

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

NEWSLETTER No. 98 – FEBRUARY 2009

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 **Argentina, 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, 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

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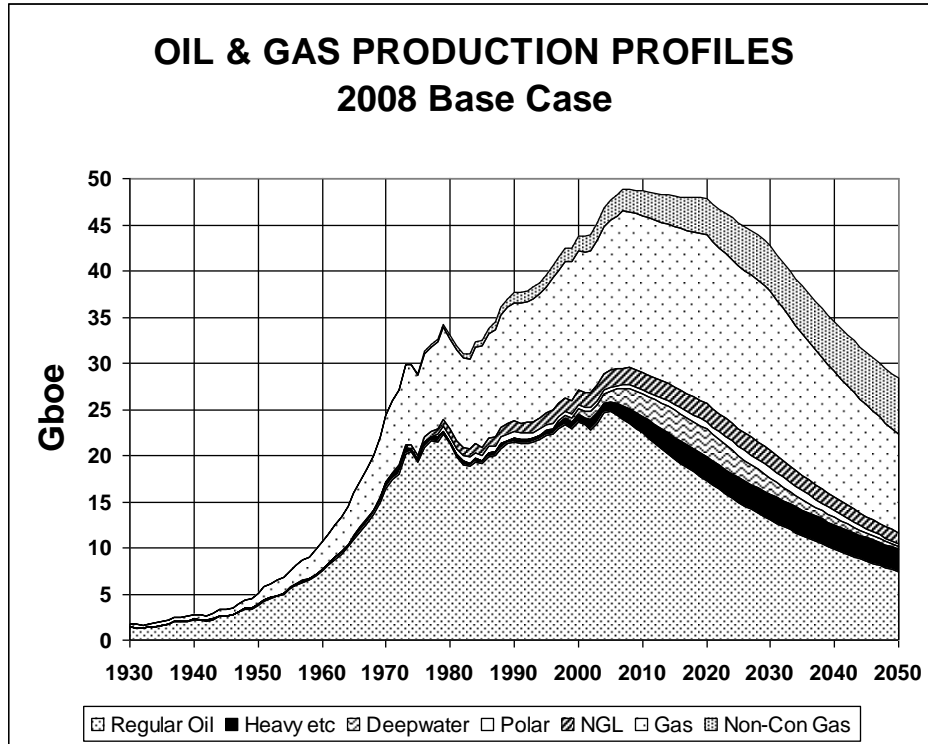
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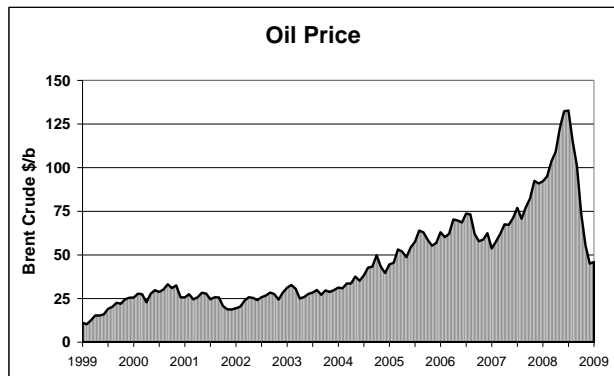
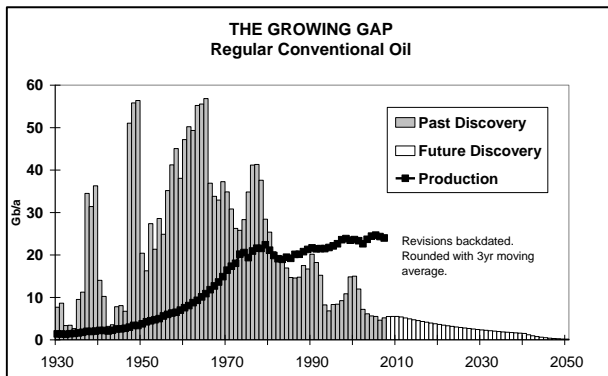
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The General Depletion Picture



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	29	27	23	19	14	722	2005
1154	1246	2400		World	65	61	54	47	36	1900	2005
2008 Base Scenario				Annual Rate - Other							
M.East producing at capacity (anomalous reporting corrected)				Heavy etc.	4.0	5.0	6.5	7.2	7.7	226	2030
				Deepwater	5.2	6.6	8.1	8.1	4.7	89	2013
Regular Oil excludes Heavy Oils (inc. tarsands, oilshales); Polar & Deepwater Oil; & gasplant NGL				Polar	1.2	1.3	1.7	2.2	3.0	52	2030
				Gas Liquid	5.1	5.5	5.6	5.9	5.6	156	2020
				<i>Rounding</i>			-1	-1	-2	2	
Revised			20/12/2008	ALL	81	80	75	70	55	2425	2008



