THE ASSOCIATION FOR THE STUDY OF PEAK OIL AND GAS

"ASPO"

NEWSLETTER No. 94 – OCTOBER 2008

ASPO started as a European 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, associates are active in **Australia**, Austria, **Belgium, Canada, China,** Croatia, Denmark, Egypt**,** Finland, **France, Germany, Hong Kong, Ireland,** Isle of Man**,** Israel**, Italy,** Luxembourg**, Japan, Korea**, Kuwait, Malaysia, **Mexico, Netherlands, New Zealand,** Norway, **Portugal,** Russia**,** Singapore, Slovenia, **South Africa, Spain, Sweden, Switzerland, United Kingdom, USA** and Venezuela**.**

(Formally constituted entities are shown in bold face)

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 of oil and gas decline for Mankind.

Foreign language editions are available as follows:

Spanish: www.crisisenergetica.org

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

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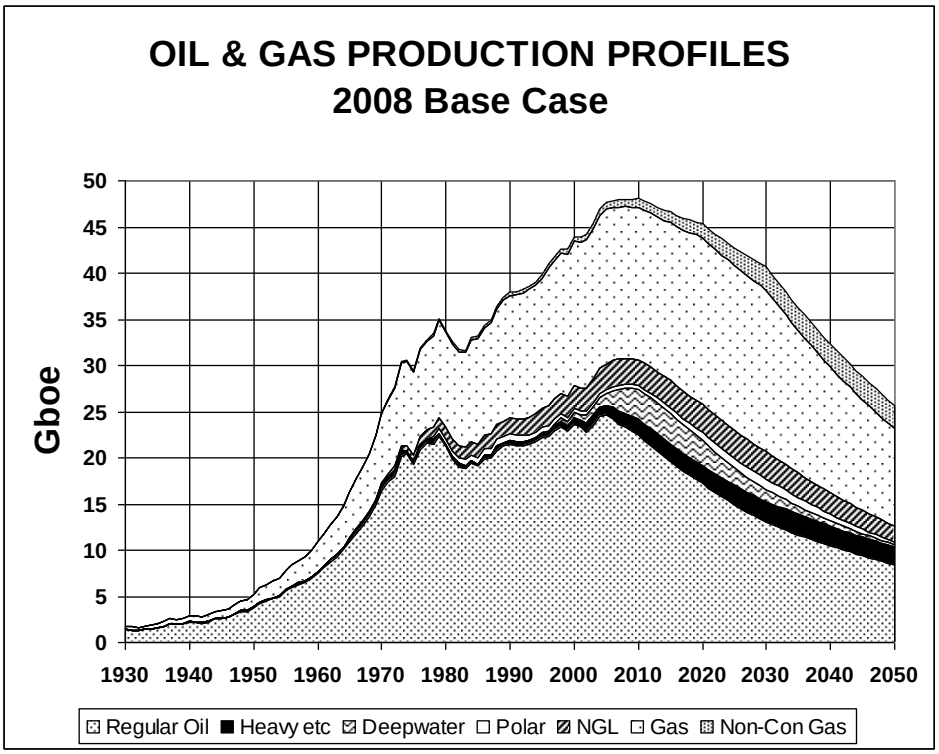
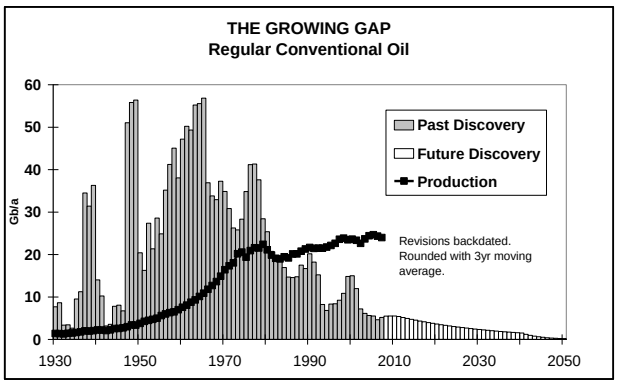
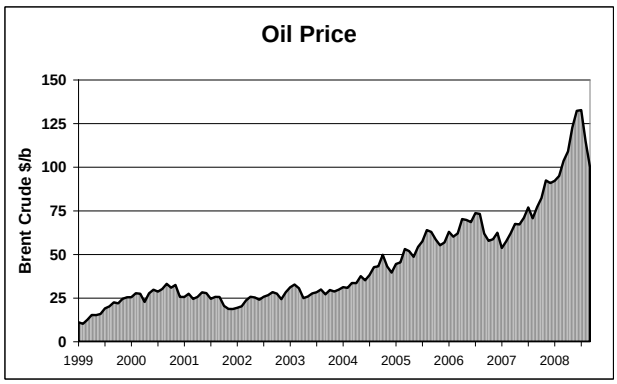
Index of Country & Regional Assessments with Newsletter Reference (*revised)

