

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

**NEWSLETTER No. 59 – NOVEMBER 2005**

**ASPO is 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. Independent national affiliates are in existence or formation in Australia, Canada, France, Germany, Ireland, Italy, Netherlands, New Zealand, Portugal, South Africa, Spain, Sweden, 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](http://www.peakoil.ie).

Foreign language editions are available as follows:

Spanish: [www.crisisenergetica.org](http://www.crisisenergetica.org)

French: [www.oleocene.org](http://www.oleocene.org) (press “Newsletter”)

Newsletter communications should be addressed to ASPO IRELAND at [www.peakoil.ie](http://www.peakoil.ie)

**CONTENT**

- 625. The Energy Cost of Agriculture***
- 626. Returning BP’s challenge***
- 627. President Chavez recognises Peak Oil***
- 628. The Age of Oil***
- 629. Country Assessment – Chad***
- 630. Describing the Past is easier than Forecasting the Future***
- 631. The Chimera of Oil Shale***
- 632. New books***
- 633. Expansion of ASPO***
- 634. Waking up to Peak Oil***
- 635. Database***

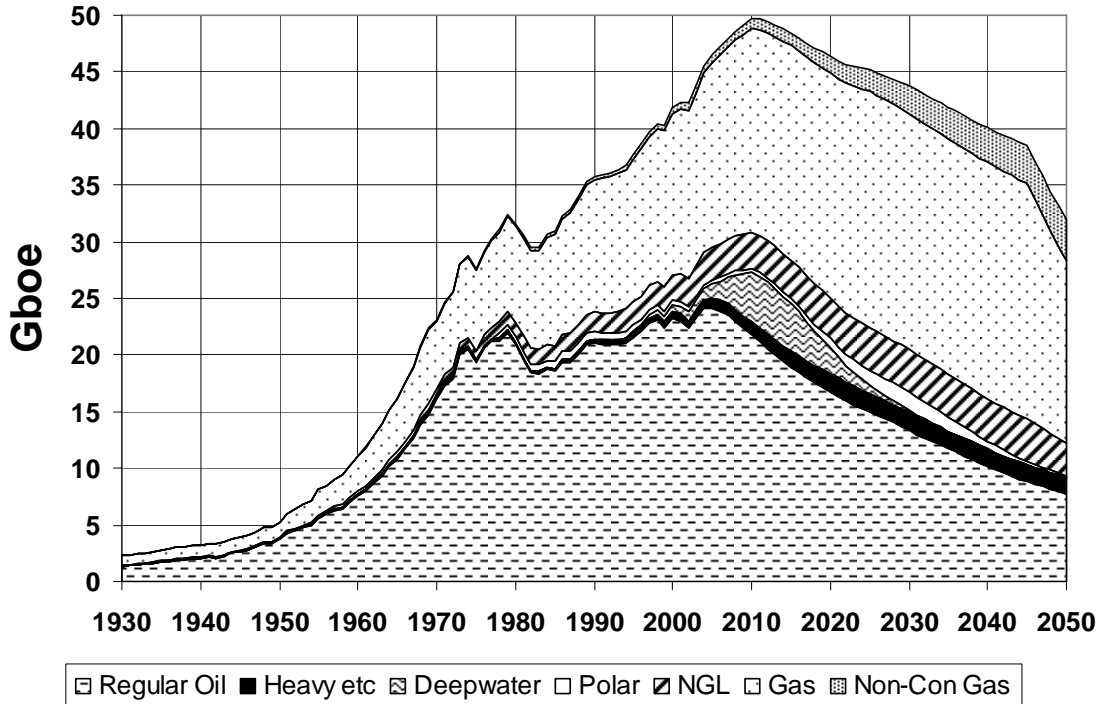
***Calendar of Forthcoming Conferences and Meetings***

**Index of Country Assessments with Newsletter Reference**

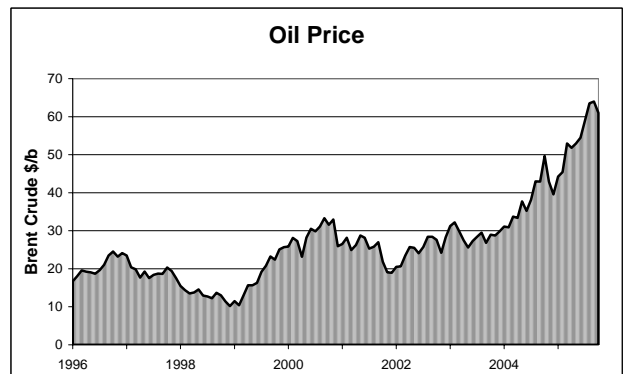
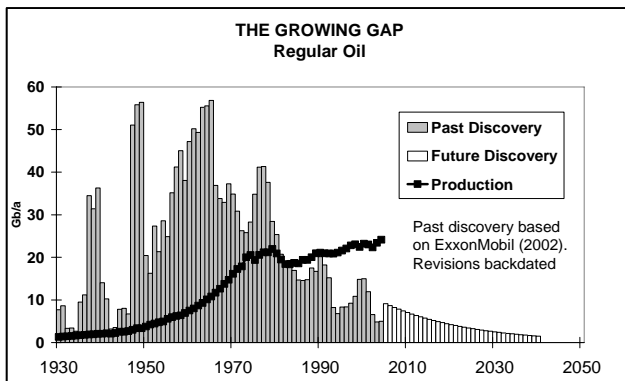
Abu Dhabi	42	Canada	48	Indonesia	18	Netherlands	57	S. Arabia	21
Algeria	41	Chad	59	Iran	32	Nigeria	27	Trinidad	37
Angola	36	China	40	Iraq	24	Norway	25	Turkey	46
Argentina	33	Colombia	19	Italy	43	Oman	39	UK	20
Australia	28	Denmark	47	Kazakhstan	49	Peru	45	USA	23
Azerbaijan	44	Ecuador	29	Kuwait	38	Qatar	58	Venezuela	22
Bolivia	56	Egypt	30	Libya	34	Romania	55	Vietnam	53
Brasil	26	Gabon	50	Malaysia	51	Russia	31		
Brunei	54	India	52	Mexico	35	Syria	17		

