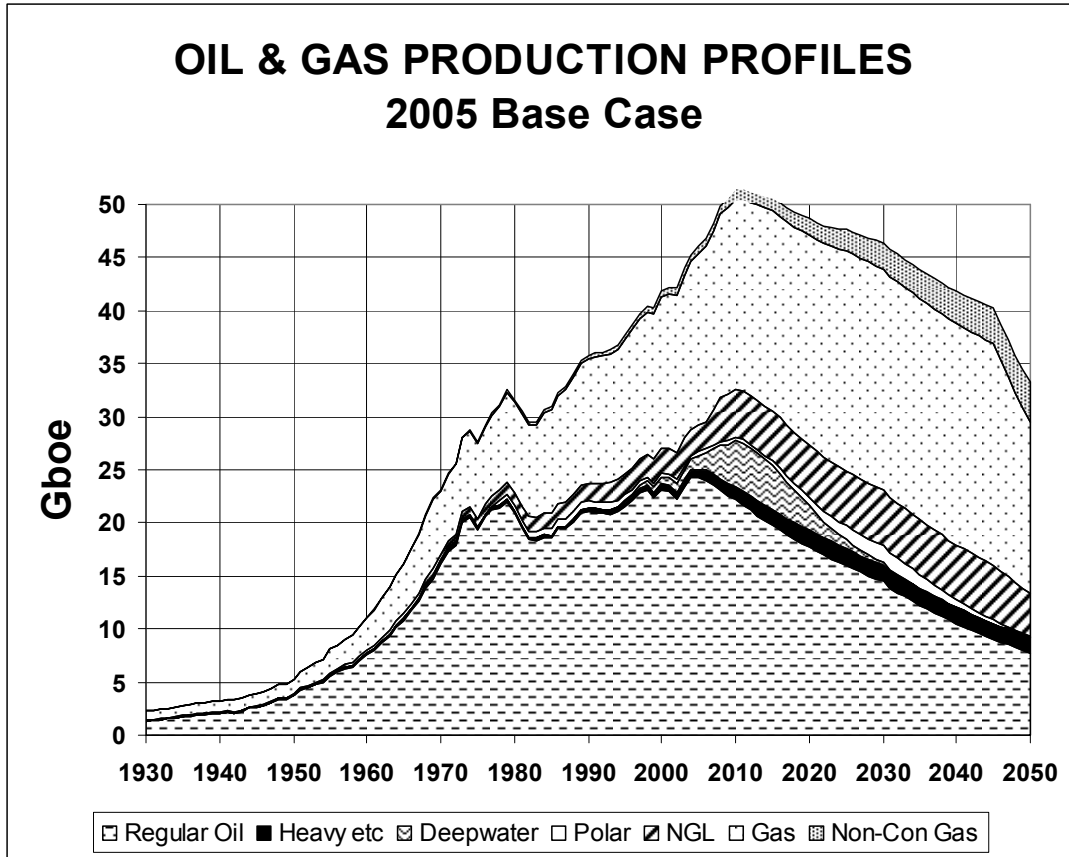
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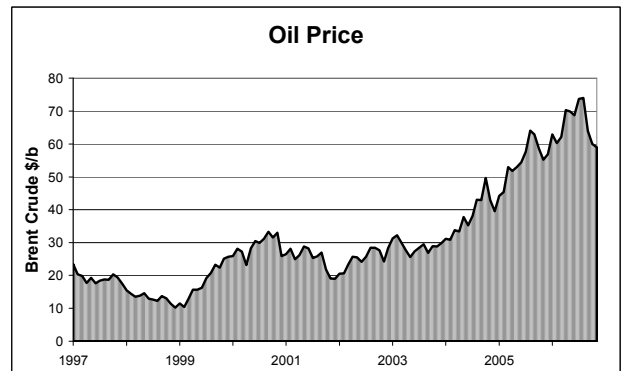
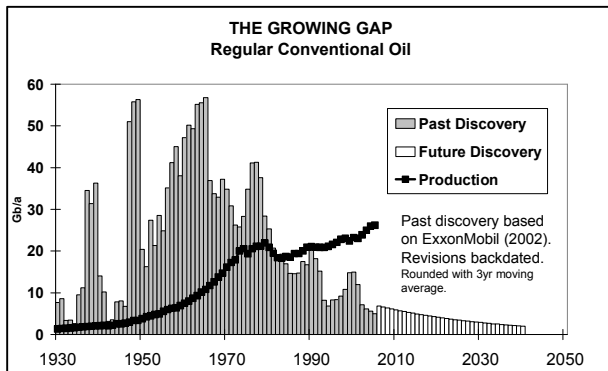
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The General Depletion Picture