The General Depletion Picture



ESTIMATED PRODUCTION TO 2100										End 2008
Amount			**Gb**	**Annual Rate - Regular Oil**						**Gb**	**Peak**
Regular Oil				Mb/d	**2007**	**2010**	**2015**	**2020**	**2030**	**Total**	**Date**
Past	**Future**		**Total**	US-48	3.0	2.6	2.1	1.7	1.1	200	1970
Known Fields		New		Europe	4.3	3.5	2.5	1.8	0.9	75	1999
1053	734	114	1900	Russia	8.7	8.2	6.8	5.7	4.0	230	1987
	848			ME Gulf	20	20	20	19	16	673	1974
All Liquids				Other	28	27	23	19	14	722	2005
1176	1274		2450	**World**	**65**	**62**	**54**	**47**	**36**	**1900**	2005
2008 Base Scenario				**Annual Rate - Other**							
M.East producing at capacity				Heavy etc.	3.9	4.6	5.2	5.5	6.2	184	2030
(anomalous reporting corrected)				Deepwater	5.2	6.6	8.0	8.1	3.9	80	2013
Regular Oil excludes Heavy Oils				Polar	1.2	1.3	1.7	2.2	3.0	52	2030
(inc. tarsands, oilshales); Polar &				Gas Liquid	7.9	7.9	8.1	8.5	8.0	230	2020
Deepwater Oil; & gasplant NGL				*Rounding*				-1	-2	4	
Revised 09/09/2008				**ALL**	**83**	**82**	**77**	**70**	**55**	**2450**	2008





1086. Corrections

It has been pointed out that Item 1084 in the last Newsletter got two elements of history marginally wrong. First, it seems that, in 1908, Austria annexed Bosnia, with its Serb population, dashing the hopes of Serbia to incorporate the territory into a Greater Serbia. A Bosnian Serb activist assassinated the heir to Austrian throne in 1914 which led Austria, backed by Germany, to declare war on Serbia, which had the support of Russia, triggering a chain reaction that led to the First World War.

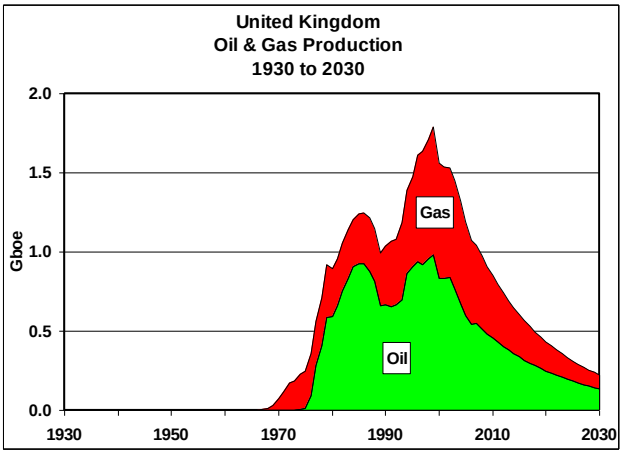
Secondly, although Lenin had a Jewish grandfather, he was not a member of the Jewish faith. That said, it seems that Jews were prominent in both the Bolshevik and Menshevik Movements, and did have a role in the Russian Revolution of 1917, understandably reacting to their oppression by the Czar (see Sebag-Montefiore S.,2005, *Stalin: The Court of the Red Tsar*; and Solzhenitsyn's book *Two Hundred Years Together).*

These historical vignettes are secondary to the main issue of Peak Oil, but are not totally irrelevant, as they may give some insight into what the reactions by political factions and vested interests of all sorts may be. In the same way as the assassination of an Archduke triggered the First World War, so current, relatively trivial events in Palestine or Georgia may trigger responses reflecting wider and deeper conflicts.

Comments, even complimentary ones, and corrections are by all means very welcome.

(Errors pointed out by Mark Robinowitz and Greg Platt)

1087. Britain in Recession



Alistair Darling, the Chancellor of the Exchequer, recently stated that the country faces the worst recession since the Second World War, and the Prime Minister followed that up with comments attributing the economic recession to the soaring cost of energy, which carries the cost of food with it. The sales of new cars fell to the lowest level since 1966, and people are saving and spending less because essential food costs consume a rising percentage of their income. Inflation is rising to pass 4.4%.

The Government tends to blame the US credit crunch and other international events, but the country's own looming energy shortfall has long been evident, with the peaks of oil and gas discovery having been passed long ago in respectively 1966 and 1974. The supreme irony is that the great success it enjoyed in building its oil industry with the most advanced technology, skill and entrepreneurial drive, simply had the effect of depleting its endowment more quickly. Imports are set to soar at ever rising cost as other countries, including the Middle East, also face variants of the same situation. The Prime Minister is right therefore to press for new policies to radically improve energy efficiency, and use less, although in practice such moves will likely reduce consumerism, on which many livelihoods indirectly depend.

