

NEWSLETTER No. 70 – OCTOBER 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 or formation 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.***

Newsletter: The newsletter is currently compiled under the auspices of ASPO IRELAND, which maintains a full and searchable archive of past issues at www.peakoil.ie.

Foreign language editions are available as follows:

Spanish: www.crisisenergetica.org

French: www.oleocene.org (press "Newsletter")

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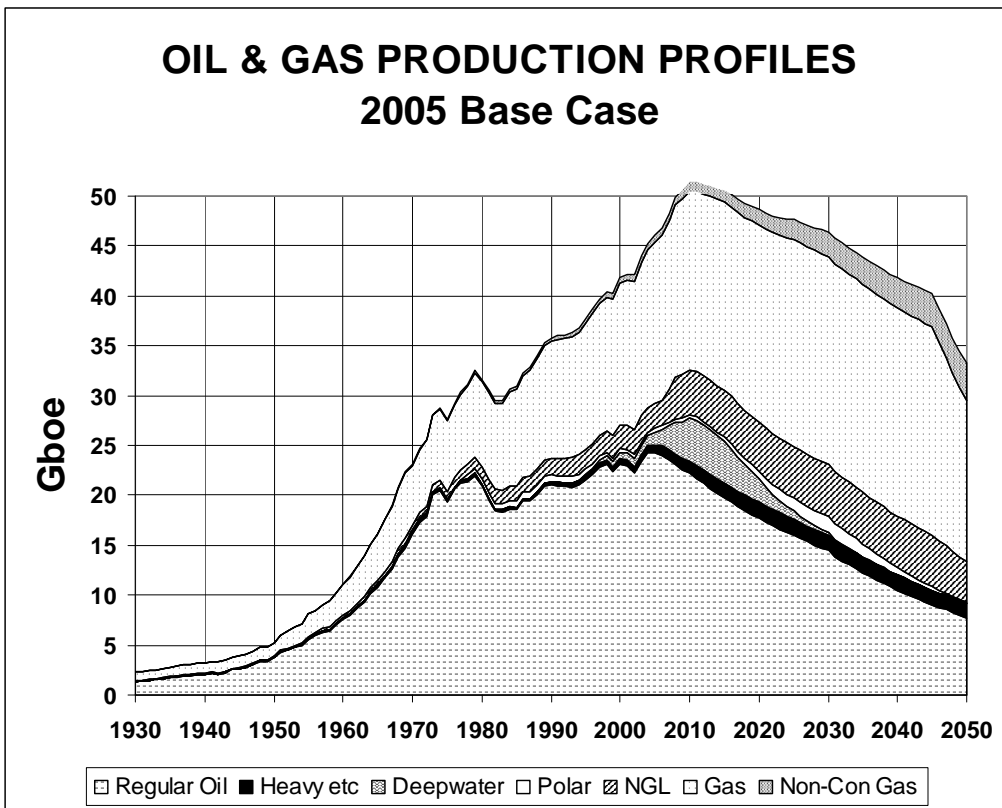
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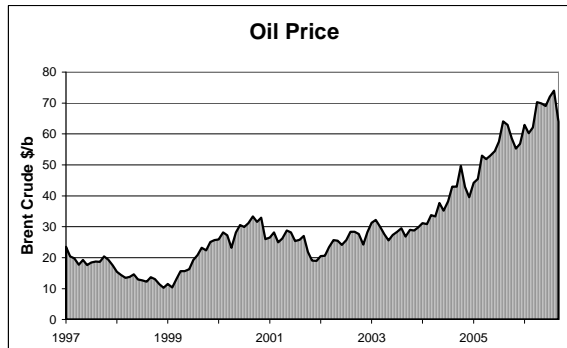
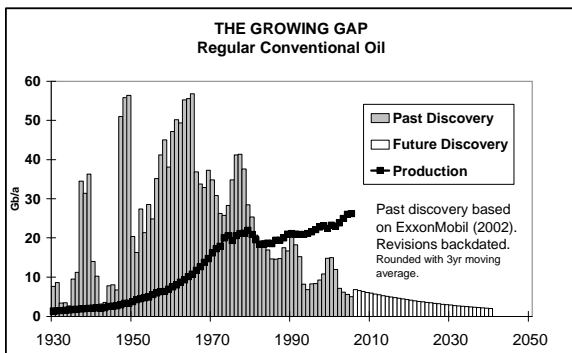
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The General Depletion Picture