ESTIMATED PRODUCTION TO 2100										End 2005		
Amount			Gb	Annual Rate - Regular Oil					Gb	Peak		
Regular Oil				Mb/d	2005	2010	2015	2020	2050	Total	Date	
Past	Future	Total		US-48	3.6	2.8	2.2	1.7	0.4	200	1971	
Known Fields	New			W.Europe	5.0	3.4	2.3	1.6	0.2	75	2000	
967	788	145	1900	Russia	9.2	8.5	6.9	5.7	1.5	220	1987	
	933			ME Gulf	20	19	19	19	11	680	1974	
All Liquids				Other	29	27	23	20	8	725	2004	
1043	1457	2500		World	66	61	54	48	21	1900	2005	
2005 Base Scenario				Annual Rate – Other Categories								
M.East producing at capacity (anomalous reporting corrected)				Heavy etc.	2.3	3	4	4	4	150	2021	
Regular Oil excludes Heavy Oils (inc. tarsands, oilshales); Polar oil; Deepwater oil, & gasplant NGL				Deepwater	3.6	12	11	6	0	69	2011	
				Polar	0.9	1	1	2	0	52	2030	
				Gas Liquid	6.9	12	13	14	11	354	2035	
				Rounding		1	2		-2	-25		
Revised	20/08/2006			ALL	80	90	85	75	35	2500	2010	



771. Regional Assessment - North America

The North America Region, as defined for the purpose of this study, comprises only the United States and Canada, with Mexico, which is sometimes included, here treated as part of Latin America. In topographic terms, it covers an area of almost 20 M km², being flanked by the Pacific, North Atlantic, and Arctic Oceans, as well as the Caribbean. The Rocky Mountains form the western margin, while the more ancient Appalachians adjoin the eastern seaboard. A series of great lakes straddles the interior boundary between the two countries, while the Hudson Bay forms a large embayment in northern Canada. The great Mississippi River drains the interior, flowing south into the Caribbean at New Orleans.

The Region supports a population of 325 million with an average density of 16.3 per km². The fertility rate is a near-stable two children per woman, although the population is expanding thanks to immigration, mainly from Latin America.

The early history is little known, but the region was evidently settled by migrants who managed to cross the Bering Strait from Asia at the end of the Ice Age, becoming the well-known Red Indians, who lived on buffalo in the great interior plains. Florida and the southwest were previously under Spanish dominion before being overrun by large scale immigration. Britain had established a series of colonies along the east coast of the United States in 17th Century to absorb its surplus population while the French took control of Louisiana, and Quebec in Canada. Slavery brought in large numbers of Africans to the southern States until its abolition in 1830, and the Irish famine prompted another wave immigrants around 1850. Most of the European immigrants were forced out of their home countries by raw necessity when the growing populations became insupportable. It had even become necessary to import bird excrement from South America in sailing ships to try to improve crop yields. The indigenous population of North America was virtually exterminated by the immigrants, partly under the notion of what was described as their *Manifest Destiny*.

Resentment over the payment of tax to the British Crown had led to a successful war of independence, supported by France, which ended in a peace treaty in 1783. However, various internal disputes continued, and erupted into civil war between the north and the more agrarian south from 1861 to 1865, with slavery being one of the elements in dispute. The interior and western parts of the country were opened up over the ensuing years, being partly encouraged by the discovery of gold in California. Political union between the various States was achieved in a series of steps. Canada, for its part, remained under British control, following a conflict with the French, to become a Dominion of the British Commonwealth. French Canadians remember their cultural heritage in Quebec, where French is still spoken. Alaska was purchased from the Russian Czar for \$7.2 million dollars in 1867, becoming the 49th State of the American Union in 1959.

Oil was found in Pennsylvania in 1859, being at first used as a substitute for whale oil as fuel for lamps, while vast deposits of coal and other minerals were tapped to provide the basis for an Industrial Revolution during the latter part of the 19th Century. The Federal Reserve Bank, which was founded by a group of London financiers, grew in stature as a form of privately-owned Central Bank to fund the economic expansion. It threw up various capitalistic dynasties, which gradually extended their influence around the world, as the British Empire went into eclipse as a result of two world wars. The United States, which was home to many German immigrants, had remained neutral for much of the First World War before joining in the latter stages of the conflict in April 1917, when Britain confirmed the Balfour Declaration of 1916, establishing a homeland for the Jewish people in Palestine. Substantial loans had been made to Britain and France which would have been at serious risk if these countries had lost the war. Victory gave the country a new geopolitical importance in the ensuing peace treaty which, amongst other things, led to the dismemberment of the Ottoman Empire, which previously controlled the oil-rich Middle East outside Persia (Iran).

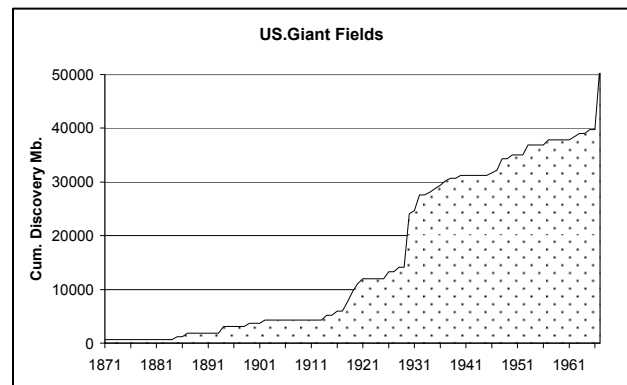
The US economy blossomed after the First World War before over-reaching itself in a speculative bubble that burst on the trading floors in October 1929, leading to the first Great Depression. This was a searing experience, putting one-third of the US workforce out of work, and led to an epoch of almost socialist policies under the so-called New Deal. That was followed by the Second World War, which the United States joined in 1940 following a Japanese attack upon its fleet in Pearl Harbour in Hawaii. The incident, of which there was apparently fore-knowledge from radio intercepts, gave popular support for the declaration of war. Having campaigned from the Pacific to North Africa, the country emerged victorious in 1945 having dropped two atomic bombs to vapourise Japanese cities. Victory paved the way for a new financial hegemony under the dollar.