It really does sound like a turning point of almost unparalleled magnitude, which will be faced by every country in one way or another over the next few years. It is fortunate that there is a gradual awakening as revealed by the following article from the Times of London

From The Times
September 3, 2008
Dick Cheney in Georgia: Europe has weak hand in game of power
Carl Mortished: World business briefing

Where there is oil and where there is trouble, you can expect to find Dick Cheney - and the US Vice-President arrives today in Baku, the capital of Azerbaijan, for a brief tour of the Caucasus, taking in Georgia as well as Ukraine, three states in the front line of the West's struggle for Asian energy supplies.

Mr Cheney is a veteran of this conflict and he is back, trying to rally support for a failing strategy. He has been a key supporter of the Caspian region as an alternative supplier of oil and gas to the West. Sandwiched between troublesome Iran to the south and overbearing Russia to the north, the oil and gas reserves of Azerbaijan, Khazakhstan and Turkmenistan were promoted as an energy safe haven, with independent links to the West via pipelines through the Caucasus. That Caucasian lifeline has been shown to be tenuous, its fragility exposed when President Sakashvilli, of Georgia, blundered into South Ossetia last month, guns blazing, to attack Russian separatists.

Today, it seems almost incredible that this chaotic region of gangsters, warring tribes and uncertain borders was trumpeted as an energy umbilical cord to the West, free of Russian influence. The construction by BP of a 1,700-kilometre (1,000-mile) pipeline (the BTC) linking Baku to the Turkish Mediterranean port of Ceyhan via Tbilisi was a feat of engineering, but it was even more of a political

triumph, a two-fingered gesture to Moscow as two former Soviet states - Azerbaijan and Georgia - combined to build an oil export system that bypassed Russia.

Tortuous negotiations over the pipeline route through Georgia should have alerted investors to the long-term political risks. A more direct path close to the Armenian border was blocked by Georgia, a mysterious objection until it emerged that the route passed close to a Russian military base.

Built in the late 19th Century and abandoned only in 2007, the garrison at Akhalkalaki existed to defend the Kremlin's southern flank, initially from the Empire of the Ottomans and subsequently the empire of Nato.

In Moscow, the withdrawal from Akhalkalaki and the port of Batumi was probably regarded as diplomatic, not a strategic retreat. The rebel government in Abkhazia has now requested a permanent Russian military base on the Black Sea.

It is becoming clear that the Georgian export route to the Mediterranean is insecure, subject to Russian oversight and likely to become increasingly unreliable. The BTC was disrupted in August after an explosion that was blamed by the Turks on Kurdish separatists.

However, the real cause for concern is that we in the West have made a colossal strategic blunder over energy. We have closed off our options. In Brussels yesterday, the European Union delivered a petulant protest to Moscow, threatening to postpone trade talks. Brussels is anxious to present a united front over energy, but its strategy is barely credible. Leading European utilities in Germany and Italy long ago accepted the Tsar's writ, offering Russia direct access to their markets in exchange for new supplies of Russian gas.

Mr Cheney's world view is more in tune with that of Vladimir Putin than the European leaders who huffed and puffed but failed to blow the Kremlin's house down. In Brussels, President Sarkozy plaintively urged that the world should not return to spheres of influence, but in energy terms we are already there.

Mr Cheney understands spheres of influence. That was his analysis in the National Energy Policy, an attempt to frame a strategy for the United States in the wake of 9/11. It was presented as a way of making America more energy independent, but in fact it was all about securing energy allies, alternative suppliers to Russia and the OPEC cabal. These were to be found in West Africa and the Caspian.

To be fair to Mr Cheney, he at least understands the dilemma, even if he played a key part in its creation. He failed to persuade the leaders of Kazakhstan and Turkmenistan to follow the Azeri example and build a gas export pipeline across the Caspian to link up with BP's gas and oil caravan across Georgia to Turkey. The proposed Trans-Caspian pipeline was bitterly opposed by both Moscow and Tehran, correctly seen by Gazprom as commercial interference in its patch and by Teheran as a Western incursion into an Iranian sea. The clannish Kazakh and Turkmen leaders looked north to Russia and south to Iran and decided that discretion and an improved gas price was the better part of valour. Kazakh gas still heads north into Gazprom's network and Turkmen gas heads to Teheran.