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											
Known Fields	New										
967	788	145	1900								
	933										
All Liquids											
1043	1457	2500									
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



750. ASPO-USA Conference

ASPO-USA is organising a major conference in Boston on October 26th and 27th entitled *Time for Action – a Midnight Ride for Peak Oil* with an impressive list of speakers including Matt Simmons, the Houston banker, Ali Samsam Bakhtiari, an energy expert from Tehran, Richard Heinberg, author of the *Oil Depletion Protocol*, and Michael Klare, author of *Blood and Oil*, to name a few. One of its aims is to formulate a *Blueprint for Peak Oil Action*, defining survival strategies to be adopted by individuals, organisations and nations as they face the new circumstances of the Second Half of the Age of Oil. (See www.ASPO-USA.com for details).

751. European Union addresses Peak Oil

The European Union held a workshop on September 6th and 7th in Brussels to consider wide-ranging strategies in response to Peak Oil. The importance of the event was primarily in that it should have been held at all, marking a certain turning point when the unmentionable became mentionable. In the past, Governments have tended to hide behind the silken scenarios of the International Energy Agency, which, as now recognised in Brussels, are based solely on short-term economic and political considerations without addressing the impact of depletion.

The hope is that the European Union will now make a concerted systematic effort to grasp the obvious reality and collect valid information on the remaining oil and gas resources of the world, possibly using the Foreign Services of member countries to do so. Such a study would provide a clear unequivocal overall result within a matter of months, to be followed by filling in all the details which will take some more time. That in turn could provide a clear mandate for a wide range of new far-reaching policies with which to face the Second Half of the Age of Oil. It is really so simple. The European Union might be surprised at the high level of popular support it would receive for new initiatives, once people were properly informed of the situation.

An assessment of the Workshop is to be placed on the EU website. (www.ec.europa.eu/research/energy)

Perhaps the most important policy issue for the EU to address is to provide a framework to encourage towns and communities to power down their energy consumption. An excellent publication on this subject is *Energy Descent Pathways* by Rob Hopkins (www.transitionculture.org)

752. Regional Assessment - EUROPE

Last month's newsletter reviewed the Eurasia Region, and is followed this month by an assessment of western Europe.

EUROPE

The Europe Region, as defined for the purpose of this study, comprises the following countries: Austria, Belgium, Finland, France, Denmark, Germany, Greece, Ireland, Italy, Luxembourg, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom, thereby excluding countries of the former Communist bloc. All but Norway and Switzerland belong to the European Union, which is now bent on eastward expansion.

In topographic terms, the Region covers an area of 3.7 M km², ranging from the Mediterranean coasts to the Arctic wastes of northern Norway. It is washed by the Atlantic and its northerly climate has been tempered by the influence of the fluctuating Gulf Stream. It is surmounted by the mountain ranges of the Alps, Pyrenees and Appenines as well as other more ancient chains. It supports a population of 400 million with an average density of 108 per km². The fertility rate is about 1.6 children per woman, which is below replacement rate, but the population is expanding thanks to an influx of immigrants.

The Region has had a long history back to the Stone Age having been settled by various tribes migrating out of Asia, probably in response to adverse climate changes. The Greek and Roman civilisations flourished some two thousand years ago before being extinguished in the so-called Dark Ages, themselves being marked by Viking expansion from Scandinavia. Christianity came to the region early but fragmented into Catholic and Protestant factions giving rise to religious wars. Monarchy was the principal form of government although democratic processes have generally taken over during the past five hundred years.