A new enemy in the form of the Soviet Union, its wartime ally, was then identified, prompting the so-called Cold War, when the two sides, now armed with nuclear weapons, glared at each other across a divided

world. Armed conflict as such was confined to Korea and Viet Nam, ending in something close to stalemates. The Cold War gave rise to a massive and highly profitable arms industry, underpinning a new global market in which the dollar played a profitable role as the premier trading currency. The Cold War came to an end around 1990, following the fall of the Communist Government of Russia, but has now been succeeded by the so-called War on Terror, which has led to the invasions of Afghanistan and Iraq. They were intended to strengthen the US presence in the oil-rich Middle East and Caspian regions but the outcome remains uncertain given the alienation of the peoples of the Region.

In terms of oil history, the initial finds in Pennsylvania were followed during the early years of the last Century by major discoveries in Illinois, Oklahoma, California and Texas. These developments involved exceptionally large drilling campaigns both because the exploration technology was relatively primitive in those early days and because of a unique legal environment, whereby the mineral rights belonged to the landowner. Although the industry was fragmented for these reasons, it did spawn some of the world's largest oil companies, comprising Texaco, Gulf Oil and the daughters of the Standard Oil empire of Mr Rockefeller (Exxon, Mobil, Chevron, Arco, and Amoco), which later consolidated and contracted through merger. Subsequent phases of development included the opening of an oil province in Western Canada in the 1950s, offshore exploration in the Gulf of Mexico, California and eastern Canada, as well as Arctic operations in Alaska and northern Canada. The final step arrives with a move to deepwater exploration in the Gulf of Mexico.

Two other elements deserve special mention. First, was the empowerment of the Texas Railroad Commission to restrict production to support price at times of glut. This was in conflict with the precepts of classical market economics, becoming the inspiration for the creation of OPEC in 1959. The second is the reserve reporting practices imposed by the Stock Exchange regulator (SEC), whose rules were designed to prevent fraudulent exaggeration, but smiled on cautious under-reporting. As a result, reported reserves were subject to upward revision over time giving a comforting but misleading impression of steady growth. These conditions, together with the highly fragmented ownership, have made it virtually impossible to obtain an accurate discovery record, with the following table of giant fields giving no more than a somewhat outdated approximation. In addition are a few recent deepwater giant fields including Atlantis with 500 Mb, Thunder Horse with 800 Mb, and possibly the recent Jack discovery in ultra-deepwater which has yet to be confirmed as a giant, despite enthusiastic press reports before the election.



Field	Date	Mb	Field	Date	Mb	Field	Date	Mb
Bradford (O)	1871	700	HuntingtonBeach(C)	1920	1000	Hawkins (T)	1940	500
Lima Indiana (O)	1885	500	Long Beach (C)	1921	900	Golden Trend (O)	1946	500
Coalinga (C)	1887	700	Yates (T)	1926	1300	Leduc (CN)	1947	500
Midway Sunset (C)	1894	1200	OklahomaCity(O)	1928	800	Kelly Snider (T)	1948	1700
Kern River (C)	1899	600	Bay Marchand (L)	1930	3400	Redwater (Cn)	1948	700
Rangely (O)	1902	600	East Texas (T)	1930	6000	South Pass (L)	1950	750
Illinois (O)	1905	700	Cowden (T)	1930	600	Pembina (CN)	1953	1800
Salt Creek (O)	1906	500	Conroe (T)	1931	600	Swan Hills (CN)	1957	1000
BuenaVista (C)	1909	600	Wilmington (C)	1932	2600	W.Delta (L)	1962	600
Sho-Vel-Tum (O)	1914	900	Smackover (O)	1932	500	Hastings (T)	1963	600
Ventura Avenue (C)	1916	800	Tom O'Connor (T)	1934	500	Slaughter (T)	1963	500
Panhandle (T)	1918	1700	Goldsmith (T)	1935	700	Rainbow (CN)	1965	700
Elk Hills (C)	1919	1300	Wasson (T)	1936	600	Prudhoe Bay (A)	1967	12000
Santa Fe (C)	1919	600	Seeligson (T)	1937	800	A-Alaska, C-California, CN-Canada,		
Burbank (C)	1920	500	Coalinga Nose (C)	1938	500	L-Louisiana, T-Texas, O-Other		

(Mainly taken from AAPG Memoir 14 of 1970)

It seems that about 194 Gb of *Regular Conventional Oil* have been produced to-date with 32 Gb left for the future, of which 28 Gb are in known fields. In other words, the region is 86% depleted. In addition are the heavy oil and bitumen deposits of Canada, whose production is set to rise, with superhuman effort, from about 1.2 Mb/d in 2005 to perhaps around 2.5 Mb/d by 2030, by which time it will be providing 60% of the total regional supply.