*The General Depletion Picture*

## OIL & GAS PRODUCTION PROFILES 2004 Base Case



ESTIMATED PRODUCTION TO 2100								End 2004		
Amount			Annual Rate - Regular Oil					Gb	Peak	
Regular Oil			Mb/d	2000	2005	2010	2020	2050	Total	Date
Past	Future	Total	USA	4.5	3.4	2.7	1.7	0.4	200	1971
Known Fields	New		Europe	6.3	5.2	3.7	1.9	0.3	75	2000
945	775	130	Russia	6.3	9.1	8.4	5.4	1.5	220	1987
	905		ME Gulf	19	20	20	20	12	680	1974
All Liquids			Other	28	28	25	17	7	675	2004
1040	1360	2400	<b>World</b>	<b>64</b>	<b>66</b>	<b>60</b>	<b>46</b>	<b>21</b>	<b>1850</b>	<b>2004</b>
<b>2004 Base Scenario</b>			<b>Annual Rate - Other</b>							
M.East producing at capacity (anomalous reporting corrected)			Heavy etc.	1.7	2.3	3	4	4	151	2021
Regular Oil excludes oil from coal, shale, bitumen, heavy, deepwater, polar & gasfield NGL			Deepwater	1.6	3.6	12	6	0	69	2011
			Polar	1.0	0.9	1	2	0	52	2030
			Gas Liquid	6.3	8.0	9	10	8	276	2035
			Rounding			0	1	2	2	
Revised	26/09/2005		<b>ALL</b>	<b>74</b>	<b>81</b>	<b>85</b>	<b>70</b>	<b>35</b>	<b>2400</b>	<b>2010</b>



## 625. *The Energy Cost of Agriculture*

Agriculture uses a great deal of oil and gas to fuel the tractor, transport the produce, provide pesticides, synthetic nutrients and pump irrigation water. The soaring cost of energy is having a particular impact on US wheat farmers. The country used to be the bread-basket of the World but becomes a net importer.

It is not however as simple as it seems because the high price of oil and gas is mainly profiteering from shortage, as actual production costs have not changed materially. The money secured from profiteering flows back into a world economy to the benefit of those that control the financial system and world trading currency. Hamburgers may still be on sale if US agriculture declines, but fewer people elsewhere will be able to eat.

### The growing cost of growing wheat

#### By Andy Porter of the Union-Bulletin

Nobody's called it a 'perfect storm,' yet. But between rocketing costs for fuel and fertilizer, low prices for their crop, increased shipping surcharges and worries over whether this will be another dry winter, local wheat farmers say the future is looking pretty grim these days.

'I'm not sure anyone is aware of it, but energy prices are quickly making the continuation of wheat farming questionable unless something begins to change soon,' said Walla Walla County farmer Nat Webb.

Over a relatively short period of time, fuel prices have tripled and the cost of fertilizer has doubled, Webb and others said. At the same time, the price for soft white wheat, the type which accounts for 88 percent of the wheat grown in Washington state, is hovering slightly above \$3 a bushel, 'a 20-year low,' said Harold Cochran, former national legislative chairman for the Washington Association of Wheat Growers.

The bottom line, as Washington State University farm management specialist Herb Hinman said, is the rising prices are 'cutting into (farmers') profit margins, and a lot of these guys are operating on a pretty thin profit.' Fuel and fertilizer are two constants all farmers have to deal with year in and year out, Cochran said, and lately 'our core costs of production have gone up dramatically.'

'Three years ago I paid 80 cents a gallon (for diesel) and now I'm paying \$2.60 a gallon,' Cochran said. 'Fertilizer has gone from 17 cents a pound to 37 cents a pound, which has more than doubled in the past year. 'We've had incremental inflation for years, but when things are doubling and tripling all of a sudden, there's nowhere to turn,' Cochran said

On his farm, Webb said tractors consume between 70 to 100 gallons of diesel per day and a combine can consume about 100 gallons a day. 'Energy costs that were once one of our lesser expenses have become a major item and threaten our ability to continue farming,' he said.

Brad Tompkins, past chairman of the Washington Wheat Commission, said fuel and fertilizer prices 'are weighing on everyone's mind.' 'We're having to watch diesel fuel like the futures market...call one day and you get one (price), call the next and you get another,' he said. The price for fertilizer, particularly anhydrous ammonia, which is widely used by growers in this region, has also climbed.

'Fertilizer prices are almost double what they used to be...it's a pretty sad situation,' said Jack DeWitt, past president of the Washington Wheat Growers Association. His son, Jay DeWitt, voiced similar concerns. 'I guess the worst part of the problem for me is the natural gas prices. Nitrogen fertilizer is my number one expense item, (and) it's more than doubled over the past 30 months,' he said.

To cope with the increases, DeWitt said, 'we're having to make very serious and uncomfortable adjustments' in how we farm, most immediately in the crop and rotation patterns.

'What we like to do is grow wheat every two years, but the economics have changed to the point where that's almost impossible,' he said. Consequently, we are looking to change to other crops, such as dried peas 'and we're using summer fallow, and I haven't had that on my farm in 15 years.'

For farmers who use anhydrous ammonia to fertilize their fields, the reason behind the price increases lies in the price of natural gas, which is used to make the fertilizer, Webb and others said. 'Just prior to (Hurricane) Katrina we received a price increase of about \$40 per ton,' Webb noted. 'After Katrina came another price hike of (more than) \$100 a ton.' In addition, the timing of the increases has hit some farmers particularly hard 'In past years this wouldn't have had the impact that it has now since most of the fertilizing for next year's crop would have been completed,' Webb said. 'However, with the advent of no-till seeding, the fertilizer is applied with the seed, so much of the fertilizer hasn't yet been applied. Any cost savings generated by no-till seeding have just been eaten up by the effects Katrina had on fertilizer prices.' The uncertainty over costs and worry about weather are also coming at a time when farmers are trying to draw up their budgets and arrange lines of credit for next year's crop, said Mark Grant, manager of the Bank of Whitman in Walla Walla. 'Basically, fuel is up and people are going to have to budget 100 percent more than last year, and they pay sales tax on top of that,' Grant said. But the biggest worry for farmers, Grant said, is 'the moisture is gone.'

Two successive dry winters have left soil moisture levels extremely low. In northern Walla Walla County, where Tompkins farms, 'we have the lowest soil moisture samples I've ever seen.' 'What we're seeding into right now, researchers would say there's not enough (moisture) to grow...so if we don't get

decent rains this winter, we're in trouble,' Tompkins said. According to the National Weather Service's Climate Prediction Center, at present there is no clear indication of how much precipitation to expect over the next three months. While forecasts predict below-normal precipitation in the southwestern United States, the seasonal forecast gives the Pacific Northwest equal chances of above-normal, normal or below-normal precipitation in the coming three months. But if the latter situation plays out, another drought year could be the proverbial last straw for farmers who are now just scraping by. Or, as Jeff Emtman, president of the Washington Association of Wheat Growers said, ``People are going to be lucky to break even, and those who don't might go under.'