The Region has seen wars and conflicts as kingdoms waxed and waned, but also recorded great cultural achievements in many fields from architecture to music, literature and science. The French Revolution of 1789 was an important turning point, providing the inspiration for various socialist movements intent on a fair distribution of wealth, opportunity and human dignity, which have been only recently eclipsed by commercialism and consumeristic excess, made possible in fact by an abundant flow of cheap oil and gas.

Its latter history was marked by imperialism in which European countries extended their dominion. The early empires of Spain and Portugal secured the gold and silver resources of Latin America with which to fund European wars. Napoleon sought to impose French rule on Europe itself, but faced defeat in Russia. The Dutch took South Africa and Indonesia, and French territories were acquired in Africa and Indo-China. The British Empire at its prime spanned the world. It seems that the primary imperial motive was trade and financial penetration, stimulated in latter years by the

Industrial Revolution, driven by coal-based energy allowing an expansion of manufacturing and trade. The pound sterling became world's premier trading currency delivering a massive, largely unseen, tribute to the home country.

For much of the period, Germany was made up independent kingdoms and principalities before being unified in 1871. The country was overtaking Britain as an industrial power but lacked the critical financial benefit of empire. Although there were other factors, including a response to a perceived threat of Russian expansion, it was probably these financial and commercial subtexts that led to two world wars, the demise of the British Empire and the growth of a new epoch of dollar-based American hegemony.

The Second World War was followed by the so-called Cold War in which the capitalist West confronted the Communist bloc, leaving Europe, and especially Germany divided. The European Union came into existence to reduce the risk of further internal conflict and encourage industrial co-operation, before evolving into a classic economic power, with a common currency. It now seeks imperial hegemony by eastward expansion, even wishing to incorporate Turkey, offering a bridgehead to Middle East oil. Britain somewhat hesitantly joined the Union, preferring to retain its own currency and links with the United States.

The outbreak of the so-called Third World War finds Britain and America with its troops fighting in the Middle East and Afghanistan triggering a massive negative reaction by the Moslem World, with the European Union itself taking a somewhat ambivalent position in the new geopolitical framework that has yet to define itself.

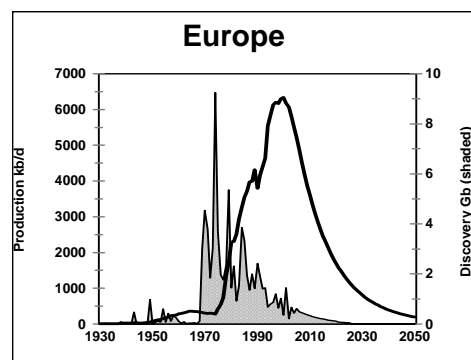
The first automobile, developed by Karl Benz in Germany, took to the road in 1882, at first using benzine distilled from coal before turning to petroleum refined from crude oil, for which it developed an unquenchable thirst. The First World War opened as plumed Uhlen lancers galloped into action but ended with oil-fuelled tank battles. The British Navy had converted to fuel oil just prior to the war, raising the issue of security of supply, which prompted the Government to take a 51% stake in the Anglo-Persian Oil Company (later BP) for access to Iranian oil. The defeat of Turkey, which had sided with Germany in the War, allowed the victorious allies to secure privileged oil rights in the new countries that arose from the ashes of the Ottoman Empire in the Middle East.

These and other developments saw the development of three major European oil companies, namely, British Petroleum (BP), Shell (Anglo-Dutch), and CFP (now Total) of France, which had a substantial position in world oil. Some exploration was conducted in Europe itself prior to, and during the Second World War, but without notable result. The turning point came in 1957 when a week-end communications failure led to the unintentional deepening of well in Holland which resulted in the unforeseen discovery of a massive gasfield at Groningen. Deeply buried coals had charged non-prospective Permian desert sandstones with gas in a process of natural coking. The same trend was then traced offshore and into British waters, yielding a series of major gas finds.