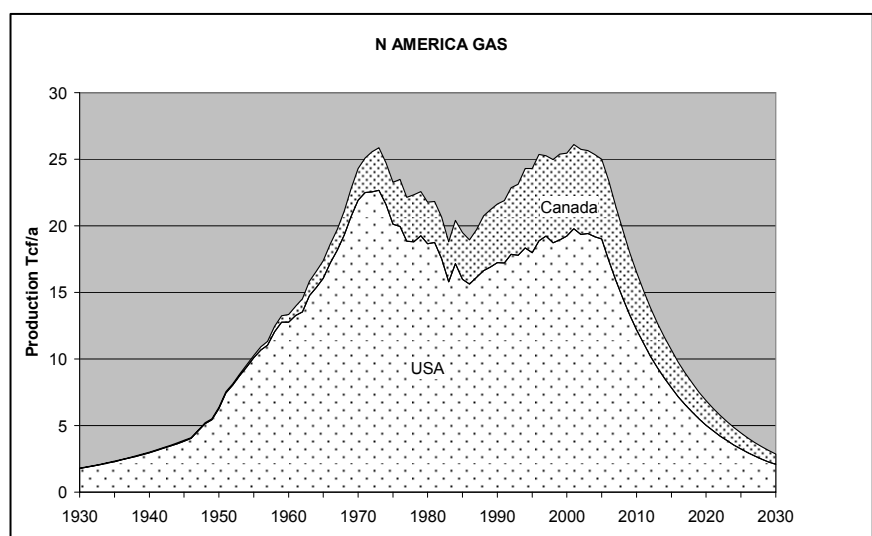
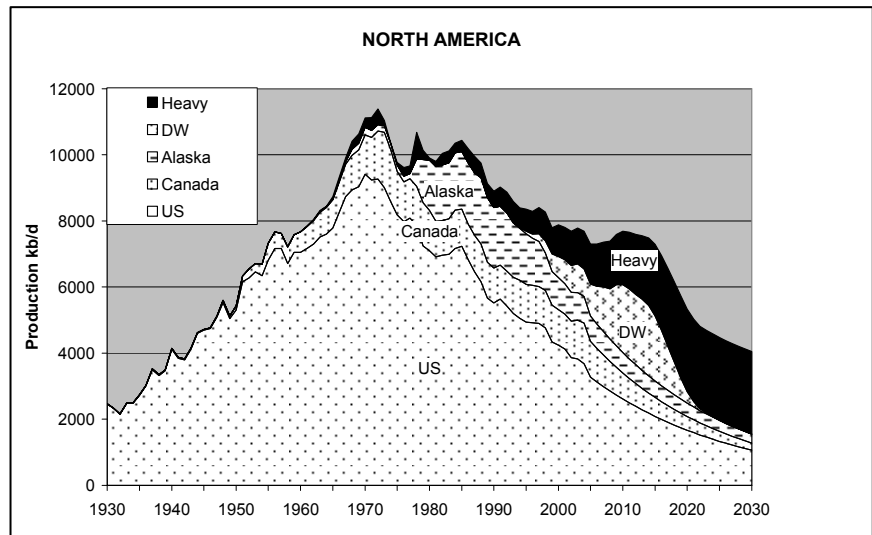
Deepwater production is expected to peak around 2013 at about 2 Mb/d, before declining to near exhaustion within twenty years. Although certain regions are closed for environmental reasons, there is no good reason to suppose that they contain material oil deposits.

The production of all categories of oil stands at 7.3 Mb/d, but is set to rise to 7.7 Mb/d by 2010 with the entry of new deepwater production, before resuming its terminal decline to fall below 5.3 Mb/d in 2020 and 4 Mb/d in 2030. Consumption is currently running at 23 Mb/d of which 66% is imported. Given the world situation, it is clear that the percentage of imports cannot rise significantly, suggesting that consumption will have to fall to about 6 Mb/d by 2030, which probably spells a second Great Depression. Already Ford and General Motors, once the cornerstones of industry, find themselves in financial difficulties.

The Region has also depleted much of its gas, having produced almost 1200 Tcf out of an estimated total of 1450 Tcf, including an assumed 21 Tcf from new discovery. Production peaked in 2001 at 26 Tcf/year, and is set to decline to 17 Tcf in 2010 and 7 Tcf in 2020, in a rather steep decline which is typical of gas. Canada currently exports about 50% of its gas production to the United States. While these estimates are far from exact forecasts, they probably do give a valid general picture.

The import of LNG is set to rise, and more non-conventional gas from coalbed methane and tight reservoirs can be produced, but even so, it is evident that the gas supply situation is more critical than that of oil. It is to be asked if Canada will continue to export when it perceives that its own needs to be in jeopardy. Evidently, there will be every incentive to bring in gas from Alaska and the Arctic Islands of Canada, which will involve the construction of costly pipelines, but would do no more than ameliorate the decline. The tar-sand operations of Canada use substantial amounts of stranded gas, which are now also facing decline. It may well be necessary to build nuclear power to process the bitumen and heavy oil, although a promising new technology involving catalysts may contribute. The net energy yield evidently declines.