### 626. *Returning BP's challenge*

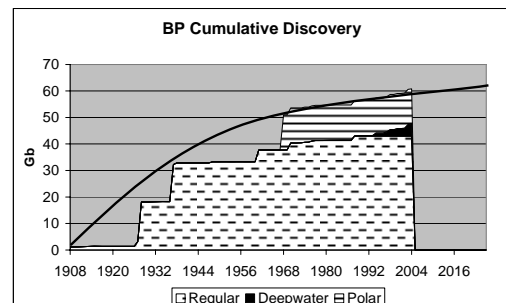
Lord Browne, the Chief Executive of BP, is known for his rejection of oil and gas depletion, being on record as saying that he sees his mission as to achieve the impossible. His views are amply confirmed by the following extract from a recent speech to the World Petroleum Congress in South Africa. While he is not necessarily informed about the world discovery record, as for example published by Exxon (see Page 2) , he should at least be able to find out how much his own company has found over the past Century.

He speaks of the challenge to prove those who recognise Peak Oil to be wrong. We therefore would like to return the challenge and invite him to publish a graph depicting BP's discovery by new field wildcat of oil (plus condensate) and gas for the onshore, offshore, deepwater (>500m) and polar domains. Any reserve revisions are to be backdated to the discovery of the fields concerned in order to obtain a valid discovery trend. If it is too much trouble to check all the records, it would suffice to show just the results of BP-operated ventures, showing BP's net share thereof.

"Those are the reasons why people are concerned. Why people are talking about the end of oil. The challenge for the industry, for all of us, is to prove them wrong. It is our industry and we can't expect anyone else to do the job for us. And I believe we can prove them wrong.

"First we can explain very clearly the reality which is well known to everyone in this room. The world isn't running out of oil. There is no physical shortage of oil or gas. There are decades of booked reserves of both oil and natural gas and even more yet to be found. And there are huge volumes of heavy oil - in Canada and Venezuela - which are identified and which have yet to be developed."

"Secondly we can bring that oil to market at a reasonable cost - a cost well below the current market price. And the industry is investing to do just that. The 1990s were a period of relatively low investment – for the simple reason that prices were low and cash flow was limited. But that began to change with the turn of the century. The underpinning of prices from 2000 onwards has increased the funds available and the industry has responded by increasing investment. BP alone has invested \$ 50 bn upstream since 2000. In places, such as Russia, Angola, Trinidad, in the deep water of the Gulf of Mexico, in Algeria and in the Caspian. The industry has also invested in the continuous improvement of the refining business - upgrading capacity and ensuring that there is sufficient refining capability to meet the changing and growing needs of the market."



We don't have good information on BP's discovery record but suppose that the record would look something like the attached graph, which depicts the total size of the main identified BP operated oil discoveries. It would make better sense to report the BP net holding, deducting the partner interests, which would probably show a greater flattening since most discoveries over the past 50 years have been in joint ventures. The plot excludes reserves from acquisition or merger, which cannot be treated as discovery as such. Evidently, BP has mounted a fairly successful deepwater campaign, which is probably now passing its prime, but does not appear to have been able to replace its *Regular Conventional* reserves by new discovery. We stand to be corrected if granted access to better information.

### 627. *President Chavez recognises Peak Oil*

In a brilliant speech to the United Nation's 60<sup>th</sup> Assembly, President Chavez of Venezuela referred to Resolution 2021 of 1974 which called for a *New Economic Order* that would respect "equity, sovereign equality, interdependence, common interest and cooperation....." the main goal being to update the Breton Woods financial arrangements. He went on to call for a *New Political Order* to protect sovereign states from economic imperialism and pre-emptive warfare. He logically expressed the view that the United Nations had failed because the invasion of Iraq was undertaken without its approval, suggesting that it should

be re-located in an “international city”. Apparently, Simon Bolivar, the Liberator of South America, had already proposed such model in 1815. He called for a reorganisation of the United Nations, and for the Security Council to be more representative, rejecting the precepts of economic globalism so that individual countries might better manage their own affairs, while cooperating in such matters as climate change.

He tellingly went on to state “we are facing an unprecedented energy crisis .....oil is starting to become exhausted”.

He spoke of the achievements of Venezuela in terms of better health care and education, which he said had been achieved despite an attempted coup d’etat orchestrated by Washington. He lamented that a prominent figure, Pat Robertson, who he said was close to the White House, should be free to call for the assassination of the President of Venezuela, describing it as international terrorism.

Not surprisingly, he is liquidating Venezuela’s dollar reserves, having already converted some \$20 billion into euros. Meanwhile, at home, Chavez is bent on a socialist policy of redistributing land to the poor and expropriating foreign enterprises, while at the same time offering 196 000 b/d to countries in the Caribbean region on favourable terms. He is also cementing an oil alliance with Brasil and Argentina, to which may soon be added Colombia, Ecuador, Peru and Bolivia. These countries will increasingly depend on imports from Venezuela as their own production declines, making good sense of the arrangement.

see <http://www.rethinkvenezuela.com/news/unspeech2.html> (Reference furnished by Thomas Lébault)

President Chavez was still more explicit at a later conference, as the following report from Associated Press confirms:

Venezuelan President Hugo Chavez said Saturday that the world faces an energy crisis but there is little chance of his country and other OPEC members increasing production because they are already pumping near “their capacity”.

“The world will have to get used to a barrel price, I think, of above \$50, and energy will have to be saved”, he told reporters as leaders from Spanish-and Portuguese-speaking countries met in this central Spanish town.

After soaring in August, crude oil prices have been between \$60 and \$70 a barrel for more than a month. “We’re at the doorway of major energy crisis worldwide”, Chavez said.

“We’ll have to develop other resources such as wind, solar and nuclear energy - naturally for peaceful purposes”. He said Venezuela was in talks with Argentina and Brazil regarding nuclear power.

“Prices will continue to rise but oil is running out”, he said. Chavez said a “lack of imagination in the United States and the war in Iraq, which has destabilized the market in the Middle East, has also driven up prices”. Increased demand from countries such as China and India is making the problem worse, he said.