The demarcation of the territorial oil rights to the remainder of the North Sea in 1962 opened a new chapter of exploration. At first, the companies hoped to find an extension of the gas trend from Holland, but instead identified a Jurassic rift holding prolific source rocks, which has yielded a number of giant fields in British and Norwegian waters. Later exploration identified other less prolific areas off mid-Norway, in the Barents Sea and to the west of Scotland. The overall peak of oil discovery was passed in 1979, delivering a corresponding peak in production in 2000 at 6.3 Mb/d. The subsequent decline rate has been growing, currently standing at 7% a year.

While the North Sea has dominated European oil production, smaller yet locally valuable discoveries have also been made in other countries mainly onshore, as summarised in the table. Oil consumption stands at 14.1 Mb/d (12.9 Mb/a per capita). Imports at present levels of consumption are set to rise from 9 Mb/d in 2005 to 12 Mb/d by 2020, suggesting that draconian measures to cut demand are overdue.

The gas situation is more difficult to assess as the potential for new discovery is less clear, but the above table is probably a reasonable estimate in terms of order of magnitude. By far the greatest potential for new gas discovery lies in Norway, with the huge expanses of the Barents Sea being generally gas prone. Production stands at 10 Tcf/a, with the United Kingdom, Norway and the Netherlands producing some 85% of the Region's total. United Kingdom production



	Oil Production (Gb)			Total
	Past	Future		
	2005	Known Fields	New Finds	
Norway	19.5	10.5	1.0	31
UK	21.8	7.4	0.8	30
Denmark	1.75	0.97	0.5	3.2
Germany	2.00	0.40	0.1	2.5
Italy	1.00	0.85	0.2	2.0
Netherlands	0.89	0.37	0.1	1.4
France	0.75	0.20	0.1	1.0
Austria	0.80	0.12	0.1	1.0
EUROPE	48	20.7	2.9	72

	Gas Production (Tcf)			Total
	Past	Future		
	2005	Known Fields	New Finds	
Norway	38	124	23	185
Netherlands	100	61	2	163
UK	87	40	6	133
Germany	31	16	3	50
Italy	24	7.2	2	34
France	12	0.2	0.5	12
Denmark	4	2.9	0.5	8
Austria	3	1.6	0.3	5
EUROPE	300	253	38	590

is now in terminal decline at about 10% a year. Norway could support current production for many years to come, unless it should decide to build new pipelines and accelerate depletion, which would hardly be in the national interest. The Netherlands can probably maintain current levels, or a gentle decline, for a few more years. Consumption in the Region stands at 15 Tcf/a, meaning that imports, primarily from Russia and North Africa, are set to rise steeply with far-reaching geopolitical consequences.

A total of some 12 000 exploration boreholes (*wildcats*) have been drilled, reaching a peak of 394 in 1986 before declining to about 56 in 2005 underlining the obvious fact that fewer and fewer prospects remain to be tested. Extrapolating the trend suggests that successful exploration will have virtually ended by around 2020.

The choked roads and airports of Europe, not to mention its consumeristic excesses, signify that the Region faces a very serious energy situation in the years ahead (see Item 758 below). The production of indigenous oil and gas is set to decline, and rising imports will become progressively more costly and insecure. The coal industry has been run down, so the chances are that attention will turn back to nuclear energy, despite popular doubts following the Chernobyl accident. While offering no permanent solution, it could ease the transition until new sustainable life-styles can be adopted. They depend on a new regionalism and reduced immigration to allow the natural decline in fertility to deliver supportable population levels. In the face of the new circumstances characterising the Second Half of the Age of Oil, the European Union may be forced to abandon its current ambitions of eastward expansion, rampant consumerism and economic hegemony, and come to offer a new benign cohesion for local communities and regional markets.