1116. New Schools of Economics

Richard Heinberg has written the following most perspective assessment for the Post-Carbon Institute. The time has come for new schools of economics to arise and face the reality of what unfolds. It is said that Generals always fight the last war having failed to perceive the impact of changed circumstances, but new economic schools can arise to properly address the resource limits of the Planet. Some are already in existence and urgently need more recognition especially in political circles. Imaginative politicians can reap rewards by leading rather than following outdated principles. The trouble is that most political parties are funded by the financial establishment of the past, who, like the Generals, follow what worked well in the past but does not meet what unfolds.

Economists Without a Clue

by

Richard Heinberg, December 3, 2008

Prepare to observe the spectacle of the two great economic paradigms of the twentieth century crashing to the ground, locked in mortal combat.

A hundred years past, markets ruled freely: fortunes were made, workers abused, bubbles blown. According to the Austrian School of economists, led by Ludwig von Mises, this was all as it should be: despite any temporary pain or inconvenience, the unfettered market always knows best how to allocate goods and organize investment and labor.

But the ensuing pain and inconvenience were just too much for the various stripes of Marxists and socialists, some of whom led a revolution in Russia to establish the first state-controlled, planned economy.

The catastrophes of the Great War and the Great Depression led to the ascendancy of John Maynard Keynes, the British economist who argued that even capitalist economies needed regulation and controls in order to avoid excessive manias and subsequent implisions.

Keynesianism reigned supreme throughout the middle decades of the century, as the US, Britain, and nearly every other country adopted regulations on banking, finance, and industry, in many cases going so far as to nationalize railroads and other central features of the productive economy.

Meanwhile, rival economist Friedrich von Hayek and his followers quietly plotted the Austrian School's revenge—the occasion for which was offered by the stagflation of the 1970s. Von Hayek, who had raised a generation of followers (including Milton Friedman) at the Chicago School of Economics while toiling in obscurity, was now prominently rewarded with the so-called Nobel prize in economics (there actually is no prize in economics offered by the Nobel family), and his acolytes Margaret Thatcher and Ronald Reagan promised to show the world the way back to freedom and prosperity: government was the problem, they proclaimed, and privatization the solution!

The ensuing three decades have seen economists crowding back to the "Let Markets Rule" side of the ship, as they giddily praised the wonders of globalization and free trade.

Now with the Collapse of 2008, economists are rushing to announce a new era of neo-Keynesianism: lack of regulation in the finance industry has led to a cataclysm of unimaginable proportions, and only massive government intervention can put us back on track.

Sadly, this time the tracks have been moved, maybe dismantled altogether. The two great economic paradigms of our age simply took too much for granted. They assumed that economies run on money and labor, whereas real economies also need energy and natural resources. They assumed that because population, resource extraction, and available energy had grown throughout the 19th and 20th centuries, they would continue to grow in perpetuity; all that was necessary was to properly adjust the relations between money, market forces, and government regulation. No one (within the economics profession) stopped to think that limits to Earth's supplies of fossil fuels, topsoil, water, and other resources might impose ultimate limits on economic activity.

The fields of ecological economics and biophysical economics have sprung up in the past two or three decades to fill in this enormous blind spot of conventional economic thinking, but both are currently marginalized to the point of irrelevance.

In the months and perhaps years ahead we will see a titanic battle to the finish between the free marketers and the state controllers over who is right about the economy, and about who is capable of restoring the beatific condition of perpetual growth. Sadly, neither camp has the answer this time around. Humanity has reached a significant physical limit to growth—Peak Oil—that will spell ruin to all economic philosophies that fail to take such limits into account.