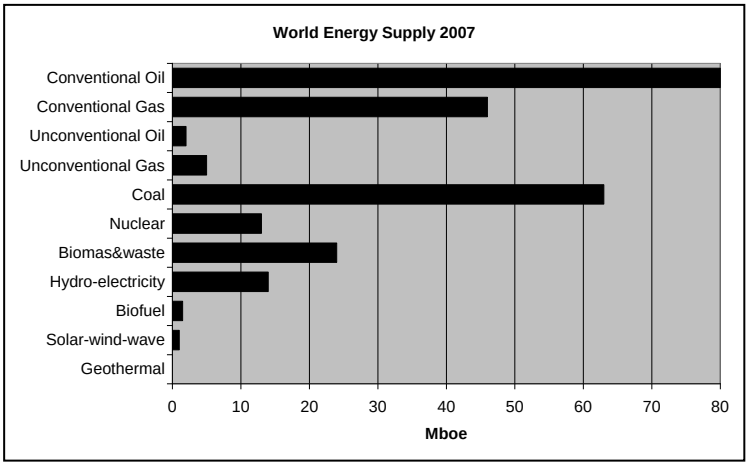
Meanwhile, Europe is stymied. Where is the alternative supplier of gas to Europe? In the grip of a policy set in Washington that has run into the sand, we have no energy alternatives. We have excluded Iran, which holds the world's second-largest gas reserves, as an unacceptable partner. Again, thanks to a policy set in Washington, Iraq remains an improbable energy partner.

In Brussels, some draw comfort from the notion that Russia needs Europe's markets. That is true, but when there is no alternative supplier of scale, Europe's ability to set terms is diminished. At the same time, China beckons. Russia is building pipelines to the east, as are the Caspian states. There is competition for resources from a buyer that understands and accepts spheres of influence.

Meanwhile, we in Europe have put all our cards on the table. Our hand looks weak and our partner is showing less interest in the game. *(Reference furnished by Mark Griffiths)*

1088. The Scale of the Problem

Experience in this newsletter has shown that any mention of population pressure triggers an avalanche of criticism accompanied by accusations of racism if not fascism, so it is a delicate subject to touch, yet it remains an important if not critical one. Conventional oil and gas currently supply about half the world's energy supply as illustrated (*from a study by K.Chew*)



The Planet supports at present a population of 6.6 billion, which most prognoses expect to rise in the future. These people currently consume about 23 billion

barrels of *Regular Conventional Oil,* yielding an overall per capita average of about 3 barrels a year, although the range is wide from about 25 in the United States to less than 2 in India.

The depletion model suggests that production will have fallen to about 8 billion barrels by 2050, which on the present level of reliance could support no more than about 2.3 billion people.

It is obvious that the modern world runs on *Regular Conventional Oil* to power industry, transport, trade and agriculture. Logic therefore suggests that major challenges are faced in developing alternative sources of energy, including the *Non-Conventional oils,* and finding more efficient methods of using what is left, if the present population is to be supported in anywhere near its present condition. There is a certain irony that the under-privileged of to-day, who make minimal demands, may find themselves relatively better placed to face the future.

Many people pin hopes on the entry of *Non-Conventional* oil and gas, but the costs are very high. The French oil company, TOTAL, has reported that its heavy oil projects in Canada require an oil price of $90 a barrel to deliver an internal rate of return of 12.5% whereas the deepwater projects off Angola require $70.

The Middle East perhaps faces the greatest challenge insofar is its rich endowment together with soaring prices have brought immense unsustainable wealth, together with massive immigration, such that some of its cities contain the world's highest skyscrapers, and even indoor ski slopes. But its oil will be about gone by the end of the Century, and the inhabitants will face a challenge to survive on the barren lands, even if foreign investments made during the boom times buffer the collapse. Certainly it makes no sense for them to increase production in the short term, even if technically in a position to do so. It takes no feat of science to conclude that the lower the extraction rate the longer the resource will last. They might even be doing a favour to people elsewhere by ameliorating the post-peak decline in this way, even if they do run the risk invasion thereby.

1089. Updating the Depletion Model

Work has started on updating the depletion model, with a preliminary result summarised in the graphs and tables on Page 2. Indeed, an error was discovered in the previous version, caused by a mistake in copying one of the many spreadsheets. The evaluation is compiled from a detailed assessment of some 65 producing countries, and more general coverage of other small producers, as well as the various *Non-Conventional* categories of oil and gas.

The present estimate suggests that the total amount of *Regular Conventional Oil* to be produced by the end of the Century will amount to a rounded 1900 Gb, with the total of all categories coming to 2450 Gb.

It shows a peak of *Regular Conventional* production at 67.5 Mb/d in 2005, which is expected to have fallen to about 64 Mb/d by the end of this year, and 48 Mb/d by 2020. The overall peak, including the *Non-conventional oils*, is expected this year at 84 Mb/d, falling to 71 Mb/d by 2020 and 35 Mb/d by the mid-Century. It is important to note that these estimates relate to wellhead production, ignoring refinery gains and the addition of biofuels.