753. Oil Depletion Protocol

As is well known, world oil statistics are seriously unreliable in many countries, being subject to ambiguous definitions and misunderstood reporting practices. If we identify, for example, what has been called *Regular Conventional Oil*, we might conclude that in 2005 the World produced 24.2 Gb (billion barrels) and that at the end of 2004 there were about 933 Gb left to produce (788 Gb in known fields and 145 Gb yet-to-be found), giving a Depletion Rate was 2.5% (annual production as a percent of what is left.)

An alternative estimate, taking for example the estimate of 1200 Gb in known fields (as reported in the BP Statistical Review and, say, 200 Yet-to-Find based on the USGS High Probability Case of 1995) delivers a Depletion Rate of 1.7%.

If the world leaders were to sit around a table and negotiate a compromise they might agree a rounded 2%. If meanwhile they had read Richard Heinberg's new book *The Oil Depletion Protocol – A Plan to avert oil wars, terrorism and economic collapse* (ISBN-10 0-86571-563-7) they might see merit in agreeing a Protocol whereby importers would cut imports of oil by 2% a year. Naturally the calculations could be reviewed each year, hopefully as better information permeates through the barriers of the sundry vested interests seeking to obscure the reality.

Further details could of course be negotiated whereby for example the indigenous production of an importing country would be deducted from its import allowance, because at the end of the day it is consumption that matters. Adopting the Protocol would put world demand roughly in balance with supply, which would presumably reduce the world price of oil, preventing profiteering from shortage and the massive flood of false petrodollar liquidity, which undermines financial stability. The Middle East countries would benefit because no one would have a motive to invade and interfere, and the poor countries of the world would find it easier to afford their minimal needs.

The importing countries could manage their allowance as they wished. Those with a market mentality could sell it to the highest bidder, further impoverishing the poor; others might introduce a ration; and some might find a happy compromise. But however they did it, they would be moving in the right direction, preparing for the inevitable decline in oil supply as imposed by Nature. The main thrust would have to be a turn to the full spectrum of renewable energies, cutting waste and improving efficiency, with a revival of coal mining and nuclear energy to ease the transition despite associated environmental risks. Clearly there would be huge social and political implications, and some political parties would find themselves ahead or behind the evolving new priorities. Not all countries would co-operate, but it would not matter because those that adopted such policies would soon find themselves better prepared and enjoying competitive advantage.

While the chance of world leaders actually adopting such a simple and workable solution is probably negligible, the idea remains a valid one worthy of consideration by those having an interest in the future.

754. Oil Price

Oil prices have weakened by about 15% over the past month, although strengthening at its end : news that will no doubt be greeted with cheers by the flat-earth community. Since the fundamentals have not changed in any material way, one must suppose that the fall has been occasioned by short-term seasonal and speculative pressures. There are many possible causes: the summer driving season is over; a feared hurricane did not strike the United States; financial operators may be selling positions to provide good news prior to

the mid-term elections in the United States; a deepwater discovery in the Gulf of Mexico in May has been belatedly announced; the US Government has announced that it will use strategic stocks to counter speculation; new security measures may have reduced air travel, cutting the consumption of aviation fuel. Beyond these factors, recession induced by the high prices may be beginning to set in, dampening demand. Furthermore, the flood of new petrodollar liquidity pumped into the system by the Middle East, which is profiteering from shortage to the tune of \$60-\$70 a barrel, may have artificially propped up markets but has now run its course. Lastly, to be cynical, if a threatened US attack on Iran should take place just before the mid-term elections to rally the nation to its President and his party, traders in the know could be talking down the price to make a killing when prices soar after the attack. Apparently, a naval task force led by the carrier *Eisenhower* is due to arrive off the Iranian coast by October 21st, suggesting that this might indeed be a golden moment to buy oil futures.

The explanation is obscure but, conspiracy theories apart, the downturn may reflect the opening of the anticipated period of volatility following Peak Oil made up of price shock – recession – price collapse – economic recovery – price shock as the falling productive capacity limits are successively breached.