It is, as always, very difficult to forecast the future of the region. The United States has been a bastion of capitalism and free-market economics, having seen years of prosperity built on cheap energy supply and control of the world's financial system. Although not remotely threatened in military terms, it shrewdly entered the two world wars, allowing the dollar to become the world trading currency, which made New York the premier financial centre. Conventional manufacturing has now been in decline for several years, and agricultural production is also contracting, partly due to the depletion of the aquifers. A steep decline in oil and especially gas production will evidently have a further negative impact on the economy. The recent foreign policy seems to have been dedicated to securing control of foreign supplies of oil, but it offers at best no



more than a short term palliative, as production in the rest of the world also heads into decline, mirroring the experience of natural depletion already well demonstrated in North America itself. In addition, the country faces a negative balance of payments and mounting foreign debt. For some reason, the United States seems to find itself under a certain Israeli influence, supplying that country with \$20 billion a year of aid, unrecovered debt and arms, to no obvious national advantage. Yet, the recent election demonstrated popular opposition to the ill-fated Iraq invasion, despite the images of Saddam Hussein being condemned to death a few days before the polls opened. It is too soon to know if it marks any long term change of direction, still less whether that direction would be for the better or worse.

Putting it all together suggests that the scene is set for a Second Great Depression, which would no doubt be a harrowing experience. But the well-known national attributes of initiative, enthusiasm and common sense may in due time deliver a new benign environment of self-sustainable communities, living contentedly in the ample landscape of North America. A growing awareness of the underlying resource constraints imposed by Nature may also lead to a new positive, inward-looking political evolution in which the individual States recover essential control of their destinies. This might also facilitate the other countries of the world in defining their own survival strategies freed from foreign financial, economic and, in some cases, military intervention.

772. *The BBC covers gas depletion*

On November 5th the BBC broadcast an impressive programme on Britain's dire gas situation in its prestigious Panorama Series. The text might almost have been drawn from these pages, as the programme explained how market economics, as emphasised by Mrs Thatcher's Government, are ill-designed to cope with natural depletion. It interviewed an executive of a German gas company who said that his primary responsibility was to keep his customers supplied as well as possible, whatever the market rewards of supplying Britain at times of high price from shortage. The programme illustrated the impact of the high cost of energy on industry, with the illustration of a glass-making company which had been bankrupted by the soaring costs. It mentioned the role of the transit countries, including the Ukraine through which much of the gas from Russia passes. For the BBC to give such prominence to this issue suggests that the Government is belatedly coming to terms with it, and wishes to soften up the public for whatever draconian measures it will be obliged to impose.

One item not covered by the programme was the even more dire situation of Ireland, which relies on gas imported from Britain for 50% of its electricity generation.

773. *Climate Change and Oil Depletion*

As mentioned in Item 769, the much publicised Stern Report on Climate Change has failed to grasp the issue of Peak Oil. It simply adds up a total remaining resource of oil, gas and coal, which it states to be 7 trillion barrels of economically recoverable oil equivalent, saying that it is *comfortable enough* to meet a business-as-usual demand to 2050 of 4.7 trillion boe. It fails to note that oil and gas, which drive the modern economy, are close to peak, and will decline over most of this century to near exhaustion. The coal resources are indeed large, but the coal-burning airliner has yet to take off.

Without in any way diminishing the impact of climate change, it does appear that the Stern Report is based on flat-earth economics, albeit an increasingly submerged earth. Economics is in some ways a subject to itself, ignoring some of the wider interests of humanity : we can perhaps look forward to an economic assessment of the profit and loss account of giving African children drugs to prevent malaria or of cell-stem research to prolong the lives of the aged in Britain.

Speaking of Climate Change, attention is drawn to a truly magnificent film by Al Gore, entitled *An Inconvenient Truth*, which explains the whole issue in an eminently sensible, well organised and compelling way, even if it does not mention the impact of Peak Oil.

774. *The IEA confesses.*

It seems that in politics there comes a time when it becomes necessary to admit to reality or lose credibility. The latest edition of the World Energy Outlook, an annual publication from the International Energy Agency, says that the world will move from crisis to crisis unless Governments act immediately to save energy and invest in nuclear and biofuels, speaking of blackouts and skyrocketing prices. It states that production outside OPEC will peak within five years. These words represent a remarkable departure from past pronouncements based on bland scenarios, albeit adorned with coded messages. Mr Mandil, the Executive Director, who, it is said, has personally understood the issue of Peak Oil for a long time, is to step down.

It is well known that this organisation, which tends to see itself as a consumers' lobby, has come under pressure from its member Governments not to deliver the producers with the strength that reality conveys. The new position may reflect a shift in their position. It may be easier for the member governments to adopt the necessary policies if they can do so under the authority of the IEA : perhaps at last they come to accept that there is no escape from the iron grip of depletion imposed by Nature, and that it is indeed time for new policies. Or alternatively it may be a heroic gesture by the departing Director.

The IEA and many other economic forecasters rely on estimates by the USGS of the amounts potentially available by 2025. It certainly looks as if its *high probability* case might be the closest to what is actually found in the real world, although the *Mean* estimate is supposed to be the best one under *Probability Theory*.