“The whole world right now is producing petroleum at their maximum capacity”, he said. “In Venezuela, for example, we can’t produce a single barrel more”. Venezuela, a member of Organization of Petroleum Exporting Countries, is the world’s fifth largest oil exporter and a major supplier to the US market. Venezuela’s state oil company, Petroleos de Venezuela, says it pumps 3.2 million barrels of crude oil a day. But industry analysts put the figure lower, saying the country has never fully restored output since an extended strike in 2003 that sought to force Chavez’s resignation.

Increased production would not solve the price problem, Chavez said. “The cause of the increase in the price is not in the production. It’s partly the intermediaries who make things dearer. It’s also because of the increase in demand and the irrational capitalist consumerism model”, he said. “The United States for example, with scarcely five percent of the world’s population, uses almost 25 percent of the petroleum and combustion fuels produced in the world”, he said.

Copyright 2005 The Associated Press. All rights reserved.

[http://news.yahoo.com/s/ap/20051015/ap\\_on\\_bi\\_ge/spain\\_chavez\\_oil](http://news.yahoo.com/s/ap/20051015/ap_on_bi_ge/spain_chavez_oil)

(Reference furnished by Prof. Rui Rosa)

## **628. The Age of Oil**

The Sunday Times of October 16<sup>th</sup> carries an impressive article entitled *Waiting for the Lights to Go Out* that reviews the remarkable attributes of the brief age of oil. It ends with the comment “*our two sunny centuries of growth may end in a new Dark Age*”. But unfortunately, like many, it confuses running out with peak, mistakenly quoting Uppsala University as saying that oil will start to run out in ten years. Oil started running out when the first barrel was produced. The date of peak itself is substantially irrelevant, as it is not a high peak: what matters is the view of the long slope that opens after it.

### 629. Country Assessment – Chad

Chad is a landlocked country, covering some 1.2 million km<sup>2</sup> in the heart of Africa. In physiographic terms, it forms a large basin surrounded by the Tibesti Massif to the north, rising to over 3000m, and other high plateaux to the south and east. Lake Chad, in the southwest, is a prominent feature. In the past, this lake was much larger than at present, being over 150m deep, and emptying over impressive falls into the Benue River, which runs westward to the Atlantic. To-day, its level fluctuates greatly with climatic changes, and almost dried up in droughts during the 1970s and 1980s.

The population of 9.4 million comprises many different tribal groups of mixed African and Arabic origins, speaking a range of local languages. In earlier times, the country lay at the southern end of a trans-Saharan trade route leading to Tripoli on the Mediterranean, which was partly used for the slave trade. The territory fell within the French sphere of interest during the early years of the 20<sup>th</sup> Century, being incorporated into the Federation of French Equatorial Africa in 1910, before becoming an overseas territory of the French Republic in 1947.

A degree of independence was achieved in 1957 under a West Indian immigrant, named Gabriel Lisette; with full independence following in 1960. Years of conflict followed between rival partly tribal movements, reflecting tensions between the Muslim north, backed by Libya, which physically intervened from time to time, and the more Christian south. A civil war in 1990 led to a new government under Lt. General Idriss Déby, who remains in power to this day as Head of State.

Most of the population, who are amongst the World's poorest, rely on barely subsistence farming and cattle-raising. The country now faces the added burden of being host to some 200 000 refugees from the Dhofar region of neighbouring Sudan following recent tensions there.

It does not represent obvious oil territory in geographic, geological or political terms, but nevertheless Conoco did mount an exploration campaign in the 1970s, possibly at the instigation of the US government, wishing to counter Libyan pressure. It found that the territory lay on a system of rifts and transcurrent faults, which are associated with the major plate boundary that cut the great Southern Continent (Pangaia), before the opening of the South Atlantic. It formed the lines of weakness followed by the Niger and Amazon Rivers. Evidently, algae proliferated in these opening rifts during the Cretaceous, providing the organic material that was locally buried and preserved sufficiently to become hydrocarbon source rocks. The prime reservoirs are of Cretaceous age, but the conditions of entrapment are complex due to late fault movements and structural inversions.

Conoco later withdrew, and its place was taken by Chevron, Exxon, Total and other companies, being partly funded by the World Bank. Some 50 wildcat wells have been drilled so far, finding a total of about 1.2 Gb of oil, some of which is partly degraded with a gravity of 20° API. Most lies in three fields, Bolombo, Kombe, and Miandoum, in the southwest corner of the country.

A 1000 km pipeline, costing \$3.7 billion, has been constructed to Kribi on the coast of the Cameroons, where it is transhipped to a floating loading facility, 11 kms offshore. The pipeline with a capacity of 250 kb/d was completed in 2005, allowing exports to commence. Further exploration is likely to be stimulated by the opening of the pipeline, and is here expected to yield another 700 Mb of new discovery, with the drilling of some twenty wildcats.

Production commenced in 2003 and is expected to reach a plateau of 250 kb/d, the limit of the pipeline, and continue at this level to 2010 before declining at about 6% a year.

Chad will enjoy a brief epoch of relative prosperity on the strength of the new oil revenues, but this may serve to fuel the ambitions of the varied political factions in the country leading to further tensions, as has been the experience in other African countries. It is evident that the Cameroons, if not factions within it, exert a certain stranglehold on the country by controlling the export pipeline. The US troops protecting it may find themselves fully occupied.

<b>CHAD</b>		<i>Regular Oil</i>
<b>Population M</b>		9
<b>Rates Mb/d</b>		
Consumption	2004	0.002
per capita b/a		0.1
Production	2004	0.25
	Forecast 2010	0.25
	Forecast 2020	0.13
Discovery 5-yr average Gb		0.001
<b>Amounts Gb</b>		
Past Production		0.13
Reported <i>Proved Reserves*</i>		-
Future Production - total		1.87
From Known Fields		1.2
From New Fields		0.7
Past and Future Production		2.0
Current Depletion Rate		4.6%
Depletion Midpoint Date		2014
Peak Discovery Date		1977
Peak Production Date		2008

\*Oil & Gas Journal

As the Century passes, life in Chad will likely revert to its historical subsistence agriculture with a declining population facing disease, malnutrition, Aids and tribal warfare, especially if the climate should change for the worse as seems to be happening. *(Geological insight from Walter Ziegler)*

### **630. Describing the Past is easier than Forecasting the Future**

Daniel Yergin deserves every accolade for his book *The Prize*, which was a brilliant history of the oil business, published in 1991, but it seems that the recent forecasts by his company, CERA, may be less commendable. It claims that as much as 16 Mb/d of additional production capacity will be added by 2010, but the *Petroleum Review* (Oct 2005) points out that this will be largely offset by a comparable decline in existing fields, many of which have long since passed their prime. The listing of so-called mega projects by the *Petroleum Review* does provide a valuable database, compiled from close contacts with the industry.