755. Discovery so far in 2006

The Offshore Journal has collected information on discoveries this year through June. They amount to the following:

In less than 500m water depth : 25 discoveries totalling 0.87 Gb of oil and 6.8 Tcf of gas

In 500-1500m of water : 8 discoveries totalling 0.75 Gb and 0.93 Tcf of gas

In more than 1500m of water : 7 discoveries totalling 1.6 Gb of oil and 2 Tcf of gas

So, the total amounts to 3.2 Gb of oil and 9.7 Tcf of gas of which only 1.6 Gb qualifies as *Regular Conventional Oil*. Discovery continues to run far below consumption, with the shortfall in gas being particularly noteworthy.

An large earlier discovery by Chevron, known as the Jack Field, lying at a depth of over 28 000 feet under 7000 feet of water in the Gulf of Mexico, has been announced. It represents a remarkable technological achievement but at the same time reflects the extreme desperation of the industry, evidently having little easier left to test. This achievement contrasts with BP's experience at Thunder Horse field in the Gulf of Mexico, where the wellhead manifold failed under pressure testing, delaying the development by more than a year. Poor Lord Browne, the CEO, who was once the darling of the stockmarket, has evidently miss-timed his retirement, as his company faces not only this setback but rusting pipes in Alaska and the opprobrium of an audit into irregularities in product pricing.

756. Russia puts pressure on foreign companies

Several major companies took positions in the mid-1990s to develop a promising area off Sakhalin on Russia's Pacific coast under Production Sharing Contracts, whereby the companies are entitled to recover their costs from a share of the production, such that, within limits, the greater the cost the more oil they can take. Costs cover direct operating costs; general and administrative costs, which often include allocated charges from home offices, regional offices and research establishments; and financial depreciation, interest charges and so forth. Some of these charges only peripherally relate to the operation itself. The main projects are Sakhalin I (Exxon-Mobil, Rosneft, ONGS) with 2.5 Gb of oil and 17 Tcf of gas; Sakhalin II (Shell, Mitsubishi, Mitsui) with 1.2 Gb of oil and 18 Tcf of gas; and Kharyaga (Total, Norsk Hydro, Nenets) with 420 Mb of oil.

The Russian Government is understandably reacting to cost-overruns on these projects which reduce its share of the proceeds, and is seeking to renegotiate. A Shell spokesman has rather lamely responded with the claim that it has brought technology new to Russia in the form of an offshore drilling rig.

It seems clear that more and more countries will try to preserve their oil and gas resources for internal use as they begin to appreciate the impact of depletion.

757. Worries in the Tar-belt

The current weakness in oil price is causing concern in the tar-belt of Canada. Apparently, the tarsand operations have reached an extreme, facing shortages of steel, equipment and workers, now numbering 20,000 and expected to double by 2008, some of whom who are already having to commute by air from Montreal. Costs are soaring. Shell for example has announced that a planned expansion could now cost \$12.8 billion, double the estimate of a year ago, while TOTAL announces a delay in production start-up from 2010 to 2013.

As discussed in Item 754, it is likely that the world enters an epoch of volatile oil prices in a market that

over-reacts to small imbalances between shortage and surplus. Such an environment is not conducive to the orderly development of their capital intensive tar-sands, but may well make fortunes for astute traders.

758. Mr Blair Speaks of an Energy Crisis

Mr Blair, the British Prime Minister, who is somewhat reluctantly about to step down, has informed his party of a looming energy crisis as follows:

“The scale of the challenges now dwarf what we faced in 1997. They are different, deeper, bigger, hammered out on the anvil of forces, global in nature, sweeping the world. Ten years ago energy was n’t on the agenda. Ten years ago I parked the issue of nuclear power. Today, I believe without it, we are going to face an energy crisis, and we can’t let that happen.....Scarce energy resources mean rising prices that will threaten our country’s economy. In 15 years we will go from 80% self-sufficient in oil and gas to 80% imported.