We may note in passing that the USGS did not forecast what would actually be found, still less produced, but merely made a range of subjective probability estimates of what might be available for discovery to 2025.

Astrologers may be in a position to divine if this is the month of confession : if so, the following item from the Washington Post suggests that Mr Bush does not wish to be left out

During the run-up to the invasion of Iraq, President Bush and his aides sternly dismissed suggestions that the war was all about oil. *Nonsense*, Defense Secretary Donald H. Rumsfeld declared. *This is not about that*, said White House spokesman Ari Fleischer. **Now, more than 3 1/2 years later, someone else is asserting that the war is about oil -- President Bush.** As he barnstorms across the country campaigning for Republican candidates in Tuesday's elections, Bush has been citing oil as a reason to stay in Iraq. If the United States pulled its troops out prematurely and surrendered the country to insurgents, he warns audiences, it would effectively hand over Iraq's considerable petroleum reserves to terrorists who would use it as a weapon against other countries. *You can imagine a world in which these extremists and radicals got control of energy resources*, he said at a rally here Saturday for Rep. Marilyn Musgrave (R-Colo.). *And then you can imagine them saying, 'We're going to pull a bunch of oil off the market to run your price of oil up unless you do the following. And the following would be along the lines of, well, 'Retreat and let us continue to expand our dark vision. Bush said extremists controlling Iraq would use energy as economic blackmail' and try to pressure the United States to abandon its alliance with Israel.* At a stop in Missouri on Friday, he suggested that such radicals would be *able to pull millions of barrels of oil off the market, driving the price up to \$300 or \$400 a barrel.* White House spokesman Tony Fratto said Saturday that Bush's latest argument does not reflect a real shift. *We're still not saying we went into Iraq for oil. That's not true*, he said. *Bush Says U.S. Pullout Would Let Iraq Radicals Use Oil as a Weapon.* Washington Post, 5 November 2006 (Reference furnished by NLP Wessex)

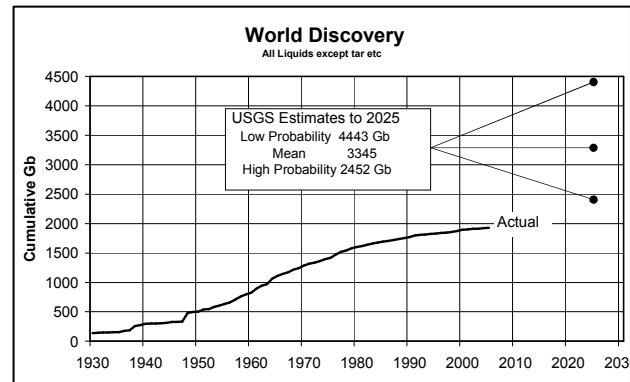
775. More assertions from CERA

Although some fifty countries are now producing less oil than at some date in the past, CERA has issued a new report criticising those who analyse *Peak Oil*, dismissing them as scaremongers. It is by no means alone, as there are other vested interests, especially in the oil industry, who adopt the same position, albeit in declining numbers. They now find themselves in sharp contrast with the establishment authority of the International Energy Agency, mentioned above

The following is an extract from the CERA press release:

CAMBRIDGE, Mass., November 14, 2006 – In contrast to a widely discussed theory that world oil production will soon reach a peak and go into sharp decline, a new analysis of the subject by Cambridge Energy Research Associates (CERA) finds that the remaining global oil resource base is actually 3.74 trillion barrels -- three times as large as the 1.2 trillion barrels estimated by the theory's proponents -- and that the "peak oil" argument is based on faulty analysis which could, if accepted, distort critical policy and investment decisions and cloud the debate over the energy future.

"The global resource base of conventional and unconventional oils, including historical production of 1.08 trillion barrels and yet-to-be-produced resources, is 4.82 trillion barrels and likely to grow," CERA Director of Oil Industry Activity Peter M. Jackson writes in *Why the Peak Oil Theory Falls Down: Myths, Legends, and the Future of Oil Resources*. The CERA projection is based on the firm's analysis of fields currently in production and those yet-to-be produced or discovered.



It is not worth responding to this assault, beyond stating that the depletion model behind this newsletter, as summarised above, is not based on a resource base of 1.2 trillion barrels as asserted by CERA. Congressman Bartlett is however more forthright in his criticism, commenting as follows:

The CERA report agrees that world oil production will peak and projects it will occur within 20-25 years. However, world demand is growing exponentially - faster than production so the CERA report confirms the likelihood of future shortages of liquid fuel and much higher and volatile prices. A major flaw in the CERA report is its reliance upon questionable assessments of global reserves by the USGS. USGS estimates of future world reserves equate a 50 percent probability with a 50th percentile or mean. That is a bizarre and totally inaccurate use of statistics. It almost doubles the amount of projected reserves compared to the 95 percent probable estimate. Actual discoveries are tracking the 95 percent probable trend. That means world oil production will peak much sooner than CERA projects in this report.