Careful reading of the CERA report, including often key footnotes and qualifiers, gives the impression that it was constructed to deliver a desired conclusion rather than being an objective scientific analysis. This is doubling worrying as the company has been acquired by IHS, the successor to Petroconsultants, which did in earlier years co-operate closely with the international oil companies to provide a reliable industry database. The task has evidently become more difficult as the subject grows in sensitivity.

### **631. The Chimera of Oil Shale**

ASPO-USA has put out an excellent paper on Oil Shale yet again demonstrating the low net-energy yield and environmental costs of this material. Oil "shale" is not really shale in a geological sense, but an organic-rich claystone. It would have been a normal hydrocarbon source-rock had it been heated sufficiently by the earth's heat-flow to convert the organic material into oil. It is easy to understand how retorting this material uses almost as much energy if not more than it delivers. Furthermore, the fine-grained toxic residue carries high environmental costs. Various projects have been attempted over the years, some with government subsidy, but all have come to naught. Shell, which is already in dire need of reserves, having had to downgrade its normal reserves, is apparently looking again at shale oil in the United States demonstrating just how desperate its position is. The project apparently would require a massive coal-fired electricity generating plant, emphasising the low net energy yield. See [www.aspo-usa.com](http://www.aspo-usa.com)

### **632. New books**

Four new books on the Peak Oil issue have appeared:

1) *Half Gone : Hot Air and the Global Energy Crisis* by Jeremy Leggett, published by Portobello in England (also published in America by Random House as *The Empty Tank: Oil, Gas, Hot Air and the Coming Global Financial Crisis*). In summary, it explains that the physical peak of oil production is imminent and likely to trigger a Second Great Depression, worse than that of the 1930s. Global Warming is identified as a further serious risk, especially if increased coal production replaces declining oil. The urgent need to turn to renewable energies is stressed. It is not a doomsday message, for the author is confident that, with proper information and planning, governments, industry and the people at large can adapt to the new circumstances imposed by Nature.

2) *Olja* by Gunnar Lindstedt (ISBN 91-7588-484-4 in Swedish) reviews the history of the oil business and the recent growing awareness of Peak Oil, covering some of the personalities involved in the issue.

3) *Energy and the Common Purpose* by David Fleming (ISBN 0-9550849-1-1) proposes a form of rationing through the use of Tradable Energy Quotas (TEQs). Every individual in a country would be granted an annual allowance of TEQs by electronic and credit card transfers, which would be tradable. Fuel would be purchasable in a normal manner with money, but in addition the purchase would require the surrender of TEQs. Business would have to purchase its TEQs on the market to use for its fuel requirements. The total number of TEQ's issued each year would be determined in accordance with national policy. It sounds like an admirable mechanism by which at least industrialized countries could implement the Rimini Protocol, which calls for importers to cut imports to match World Depletion Rate (see Item 633).

4) *The Collapsing Bubble : Growth and Fossil Fuels* by Lindsey Grant (ISBN 1-931643-58 -X) addresses the Age of Oil in relation to the population it has supported. As this newsletter discovered when it reproduced an article on the sustainable level of population as oil declines, this is a sensitive subject on which people can get very hot under the collar. But observation tells us that people do eat and that modern agriculture is very dependent on oil for fuel, transport and pesticides, while relying heavily on gas for synthetic nutrients, for which modern crop varieties have a voracious appetite. On the other hand, it is true that the days of Peak Oil do seem to have been accompanied by a high level of general obesity.

### **633. Expansion of ASPO**

Affiliated national ASPO committees and organizations are developing throughout the world. The Oil Depletion Analysis Centre (“ODAC”) is the latest to join under a planned re-organisation, and will represent the United Kingdom. The legal formalities for the establishment of ASPO IRELAND as a non-profit entity are now nearly complete. Steps are also afoot in Germany to establish a comparable organization there. In due course, it will become necessary to formalize the relationships without impinging on the independence of the entities concerned.

### **634. Waking up to Peak Oil**

The following is an extract from an article by an economist who evidently accepts the reality of depletion imposed by Nature, while still emphasising economic and geopolitical factors.

#### ***The End of Cheap Oil, Once Again: Geopolitics or Global Economics?***

by Bernard E. Munk October 10, 2005

Bernard Munk, a Senior Fellow at the Foreign Policy Research Institute, is principal at Munk Advisory Services, an investment advisory service and publisher of *ECOMENTARY*, a private investment letter, and the website [www.ecomentary.com](http://www.ecomentary.com). This article is based on a talk he gave at FPRI on June 28, 2005, with a postscript on the impact of Hurricanes Katrina and Rita.

Oil shocks in 1973 and 1979-80 made “geopolitics of oil” the byword to describe the sources of uncertainty surrounding oil supplies and prices. Today, while geopolitics is not absent from the current oil shock, it is global economics that drives oil prices. In a world oil economy highly influenced by national oil companies, there are inevitable boundary issues, and, in that sense, geopolitics still has a role to play. However, it is only a partial role, secondary to the fundamental economic drivers of the global economy. It is the emergence of more than three billion energy-hungry consumers of petroleum products, coupled to the disappearance of sufficient excess supply capacity, that has made for a very different world petroleum economy, the more so since American consumers’ fuel appetite has shown no abatement.

Economics has pushed geopolitics to the sidelines in understanding the current world petroleum economy. This oil shock is demand driven, which makes treating it different and in some ways more difficult than treating the shocks of the 1970s. It also involves concerns over the adequacy of the world supply because of insufficient spare capacity related only in part to political restrictions. This combination of demand and supply factors makes this oil shock more comprehensible in terms of economics than prior shocks with political roots. That said, however, if the longer term contours of global growth cause a serious erosion of supply capabilities and unsatisfied demands for petroleum products, geopolitics may well rear its head again. Emerging nation-states would have to compete for higher-cost supplies of petroleum and petroleum products, largely because their oil sectors are state-dominated.