This is far from an exact science, and the model calls for perpetual revision and correction, trying to find a plausible path through a maze of conflicting data and information, which itself is always a year or two out of date and subject to revision. That said, the general trends appear to be stabilising and can be presented with some confidence (mistakes apart).

1090. The Perfect Storm

A storm, more severe than the hurricanes hitting the Gulf Coast of the United States, has hit the world's financial system. It turns out to have been built on weak and dubious foundations, especially in respect to recycling debt which itself exceeded the amounts on deposit. The United States Government has even been forced to adopt almost socialist principles by virtually nationalising major failed banks and an insurance company to protect homeowners. Other long established banks in London and on Wall Street are merging. Stock markets also crashed in other countries, including Russia, as confidence in the dollar, once the bedrock of the financial empire, withers.

The market has remained unstable despite these offers of Government bail-outs. Governments themselves are short of money, suggesting that the most likely outcome is rampant inflation. There seems to be a growing realisation that the world financial system is structured on outdated principles, and is totally unprepared to face the Second Half of the Age of Oil when this critical fuel supply declines.

A law suit has even been filed in the District Court of Albany opposing the bail-out on the following grounds:

> Beyond the moral hazard and dangerous precedent established by this action, it is of vital importance that the American people recognize that the present financial crisis is a direct and predictable result of

decades of constitutional violations by the Federal Government. Through a long-standing policy of disinformation and collusion with the Federal Reserve and Wall Street financial elite, the United States Federal Government has denied public access to information about the secretive operations of the privately owned and operated Federal Reserve and its monopoly control of America's money system.

"This monopoly control of our currency by a private banking cartel has resulted in increasing distortion, volatility and cyclical (boom and bust) economic conditions in the U.S. and abroad. America's fiat currency (produced from thin air) is manipulated by the Federal Reserve for the benefit of its owners, major Wall Street financial institutions and the Federal Government and is not unaccountable to the taxpayers. These abuses of the Constitution have taken our financial system to edge of the abyss. The chickens have come home to roost." *(Reference furnished by V. Abernethy)*

Oil prices have fallen markedly, with Brent crude dropping from a high of almost $150 in mid July to around $90 by mid September, when they began to move up again to pass $100 at the time of writing. Certainly, there has been no significant increase in wellhead production or capacity, so the explanation for the fall must rather lie in dwindling demand and market manipulation. The hurricane season in the United States has evidently affected refining operations, reducing their demand for crude, but also causing a fall in supply of gasoline prompting US prices to double over the same period.

Crude oil is traded on the futures market, which indirectly affects the current price. Physical storage helps create these swings: if prices are rising, it makes sense to keep the tanks full as the stock appreciates in value, but once a looming downward trend is perceived, it makes sense to buy Futures and drain the tanks in a self-fulfilling process. Probably, the astute tank-owner can make more money on these fluctuations than buying and selling the stuff.

But short term influences apart, it would not be surprising if the onset of the *Second Great Depression*, which seems to be building momentum, does seriously cut oil demand, such that world prices may indeed fall. OPEC faces a predicament: on the one hand it could cut production to support price, while on the other, many of its governments have substantial holdings on Wall Street, which they naturally would like to protect. It still costs the Middle East countries, say, $10-15 to produce a barrel, so when they sell it at over $100, the balance goes into the pockets of the Kings, Emirs and Sheiks who run the countries. They place much of it overseas in view of the investment constraints at home, but may soon prefer to keep the black gold in the ground.

Meanwhile the people of the Niger delta who support an organisation called Movement for the Emancipation of the Niger Delta (MEND) has declared an oil war against foreign oil companies, attacking platforms and flow stations. These activities are reported to have cut Nigerian production by a fifth over the past two years.

On balance, it would be reasonable to expect the world operators to start re-filling their tanks after the US elections in anticipation of another surge in prices.

1091 Australia re-evaluated

Australia was last evaluated in Newsletter No 28, so it is perhaps time to re-examine its situation, with the following taken from the *Atlas of Oil and Gas Depletion*

Essential Features

Australia is a continent in the southern hemisphere, covering an area of almost 7.7 million km^2. The interior forms a huge barren depression of arid lands and deserts, separated from the eastern seaboard by what is known as the Great Dividing Range, rising to 2,200m, which itself is a mature landscape of gorges, plateaux and subsidiary mountain spurs. Most of the population of 21 million live in the fertile temperate southeastern corner of the continent, where the largest town, Sydney, is located. The Great Barrier Reef, the world's largest coral reef, borders the northeast coast, while the large island of Tasmania lies off the south coast.

The country has a substantial mining industry, especially of gold and coal, but is largely agricultural, being well known as a major source of wool and wheat, although threatened by the risks of periodic droughts.