We need, therefore, the most radical overhaul of energy policy since the war. We will increase the amount of energy from renewable sources five-fold; ensure every major business in the country has responsibility for greenhouse gas reduction; treble investment in clean technology including clean coal; and make sure that every new home is at least 40 per cent more energy efficient”

It is evident that the nuclear option was far from the preferred policy having been *parked*, implying that its re-birth springs from a realisation the depletion of the country’s oil and gas. The Prime Minister’s belated recognition of the energy situation is both noteworthy and laudable, while his policies fail to earn marks for foresight, given that the peak of oil discovery in Britain in 1974 was inevitably bound to deliver a subsequent corresponding peak of production.

The October issue of the prestigious *Petroleum Review*, representing the oil industry in Britain, echoes these concerns dedicating coverage to depletion issues. It includes a supplement on *Future Fuels* covering biofuels and energy efficient vehicles. While some oil companies try to earn haloes by depicting themselves as guardians of the environment, their new direction is in fact a response to raw necessity imposed by the natural depletion of oil and gas.

759. ASPO Canada

The Hon. Ed. Schreyer, the former Governor General of Canada, announces the successful formation of ASPO-Canada with a founding board of twelve members with long standing reputations from across the country. (Contact:erschreyer@shaw.ca)

760. Life after Oil

The Schumacher College near Totnes in England is running the following course
(www.schumachercollege.org.uk.)

LIFE AFTER OIL - BREAKING THE HABIT

David Fleming, Ron Oxburgh, Michael Meacher, Rob Hopkins & Richard Heinberg

November 12-24, 2006

Many geologists, civil servants and industry experts are united in the view that the day the oil wells run dry is a lot closer than some think. Questions such as how did we become addicted to oil, and how can we redesign our society to free ourselves from oil dependence will be examined and discussed in this course.

David Fleming will review the evidence of a growing gap between energy sources and future needs. There will be an opportunity to imagine society, economy and culture in a life beyond oil dependency. Ron Oxburgh will offer his wealth of experience in the oil industry to guide an exploration of the path to a non-fossil fuel economy.

Michael Meacher will explore the political dimensions of life with oil and after oil. He will draw from his first hand experience of UK and international governance, and in particular will discuss the pros and cons of the nuclear option for reducing carbon emissions.

Local activist Rob Hopkins will join the course for a day to talk about the practical realities of helping communities find their way to a sustainable post-oil way of life.

Richard Heinberg will discuss how oil and war have been closely related for the past century as well as the degree to which energy alternatives can compensate for our dependency on fossil fuels.

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.

October 4 th	Hamilton College, Bandon , Ireland [Campbell]
October 26-27	ASPO-USA Peak Oil Conference, Boston , USA [various]
Oct 30 – Nov 3	South Africa [Laherrère]
October 31	Energy & Environment, Shijizhang , China [Alekklett]
November 4	Univ. of Petroleum, Beijing , China [Alekklett]
November 7	Oil Depletion. Inst. Energy, London [Bentley, Skrebowski]
November 13-14	Oil Conference, Kuwait [Alekklett]
November 20-21	Conference, Groningen , Netherlands [Alekklett]
November 26-28	8 th SEGJ Int. Symposium, Kyoto , Japan [Alekklett]
November 27	Securing Our Energy Future, Edinburgh [Low]
November 27	Peak Oil Debate, Limerick University, Limerick , Ireland [Campbell]
November 29	Industry Leaders, Kyoto , Japan [Alekklett]
November 30	Seoul Nat. University, Seoul , Korea [Alekklett]
November 30	Air Transport & Energy Challenge, Toulouse , France, [Bauquis]
December 1	National Assembly, Korea, [Alekklett]
2007	
January 18	Lecture, Bayreuth University, Bayreuth , Germany [Campbell]
January 20-24	Conference, Nairobi , Kenya [Alekklett]
January 26	One Planet Agriculture, Cardiff , Wales [Campbell]
February 21 st	Boole Lecture, University College, Cork [Campbell]
September	ASPO-6 International Conference, Galway , Ireland