The “commanding heights”—the ever-changing border between state and market—applies to the oil economies of many nations. The growing dominance of the state in the governance of oil supply and production has permanently upset the old oil price paradigm. The resource nationalism of the 1970s has given way to strong, well-financed national oil companies that can dictate the terms of entry for international oil companies and/or perform their own exploration and production (E&P) activities. The world of oil concessionaires has shrunk, while national production volumes are now a matter of state policies that answer to many more constituencies than the treasury of an absolute monarch. The growing dominance of the state in oil policy is ironic, because it was the privatization of former state-run economies that was one of the prime drivers of global growth, the very global growth that has undermined the old oil pricing paradigm. Furthermore, bountiful oil revenues have in many ways prevented oil states (where oil policy is state policy, not a response to market incentives) from turning themselves into flourishing national economies on their own right, less dependent upon nature’s bounty. The oil curse has worked on both producers and consumers. In the case of producing states, it has deferred privatization and a fully flowering private economy centered on human capital accumulation. In the consuming countries, it has led to overwhelming political pressure to keep the price of petroleum products from rising, thereby removing much of the incentive to substitute away from the current dependency on fossil fuels.

The powerful ideology of markets has worked to restrain the incursions of the state in many older, private, developed economies, although the state becomes an active agent when prices become abnormally low or high. Even in market economies, there is no question that the free-market areas for oil and gas are shrinking relative to the expanding role of the state. It is the rare government official who does not feel that oil is too important to be left totally to the market. This makes market-oriented policies more difficult, because politicians wish to be seen as “dealing with the crisis.” It also means that petroleum prices are likely to go higher before they go lower.

As the border between the state and the market shifts, and national oil companies come to dominate the oil industry as a whole, the predictive power of profit-maximizing behavior is adumbrated. We cannot assume that the state values its reserves and its current production in the same fashion as

would privately owned oil companies. Further, absent market disciplines applied by the financial sectors of a private economy, there is no clear way to evaluate the effectiveness of oil investment programs in national oil companies. On the contrary, rather than subjecting themselves to the discipline of the market, the national oil company states are victims of their own local politics. To see how this shift could impact the world oil economy, consider: how would the world price and world supply of oil differ from today's if all the oil reserves were privately owned? Would E&P expenditures be different in state oil company countries and, if so, would they be higher or lower? Would production policies be different? Would more or less output be produced or would economic conservation be put into place by market dictates?

(Reference furnished by Jean Laherrère)

### 635. Database

The database and depletion model, upon which the graph and table on Page 2 are based are at present maintained by ASPO IRELAND ([www.peakoil.ie](http://www.peakoil.ie)). It endeavours to unravel the ambiguous definitions, and misunderstood reporting practices, and is compiled from individual country assessments (see last page).. Most of the numbers deserve generous rounding, but nevertheless form a useful basis for general planning.

#### Notes on the Database

The data refer to end 2004, covering the production of *Regular Conventional Oil* to the end of the Century.

Some terms may need clarification as follows:

*Regular Conventional Oil* excludes Bitumen, Extra-Heavy Oil, Heavy Oil (<17.5° API), Deepwater Oil (>500m), Polar Oil, and Liquids from Gas Plants

*Static Deduction* refers to the cumulative production for any period of unchanged reserve reports.

*Other Deduction* refers to identifiable *Non-Regular Conventional* oil.

*Percent Reported* converts *Reported Proved Reserves* (as quoted by the Oil & Gas Journal) into what is expected to be produced from known fields in the future.

*Depletion Rate* is *Annual Production* as a percentage of *All Future* production.

*Depletion Midpoint* is the date when half the *Total* was, or will have been, produced.

*Peak Discovery* is the date of maximum annual discovery.

*Peak Production* is the date of maximum annual production, actual or as modeled.