Geology and Prime Petroleum Systems

Australia formed part of the Permian super-continent, known as Pangea, before it began drifting southeastwards during the Triassic, about 180 million years ago. It reached its present position some 50 million years ago, when Antarctica split off to continue its geotectonic voyage to the South Pole. The early separation has given Australia a unique flora and fauna.

Much of the continent is made up of ancient shield rocks, but they are flanked by two Twertiary petroleum systems: the Bass Strait basin off the south coast, and the extensive NW Shelf. There are, in addition, interior Palaeozoic basins of minor potential. The NW Shelf forms the passive margin of the

continent facing the contact with the Eurasian Plate, bordering Indonesia. It is made up of a thick sequence of Mesozoic and Tertiary sediments. Several rather lean source-rock intervals have been identified in the Mesozoic sequence, but in many areas lie below the oil-generating window, explaining the preponderance of gas-condensate finds.

Australia and Indonesia have also agreed to share the so-called Timor Gap, within the Indonesia arc, where some discoveries have been made.

Exploration and Discovery

Exploration for oil began early, with a reported small onshore discovery being made in 1900. As many as 157 exploration boreholes had been drilled onshore by 1930 despite very little encouragement. A new chapter opened in the 1960s when important discoveries were made in the Bass Strait Tertiary basin between Australia and Tasmania, and on Barrow Island off Western Australia. The three largest fields were Kingfish (1967) with 1.2 Gb, Halibut (1967) with 850 Mb and Mackerel (1969) with 450 Mb. They stimulated renewed interest in exploration generally, resulting in a number of finds both in onshore Palaeozoic basins and in other marginal basins. The last campaign came with the opening of the huge NW Shelf.

Exploration is now at a mature stage ; and to judge from the discovery trend and field size distribution is unlikely to deliver more than about 530 Mb in new finds. A total of 4537 exploration boreholes have been drilled so far, which is a relatively high number. The peak of exploration was in 1985 when 186 boreholes were drilled. The number has since declined to about 80, and is expected to continue to do so as the list of viable prospects dwindles, coming to an estimated end around 2035. Australia may have some deepwater potential, but that is most uncertain.

Substantial deposits of oil shale have been identified in Queensland, but have so far proved uneconomic to produce despite Government subsidy.

Production and Consumption

There may have been some earlier production that escaped the records, but significant production commenced in the 1960's and reached a peak of 720 kb/d in 2000, some thirty-three years after peak discovery. It has since declined to 417 kb/d, being set to continue to decline at about 3% a year.

About 180 Tcf of gas has been discovered, of which 26 Tcf have been produced. Production stands at about 1.5 Tcf/a. Assuming that production rises at 10% a year, it could reach a plateau of about 5 Tcf/a lasting from 2020 to 2040 before a final fall. Such a depletion profile would give a total of 218 Tcf, assuming future discovery of almost 40 Tcf. The gas also yields a substantial amount of gas-liquids, contributing about half the total liquid production by 2010. It is evident that Australia will increasingly rely on its substantial gas resources which are at an early stage of depletion.

Oil consumption stands at 323 Mb/a, meaning that Australia already has to import about one quarter of its needs, a percentage set to increase in the future as production declines. All of its gas production is consumed internally.

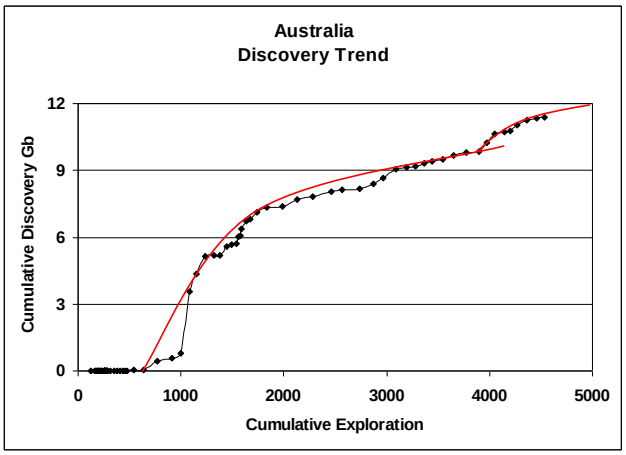
The Oil Age in Perspective

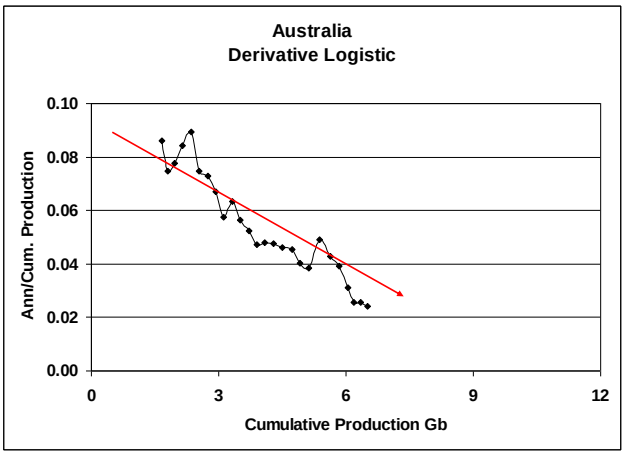
Aboriginal people have lived in Australia for over 40,000 years. They developed a system of land use and management that used all parts of the continent sustainably. They had a complicated ceremonial style of life before contact and conflict with European settlers decimated their population and cultures within only a couple of centuries.