Based on how it describes itself in the following quotation, the Company is evidently a commercial enterprise with customers to be supplied with material they wish to buy. It evidently has no incentive to offend its customers in the Middle East by questioning official reserve reports. Other industry and academic databases and analysts are not so constrained:

Cambridge Energy Research Associates (CERA), an IHS company, is a leading advisor to energy companies, consumers, financial institutions, technology providers, and governments. CERA (www.cera.com) delivers strategic knowledge and independent analysis on energy markets, geopolitics, industry trends, and strategy. CERA is based in Cambridge, Massachusetts, and has offices in Bangkok; Beijing; Calgary; Dubai; Johannesburg; Mexico City; Moscow; Mumbai; Oslo; Paris; Rio de Janeiro; San Francisco; Tokyo; and Washington, DC.

But in another press release, CERA announces a further study entitled *The Dawn of A New Age* to be issued next year. Perhaps by then a new market for Peak Oil evaluations will have arisen. In the commercial world, timing can be critical.

It is noteworthy that Ken Chew, of CERA's parent organisation IHS, gave a much more plausible presentation to a conference in London organised by the Energy Institute. He showed how the amount of *reserve growth* has been declining over the last decades despite technological advances, which confirmed that it is primarily a reporting phenomenon in which the giant fields were at first conservatively reported. He also confirmed that total discovery in 2005 of all categories of oil, including the deepwater, amounted to 11.6 Gb, which is far below consumption of 30 Gb, confirming the *Growing Gap* (as illustrated above). Probably about half of this amount qualifies as *Regular Conventional*. It is noteworthy too that IHS attributes about 56 Gb of Reserves to Kuwait (including half the Neutral Zone), which is close to the ASPO estimate of 54 Gb and far below the official number of 105 Gb. He did not however state if similar adjustments had been made to the other OPEC countries which were forced to react to Kuwait's exaggerated claims in order to protect their quotas. He reports that 46% of the world oil had been depleted, suggesting that peak is imminent as it normally comes around the midpoint of depletion (50% depletion).

776. The Meaning of Reserves

Generals, before engaging in battle, like to know how many troops they have in reserve, confident that, when the front-line troops have been gunned-down, they can turn to their Reserves. If necessary, they can have their Sergeants count them, man for man. The reserves replace the troops lost in action, who together define of the size of the army.

The depletion of a country's oil is somewhat similar, save that the reserves lie far underground beyond the eyes of the sergeant. But even if they cannot be measured barrel for barrel, they can be estimated reasonably well. Some estimates will turn out to be high, while others will be low, but if the estimates are made honestly and competently, the pluses and minuses should balance out. Estimating the size of a prospect is not a particularly difficult task, involving little more than multiplying a number of parameters including the estimated area, net reservoir thickness, porosity, and water saturation. The old oilman in Texas might say *Give her 200 barrels per acre-foot* (area x thickness), and there are of course modern sophisticated computer simulations to match the data as the field is drilled up and produced.

The problems lie in the reporting. From a financial standpoint, it is reasonable for investors to demand to know the rock-bottom estimate of what is absolutely sure, which in turn means that both the facilities to produce it and a market are in place. Such *Reserves* are termed *Proved Reserves* by the financial regulators. From the standpoint of long-term financial performance, the companies had every good reason to be ultra-cautious, reporting corporate totals at the lowest financially acceptable level. In this way they arranged that the estimates were subject to progressive upward revision providing an image of steady growth by smoothing the actual discovery rate which is episodic in Nature. All of this seems eminently sensible from a financial standpoint.

The industry, and perhaps others, however may like to have *best estimates* with which to manage their affairs. In general parlance, such reserves have been called *Proved & Probable*, introducing the notion of *Probability*. As a rule of thumb, it was common practice to take the maximum possible value and attribute one-third to *Proved*; one-third to *Probable* and one-third to *Possible*, but this was confusing because the best estimate would be the *Proved* plus half the *Probable*. That practice evolved into quoting reserves in terms of so-called *Probability*, plotting volumes along one axis of a graph against their assessed probability of occurrence on the other. This looked very scientific, normally yielding a skewed curve, from which different *Probability values* could be determined. The P₅₀ (*Median*) value was normally equated with *Proved & Probable*, being in other words the *best* estimate, but strictly speaking *Mean* value is supposed to be the best. This is however splitting hairs as the P₅₀ and P_{mean} values are normally not far apart, and the rating of probability is in any case little more than guesswork.

	Tcf
Oil & Gas Journal	27.64
World Oil	119.5
BP Statistical Review	89.0
ENI Statistical Review	82.78
Industry data	~170

The net result of this is a state of considerable uncertainty about what is reported, as is well illustrated by the range of estimates for the gas reserves of Australia, a country normally expected to work with valid statistics. Given the evident wide range, it is surprising that the estimates should be quoted to decimal places.

This uncertainty facilitates those with a vested interest in dismissing the finite limits of oil, which impose the concept of Peak and Decline, as discussed above. The date of Peak depends on the proper assessment of such numbers, which could be resolved within reasonable limits by intelligent objective study. But objective analysis has no place in the realm of polemics, and the commercial world has its own drivers.