WORLD														REGULAR OIL PRODUCTION					2004	
Unit:Gb (billion barrels)														To 2100					Revised 21/11/2005	
Country	A/B/C/D/E/F/G/H/I/J	KNOWN FIELDS										NEW FIELDS	ALL FUTURE	TOTAL	Revised 21/11/2005					
		Present		Past				Future	Past & Future	DEPLETION	PEAK									
		kb/d 2004	Gb/a 2004	5yr Total Trend	Reported Reserves						% Rept'd				Rate	Mid -Point	Disc	Prod		
		World Oil	O&GJ		Deductions Static	Other														
Saudi Arabia	A	8750	3.19	100	2%	259.7	259.4	-39.6	0.0	160%	162	263	12.4	174.5	275	1.8%	2015	1948	2013	
Russia	B	8950	3.27	130	8%	67.1	60.0	-6.3	-37.0	80%	75	205	14.6	89.6	220	3.5%	1996	1960	1987	
US-48	C	3560	1.30	173	-4%	21.9	21.9	0.0	-9.0	90%	24	198	2.3	26.7	200	4.6%	1971	1930	1971	
Iran	A	3940	1.44	57	1%	130.8	125.8	-20.7	0.0	180%	70	127	12.9	82.8	140	1.7%	2013	1961	1974	
Iraq	A	2070	0.76	29	-4%	115.0	115.0	-8.7	0.0	185%	62	91	9.2	71.4	100	1.0%	2025	1928	2025	
Kuwait	A	2050	0.75	32	3%	97.3	99.0	0.0	0.0	180%	55	87	2.7	57.7	90	1.3%	2020	1938	2015	
Venezuela	D	1879	0.69	47	-5%	52.4	77.2	0.0	-30.0	225%	34	82	5.7	40.1	88	3.2%	1999	1941	1970	
Abu Dhabi	A	1955	0.71	19	1%	68.6	92.2	-10.5	0.0	230%	40	59	5.5	45.6	65	1.5%	2021	1964	2021	
China	B	3494	1.28	31	2%	15.4	18.3	-2.5	0.0	75%	24	55	4.6	28.9	60	4.2%	2003	1959	2003	
Mexico	D	3410	1.24	32	3%	14.8	14.6	0.0	0.0	70%	21	53	2.7	23.5	56	5.0%	2000	1977	2004	
Libya	E	1550	0.57	24	2%	33.6	39.0	0.0	0.0	190%	21	44	5.5	26.0	50	2.1%	2005	1961	1970	
Nigeria	E	2350	0.86	24	3%	36.6	35.3	0.0	-5.6	175%	20	44	3.8	24.0	48	3.1%	2004	1967	2004	
Kazakhstan	B	986	0.36	6.7	9%	-	9.0	-0.7	0.0	30%	30	37	8.3	38.3	45	0.9%	2036	2000	2030	
Norway	F	2940	1.07	19	-2%	9.9	8.5	0.0	0.0	75%	11.3	30	2.2	13.5	32	7.4%	2002	1979	2001	
UK	F	1830	0.67	21	-5%	3.9	4.5	0.0	0.0	60%	7.5	29	2.4	9.9	31	6.3%	1997	1974	1999	
Indonesia	G	973	0.36	21	-5%	5.3	4.7	-0.4	0.0	60%	7.8	28	1.6	9.4	30	3.6%	1992	1945	1977	
Algeria	E	1205	0.41	13	10%	15.3	11.8	0.0	0.0	95%	12.4	25	2.6	15.0	28	2.8%	2006	1956	1978	
Canada	C	1100	0.01	20	0%	4.7	178.9	-0.4	-174.8	3100%	5.8	25	0.7	6.4	26	5.9%	1987	1958	1973	
Azerbaijan	B	298	0.11	8.34	2%	-	7.0	-0.2	0.0	60%	11.7	20	2.5	14.2	23	0.8%	2014	1871	2009	
N.Zone	A	597	0.22	7.07	-1%	4.8	5.0	-2.4	0.0	95%	5.3	12	1.7	6.9	14	3.0%	2004	1951	2003	
Argentina	D	680	0.26	8.52	-2%	2.3	2.7	0.0	0.0	75%	3.6	12.1	0.9	4.5	13	5.5%	1996	1960	1998	
Oman	H	767	0.28	7.57	-18%	4.8	5.5	-1.3	0.0	110%	5.0	12.6	0.4	5.4	13	4.9%	2001	1962	2001	
Egypt	E	712	0.26	9.21	-2%	2.2	3.7	0.0	0.0	120%	3.1	12.3	0.7	3.8	13	6.4%	1995	1965	1995	
Qatar	H	782	0.29	7.31	3%	20.0	15.2	-0.8	-25.0	375%	4.1	11.4	0.1	4.2	12	6.4%	1998	1940	2004	
India	G	685	0.25	6.07	1%	4.9	5.4	-0.3	0.0	120%	4.5	10.6	0.9	5.4	12	4.4%	2003	1974	2004	
Malaysia	G	855	0.31	5.92	5%	3.0	3.0	-0.9	0.0	75%	4.0	9.9	0.6	4.6	11	6.4%	2002	1973	2004	
Australia	G	430	0.16	6.12	-8%	3.6	1.5	0.0	-1.0	80%	1.9	8.0	2.0	3.9	10	3.9%	1999	1967	2000	
Colombia	D	530	0.20	5.94	-5%	1.5	1.5	-0.4	0.0	50%	3.1	9.0	1.0	4.1	10	4.8%	1999	1992	1999	
Angola	E	480	0.18	4.96	-7%	9.0	5.4	-2.0	-9.9	140%	3.9	8.8	0.7	4.5	10	3.7%	2004	1971	1998	
Ecuador	D	518	0.19	3.63	6%	5.5	4.6	-0.3	0.0	110%	4.2	7.8	0.2	4.4	8.0	4.1%	2006	1969	2004	
Romania	B	102	0.04	5.83	-3%	0.5	1.0	-0.1	0.0	110%	0.9	6.7	0.3	1.2	7.0	3.1%	1970	1857	1976	
Syria	H	504	0.18	4.17	-1%	2.3	2.5	-2.2	0.0	100%	2.5	6.7	0.3	2.8	7.0	6.1%	2000	1966	1995	
Brasil	D	257	0.09	4.88	-6%	11.2	8.5	0.0	-12.0	425%	2.0	6.9	0.1	2.1	7.0	4.2%	1995	1975	1986	
Dubai	H	350	0.13	3.99	5%	1.3	4.0	-2.2	0.0	300%	1.3	5.3	0.7	2.0	6.0	6.0%	1995	1970	1991	
Turkmenistan	B	216	0.08	3.10	10%	-	0.5	-0.3	0.0	50%	1.1	4.19	1.3	2.4	5.5	3.2%	1998	1964	1973	
Trinidad	D	130	0.05	3.30	2%	0.8	1.0	-0.1	0.0	85%	1.2	4.46	0.3	1.5	4.8	3.2%	1985	1959	1978	
Gabon	E	235	0.09	3.02	-6%	2.2	2.5	-0.7	0.0	170%	1.5	4.49	0.0	1.5	4.5	5.5%	1997	1985	1996	
Brunei	G	190	0.07	3.14	1%	1.1	1.4	-0.9	0.0	110%	1.2	4.36	0.1	1.4	4.5	4.8%	1989	1929	1978	
Ukraine	B	80	0.03	2.72	2%	-	0.4	-0.1	0.0	40%	1.0	3.71	0.3	1.3	4.0	2.2%	1984	1962	1970	
Vietnam	G	340	0.12	1.14	2%	1.4	0.6	-0.8	0.0	30%	2.0	3.14	0.4	2.4	3.5	5.0%	2009	1975	2005	
Yemen	H	350	0.13	1.87	0%	3.0	4.0	-1.5	0.0	340%	1.2	3.05	0.5	1.6	3.5	7.3%	2003	1978	1999	
Denmark	F	393	0.14	1.61	5%	1.3	1.3	0.0	0.0	120%	1.3	2.93	0.6	1.9	3.5	7.1%	2005	1971	2004	
Peru	D	81	0.03	2.39	-3%	1.0	1.0	0.0	-0.6	110%	0.9	3.25	0.2	1.1	3.5	2.7%	1988	1861	1983	
Uzbekistan	B	134	0.05	1.16	-3%	-	0.6	-0.3	0.0	50%	1.2	2.34	0.4	1.6	2.8	3.0%	2008	1992	1998	
Congo	E	240	0.09	1.69	-2%	1.8	1.5	-0.9	-0.5	210%	0.7	2.41	0.3	1.1	2.8	7.7%	2000	1984	2001	
Germany	F	69	0.03	1.98	2%	0.2	0.4	0.0	0.0	120%	0.3	2.31	0.2	0.5	2.5	4.6%	1977	1952	1966	
Sudan	E	287	0.10	0.44	11%	6.4	0.6	-0.3	0.0	50%	1.1	1.56	0.9	2.1	2.5	4.8%	2009	1980	2005	
Chad	E	247	0.09	0.13	-	-	-	0.0	0.0	-	1.2	1.33	0.7	1.9	2.0	4.6%	2014	1977	2008	
Tunisia	E	70	0.03	1.25	-2%	0.7	0.3	-0.2	0.0	75%	0.4	1.66	0.3	0.8	2.0	3.3%	1998	1971	1981	
Italy	F	115	0.04	0.96	5%	0.7	0.6	-0.1	-0.3	80%	0.8	1.74	0.3	1.0	2.0	3.9%	2005	1981	2004	
Thailand	G	154	0.06	0.54	8%	0.5	0.6	-0.1	0.0	80%	0.7	1.27	0.3	1.1	1.6	5.0%	2008	1981	2005	
Cameroon	E	70	0.02	1.08	-5%	-	0.4	-0.7	0.0	110%	0.4	1.44	0.1	0.4	1.5	5.1%	1994	1977	1986	
Bolivia	D	35	0.01	0.45	5%	0.5	0.4	0.0	0.0	80%	0.6	1.00	0.3	0.8	1.3	1.6%	2016	1966	2010	
Bahrain	H	34	0.01	1.00	2%	-	0.1	0.0	0.0	60%	0.2	1.21	0.0	0.2	1.3	5.0%	1977	1932	1970	
Turkey	H	42	0.02	0.86	-5%	0.3	0.3	0.0	0.0	150%	0.2	1.06	0.1	0.3	1.2	4.3%	1992	1969	1991	
Netherlands	F	44	0.02	0.87	-2%	0.2	0.1	0.0	0.0	40%	0.3	1.14	0.1	0.3	1.2	4.7%	1991	1980	1987	
Croatia	B	19	0.01	0.51	-3%	0.1	0.1	0.0	0.0	24%	0.3	0.82	0.2	0.5	1.0	1.4%	2003	1950	1988	
Hungary	B	22	0.01	0.69	-5%	0.2	0.1	0.0	0.0	70%	0.1	0.84	0.2	0.3	1.0	2.6%	1987	1964	1987	
France	F	23	0.01	0.74	-4%	0.2	0.1	0.0	0.0	95%	0.2	0.90	0.1	0.2	1.0	3.9%	1987	1958	1988	
Pakistan	G	62	0.02	0.50	15%	0.3	0.3	0.0	0.0	100%	0.3	0.79	0.4	0.4	0.9	5.4%	2001	1983	1992	
Austria	F	18	0.01	0.79	-1%	0.1	0.1	0.0	0.0	70%	0.1	0.88	0.0	0.1	0.9	5.6%	1970	1947	1955	
Papua	G	46	0.02	0.38	-8%	0.2	0.2	0.0	0.0	70%	0.3	0.72	0.1	0.5	0.9	3.4%	2007	1987	1993	
Sharjah	H	48	0.02	0.50	-1%	-	1.5	0.0	0.0	1000%	0.2	0.65	0.1	0.3	0.8	5.6%	1998	1980	1998	
Albania	B	6	0.00	0.54	1%	0.2	0.2	0.0	0.0	85%	0.2	0.73	0.1	0.3	0.8	0.9%	1986	1928	1983	
Chile	D	10	0.00	0.43	9%	0.1	0.2	0.0	0.0	400%	0.0	0.47	0.0	0.1	0.5	4.8%	1979	1960	1982	
REGIONS																				
ME Gulf	A	19362	7.07	245	1%	676	696	-82	0	177%	395	640	44	439	684	1.6%	2017	1948	1974	
Eurasia	B	14308	5.22	191	6%	83	97	-11	-37	67%	146	337	33	179	370	2.8%	2003	1964	1987	
N.America	C	4660	1.70	193	-2%	27	201	0	-184	667%	30	223	3	33	226	4.9%	1973	1930	1972	
L.America	D	7530	2.75	110	-1%	90	112	-1	-43	158%	71	181	11	82	192	3.3%	1999	1977	1998	
Africa	E	7438	2.71	83	2%	109	100	-5	-16	154%	65	148	16	81	164	3.0%	2004	1961	2004	
Europe	F	5431	1.98	47	-3%	17	16	0	0	72%	22	68	6	28	74	6.7%	2000	1974	2000	
East	G	3735	1.36	44	-1%	90	18	-3	-1	77%	23	67	6	29	73	4.5%	1999	1967	2000	
ME. Other	H	2877	1.05	27	0%	32	33	-8	-25	227%	15	42	2	17	44	5.8%	1999	1965	1998	