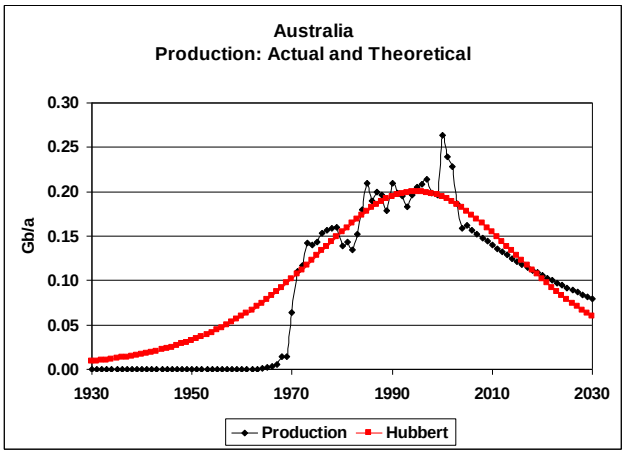
Dutch navigators started to put Australia on European maps in 1606. The British explorer, James Cook, followed in 1770, effectively bringing the territory into the British Empire. When it was no longer able to ship convicts to America after its independence, Britain began to establish penal colonies in Australia. The first convoy of eleven ships with 759 convicts arrived in Botany Bay in 1788. Life was harsh but in 1810 came the introduction of the merino sheep yielding its special wool, and sheep-farming prospered. Freed convicts and settlers began to build a new society during the 19th Century, encouraged in part by the discovery of substantial gold deposits in 1851. The discrete early colonies were brought together as a Commonwealth in 1901.

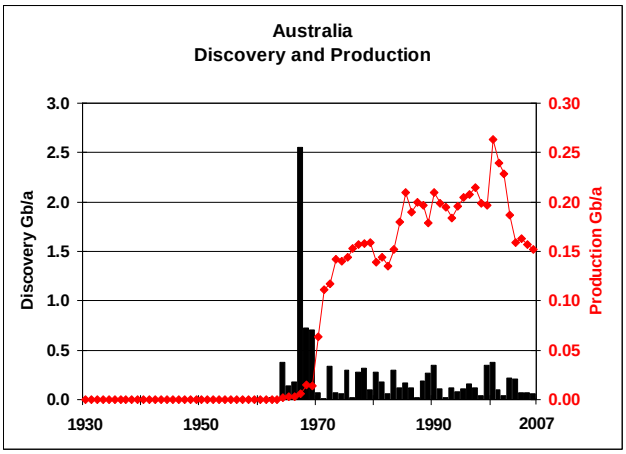
Immigration continued during the 20th Century, predominantly from Britain, such that Australia became a loyal member of the British Commonwealth, making major military contributions to the allied cause in two world wars. Its population of 21 million is concentrated in the principal cities, leaving an empty harsh interior. Politically, the country seems to be moving towards a Republican status, as its population gradually loses ties with their original homelands.

Unlike the land-use patterns of the Aboriginal people, many of Australia's European-derived farming systems are inherently unsustainable, as they do not work in harmony with the local ecosystems. Farmers are now experiencing serious problems from soil erosion, declining water quality, loss of biodiversity and rising salinity. Even so, Australia, and particularly the temperate island of Tasmania, are well placed to face the Second Half of the Age of Oil, having a relatively low population density and huge coal deposits, as well as ample solar energy. The country also has substantial uranium deposits with which to support a nuclear industry. It does at the same time face serious risks from climate change causing droughts that would adversely affect its agricultural capacity, especially in the semi arid regions. Probably the main threat it faces is from unsustainable immigration pressures from Indonesia and the East in general.