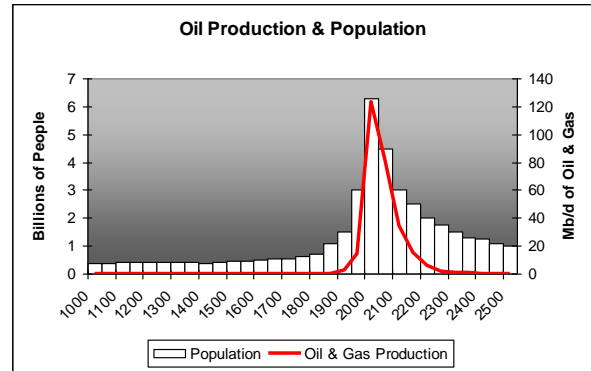
How long will it take the theoreticians to figure this out? How much of our remaining wealth will they destroy in a futile attempt to prove one or another of their paradigms to be eternally true? How far will society unravel before someone in charge begins to question the received wisdom?

Let's hope their learning curve is short

(Reference furnished by William Tamblin)

1117. Oil and People

That the world's population has grown greatly over the past Century is a matter of historical fact. The explanation for the anomaly is open to debate: doctors might attribute it to advances in medicine; and economists might see it as a reflection of successful market forces. But the role of energy, especially that from oil and gas which simply flowed from the ground under their own pressure, must be significant. It has both fuelled the massive transport fleets that ply the world's roads, skies and oceans, and has had a critical impact on modern mechanised agriculture, providing food. While a debate rages as to the date of peak production as imposed by natural depletion, there can be little doubt that *Petroleum Man* will be virtually extinct by the end of this century. It is reasonable to expect that his departure will have an impact on the overall population.



According to the IEA, oil and gas accounts for more than half of the world's energy supply (see table). It is virtually inconceivable that the production of the alternatives can be increased to offset the depletion of oil and gas. Already much of the world lives a hand-to-mouth existence, so an overall fall in population seems inevitable. The present financial crash probably marks the opening of the new order as the perception of the inevitable economic contraction which must characterise the Second Half of the Oil Age begins to permeate the system. The transition threatens to be a time of great tension as explained by William Stanton in his excellent book *The Rapid Growth of Human Populations 1750-2000* (ISBN 0-906522-21-8), but a new more benign and sustainable age may dawn for the survivors.

Energy	%
Oil	36
Gas	21
Coal	25
Renewables	10
Nuclear	6
Hydro	2

1118. Storage – Correction

Item 1109 contained an error in the decimal point regarding the size of tankers. The sentence should read as follows : *Tankers form an additional form of storage that can be chartered and simply anchored somewhere as the price structure evolves, which must in turn be a useful business for tanker-owners. The cargo of a modern tanker, holding as much as 2.6 million barrels, is worth \$130 million or \$390 million at \$50 and \$150 respectively.* (Welcomed correction pointed out by Bruce Stevens)

1119. Major Investment Bank recognises Peak Oil

It is both remarkable and very encouraging to find Merrill Lynch admitting to Peak Oil so clearly.

Oil output could fall by 30m bpd by 2015 - Merrill

by Tom Arnold on Wednesday, 04 February 2009

Steep falls in oil production means the world now needed to replace an amount of oil output equivalent to Saudi Arabia's production every two years, Merrill Lynch said in a research report.

Non-OPEC crude oil production may have already peaked and international oil companies faced the prospect of both younger and older oil fields declining steeply, the firm said in the report released on Wednesday.

It said the cumulative decline of global oil production from today could amount to 30 million barrels per day by 2015. As a result of these steep decline rates, the world now needs to replace an amount of oil production equivalent to Saudi Arabia's production every two years," said Francisco Blanch, head of global commodities research at Merrill Lynch.

The International Energy Agency expects an increase in non-OPEC output of 51 million barrels per day over the next seven years, the firm said, while it saw production in the range of 49 million to 50 million barrels a day in the same period.

But it said should the credit crunch push decline rates to six percent, non-OPEC production could decline precipitously towards 47 million barrels per day by 2015 from current levels.

It said oil production decline rates were a function of investment rates, as well as the size and age of oil fields. "All these factors point to steeper oil output declines going forward," said Blanch.