### ***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.

- November 2 Oil Depletion-Facing the Challenges, Inst Energy, **London** [Bentley, Skrebowski]
- November 5-6 Energy Futures, **Lausanne**, Switzerland [Alekklett]
- November 8-10 Clean Vehicles & Fuels, **Stockholm**, Sweden [Alekklett]
- November 10-11 Peak Oil Conference, **Denver USA** (ASPO-USA) [Gilbert, Skrebowski]
- November 12 13th Colloquium Sicherheitstechnik und Medien, ETH **Zürich**, Switzerland [Zittel]
- November 14-16 Safety & Security of Energy Infrastructures, EU Commission, **Brussels** [Alekklett]
- November 15 Roundtable "Sustainability, **Aarau** Switzerland [Zittel]
- November 17 Meeting :Growing Energy Prices - what to do? **Wuppertal**, Germany [Zittel]
- November 17 Institute of Transport, **Dublin** [Campbell]
- November 25 Dept. Civil Engineering, University College, **Cork**, Ireland [Campbell]
- November 28-30 Solar Energy conference, **Dunedin**, New Zealand [Alekklett]
- November 30 World Renewable Energy Assembly, **Bonn**, Germany [Zittel]
- December 1 Minergie, **Bern**, Switzerland [Zittel]
- December 6 Peak Oil. CEMUS, **Uppsala** University, Sweden [Campbell]
- December 14 Ireland in the Second Half of the Age of Oil, ICA, **Schull**, Ireland [Campbell]

#### **2006**

- April 2-4 Ireland's Response to Peak Oil, **Dublin** [Campbell, Skrebowski]
  - April 20-24 Peak Oil, Limerick University, **Limerick**, Ireland [Campbell]
- (Information for inclusion in future newsletters is welcomed).

#### **Note**

The Newsletter is produced and distributed by ASPO IRELAND for perusal by ASPO members and others. It currently has a circulation of about 2000 and is reproduced on several websites.

**Permission to reproduce the Newsletter, with acknowledgement, is expressly granted.**

*Compiled by C.J.Campbell, Staball Hill, Ballydehob, Co. Cork, Ireland*