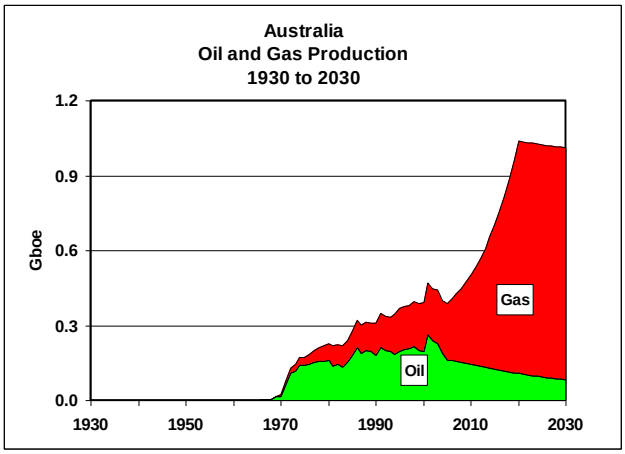


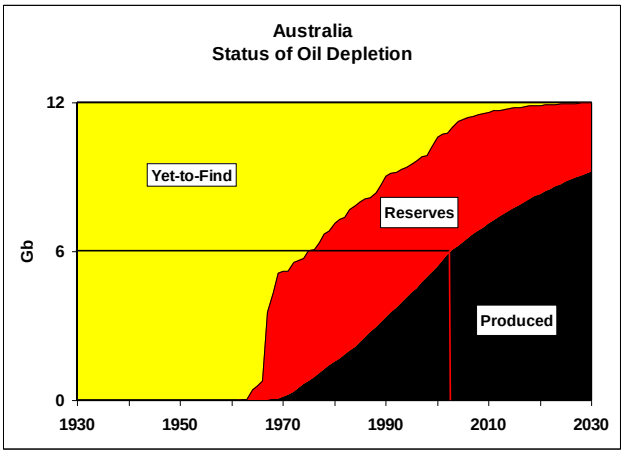






AUSTRALIA						ASIA-PACIFIC			2007	
Production						Peak Dates			Area	
Amount			Rate				Oil	Gas	'000 km^2	
	Gb	Tcf	Date	Mb/a	Gcf/a	Discovery	1967	1971	Onshore	Offshore
PAST	6.7	26	2000	263	1082	Production	2000	2025	7740	2560
FUTURE	5.3	194	2005	163	1278	Exploration	1985		**Population**	
Known	4.8	155	2010	138	1991	**Consumption**	Mb/a	Gcf/a	1900	3
Yet-to-Find	0.5	39	2020	102	5165	2006	323	1010	2006	21
DISCOVERED	11.5	181	2030	75	5165		b/a	kcf/a	Growth	7
TOTAL	12.0	220	**Trade**	-171	+486	Per capita	15	48	Density	3





1092. ASP0-8 CONFERENCE, BARCELONA

The programme has been announced for the next international ASPO Conference, which will be held in the World Trade Center, Barcelona, Spain on October 20th and 21st. A summary is listed below. For further details, see the ASPO SPAIN website (www.crisisenergetica.org) or contact Pedro Prieto (pappspain@terra.es)

DAY ONE – BELOW GROUND

Daniel Gomez – Welcome Address
Cristina Castell – Welcome
Kjell Aleklett – Introduction
Carlos de Castro – World Energy Scenarios
Salvador Pueyo – Model of Oil Depletion
Jean Laherrere and J.L.Wingert – Forecasting production
Luis de Sousa – Peak Oil Exports
Hon. Ed. Shreyer – Energy Sources in N.America
Mariano Marzo – Gas Security Supply to Spain
Andrew McKillop – Energy Transition
Chris Skrebowski – Entering the foothills of Peak Oil
Ugo Bardi – Earth Crust extraction, transformation

DAY TWO – ABOVE GROUND

Colin Campbell – Peak Oil – A Turning Point
Luca Barillaro – Financial Players
Jerome Guillet – Offshore wind
Charles Hall – Economics of EROI ratios
Mario Giampetro – Reality check on biofuels
Bob Lloyd – The growth delusion
Gonzalo Piernavieja – Hydro-wind -100% renewable
Richard Meyer – Solar Energy
Antonio Ruiz de Elvira – Climate change & Peak Oil
Juan Roquero Liberal –Territory and local resources
Pedro A. Prieto – Wind in Spain
Kjell Aleklett – Closing Address

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.

2008

Oct. 20th-21st - 7th International ASPO Conference, **Barcelona**, Spain [ASPO-SPAIN]

NOTES

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PUBLICATIONS

Multi-Science Publishing Co. (Sciencem@hotmail.com) wishes to advise that copies of the book ***Oil Crisis*** by C.J.Campbell, providing background reading, are still available for purchase.

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A privately printed booklet entitled ***Living through the Energy Crisis*** by C.J.Campbell and Graham Strouts is available from www.zone5.org (price €7 plus postage)

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An Atlas of Oil and Gas Depletion

By C.J.Campbell and Siobhan Heapes

Provides an evaluation of oil and gas depletion, together with political and historical summaries, for 65 countries, which are summed into regional and world totals. *Non-Conventional oil and gas* are also covered, and a final chapter places the Oil Age in an historical perspective.

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