777. Impact of the Oil Depletion Protocol

Interest in the Oil Depletion Protocol seems to grow. If adopted, it would require importers to cut their imports by an amount matching the world depletion rate of about 2.5% a year, with indigenous consumption being deducted from the import allowance to leave a level playing field. But some commentators question if there should not be some differential treatment between the rich and poor countries. The following table is a simple exercise comparing five different countries, assuming that world oil price in 2005 is \$60 without the Protocol but that it falls to, say, \$20 by 2020 with the Protocol, which would still deliver the producers with a reasonable operating profit. It refers only to *Regular Conventional Oil*. Saudi Arabia naturally remains a net exporter to 2020, while the other countries were net importers in 2005 save for Britain which has since become one. On a per capita basis, Ireland seems to come out worst to-day without the Protocol, spending \$1047, even more than the USA at \$1022, whereas the Kenyans spend only \$38. The Saudis make a huge per capita profit of over \$7000.

2005 Without Protocol									
	Consume Mb/a	Produce Mb/a	Import Mb/a	Price \$	Cost M\$	Population M	per capita		Net \$
							Consume	Cost	
Britain	641	681	-40	60	-2387	60	11	640	-40
Ireland	72	0	72	60	4292	4	17	1047	1047
Kenya	21	0	21	60	1270	34	0.6	38	38
USA	7710	2661	5048	60	302899	297	26	1560	1022
S. Arabia	733	3865	-3132	60	-187902	25	30	1789	-7638
2020 With Protocol									
Britain	438	206	232	20	4640	60	7	146	77
Ireland	49	0	49	20	980	4	12	239	239
Kenya	14	0	14	20	280	34	0.4	8	8
USA	5274	608	4666	20	93320	297	18	356	315
S. Arabia	733	3300	-2567	20	-51334	25	30	596	-2087

By 2020 with the Protocol, all the countries would be spending much less, and the Saudis would still be reaping a profit of about \$2000. It seems unreasonable to suppose that people of Kenya are miserable because they manage to live on little oil, and in fact may be better prepared to meet the future than the heavy consumers. Probably, most Saudis would barely notice the difference, and even the princes would have fewer headaches worrying about their investments on Wall Street. The market may have crashed as the decline in energy supply removes the collateral for to-day's debt, which is built on the premise of perpetual growth. This line of reasoning really does throw up some curious and almost incredible conclusions, but is the logic flawed?

Interest in the Protocol, and the reasoning behind it, is gaining ground especially in the United States where one city after another begins to make Peak Oil a central tenet of its planning policy, providing a groundswell of public awareness which may eventually give the politicians the mandate for action. Let us hope that they are not too late.

778. National Petroleum Council of the USA

The National Petroleum Council of the United States under the Chairmanship of Lee Raymond, the former Chief Executive of Exxon-Mobil, has been asked by the Secretary of Energy to evaluate if oil and gas supply can meet demand. It has however diplomatically decided against evaluating the subject itself, but will rather *analyse a broad and diverse group of forecasts*. The result can only deliver a broad range reflecting the various positions of the contributors, scientific or otherwise. Whether or not it will serve any useful purpose remains to be seen, but it is nevertheless at least a step in the right direction for the subject to be addressed at all.

779. Oil Price

It would take a brave man to forecast the short term movement of oil prices, but with the US election over, it appears that the slide has been halted, which may herald the resumption of their underlying upward trajectory. At the same time, there seem to be signs of the onset of recession with the collapse of the property market in the United States and Australia and a weakening of the dollar. Recession could cut oil demand and, with it, price, even quite dramatically, giving a highly volatile market in which shrewd traders may reap huge profits.

780. ASPO 6: 6th Annual International Conference, September 2007 - Ireland

ASPO Ireland announced its plans to host ASPO 6 in Ireland next September at a press conference held in Dublin on November 28th. Speaking at the press conference, Jeremy Gilbert, president of ASPO Ireland said, "Much of the best work on future oil supply has been done here in Ireland. Ironically, Ireland may well be one of the countries which will be most affected by oil and gas supply failing to meet demand. Holding the ASPO conference in Ireland provides great opportunity for our politicians and decision makers to become better informed and to begin developing strategies for dealing with a frightening situation." Sponsored by renewable energy and waste management firm, NTR, the conference, entitled "Time to Respond?" will be held on the 17th and 18th of September 2007. Jim Barry, Group CEO of NTR today said, "I believe that Ireland is sleepwalking its way into an energy crisis. We hope this event can create more positive awareness around the need to move from fossil fuels to renewable energy for the benefit of all members of society."

Calendar - Forthcoming Conferences and Meetings

ASPO members and associates [shown in parenthesis] will be addressing the subject of Peak Oil at the following conferences and meetings. Information for inclusion in future newsletters is welcomed.

December 1 National Assembly, Korea, [Alekklett]

December 12 COFORD Forest Energy Conference, **Tullamore**, Ireland [Higgs]

2007

January 19 Lecture, Bayreuth University, **Bayreuth**, Germany [Campbell]

January 20-24 Conference, **Nairobi**, Kenya [Alekklett]

January 26 One Planet Agriculture, **Cardiff**, Wales [Campbell]

February 10 Local Community Meeting, Co. Kerry, Ireland [Campbell]

February 21 Boole Lecture, University College, **Cork** [Campbell]

May 28-30 Planning for Oil Depletion ASPO-SOUTH AFRICA Conference **Cape Town** [Ratcliffe]

September 17-18 ASPO-6 International Conference, Ireland

NOTE

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