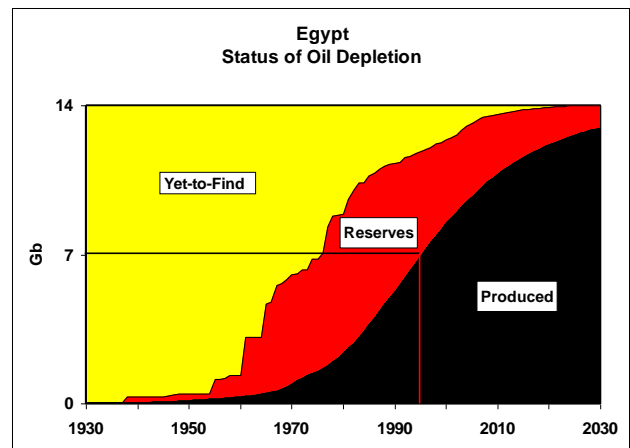
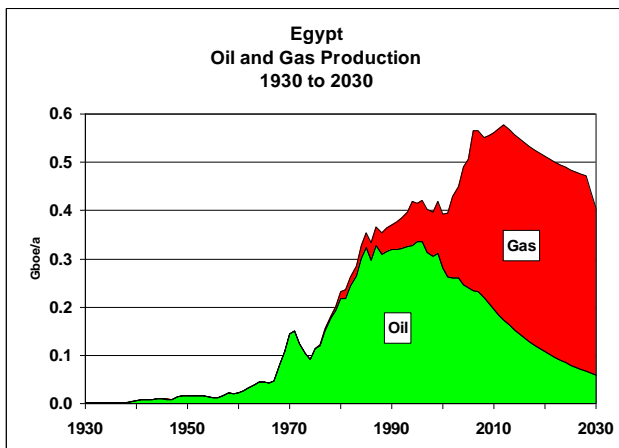
Merrill Lynch said the combined declines in OPEC and non-OPEC countries alike could lead to pressure for higher oil prices as soon as 2010 or 2011, assuming the economic slowdown did not turn into a multi-year event where global oil demand was pushed down structurally for the next five years.

Saudi Arabia, the world's largest oil exporter, said last month it will take the lead among OPEC members in trying to halt a six-month slide in prices. (Reference furnished by W.Tambllyn)

1120. Egypt Revisited

Egypt was last evaluated in Newsletter 30 of 2001, so this important country is due for an update. The following is based on the *Atlas of Oil & Gas Depletion*

EGYPT						AFRICA			2008	
Production to 2100						Peak Dates			Area	
Amount	Oil Gb	Gas Tcf	Rate Date	Oil Mb/a	Gas Gcf/a	Discovery	Oil 1965	Gas 1996	Onshore	Offshore
PAST	10.4	18	2000	280	623	Production	1996	2017	1001	145
FUTURE	3.6	72	2005	240	1475	Exploration	2006		Population	
Known	3.2	65	2010	195	2040	Consumption	Mb/a	Gcf/a	1900	10
Yet-to-Find	0.4	7.2	2020	107	2249	2008	241	1100	2008	75
DISCOVERED	13.6	83	2030	59	1924		b/a	kcf/a	Growth	7.5
TOTAL	14.0	90	Trade	-22	+478	Per capita	3.2	15	Density	75



Essential Features

Egypt covers an area of about one million square kilometres. Much of it is barren desert apart from the Nile Valley forming a long fertile strip. The Red Sea and Gulf of Suez separate it from Arabia, while the Mediterranean washes its northern shore. It has common frontiers with Libya to the west and the Sudan to the south. Its population of 75 million makes it the third most populous country in Africa after Nigeria and Ethiopia.

Geology and Prime Petroleum Systems

In geological terms, there are three main productive basins, of which by far the largest is the offshore Gulf of Suez, where oil is trapped beneath Miocene salt. Although now a very mature basin, modern technology has improved the mapping of the sub-salt plays, which may possibly lead to a few more modest finds. Another basin lies in the El Alemein area of western Egypt where Jurassic source-rocks have charged Cretaceous reservoirs in easterly trending rift zones. The third basin is the Nile Delta, which is a gas province. The Mediterranean shelf is narrow and steep. It might hold some deepwater potential, but the chances are slim.

Exploration and Discovery

Exploration commenced in the 1920's when a number of small discoveries were made, but it was not until the opening of the Gulf of Suez in the 1960's that the country's potential was realised. Amoco took a dominant position, working closely with the State oil company, to bring in the El Morgan Field in 1965 with over a billion barrels of ultimate recovery. It was followed by the July, Belayim and Ramadan fields, which just attain 500 Mb giant status. Over 1800 exploration boreholes have been drilled. Exploration drilling reached an early peak in 1985, followed by a recent surge to 2006 when as many as 80 boreholes were drilled. But overall exploration is at a mature stage, with the larger fields well into decline. Exploration drilling is expected to decline and draw to a close around 2030 as fewer and fewer prospects remain to be tested.

The Nile Delta holds substantial gas reserves of about 50 Tcf and offers some further potential. The country's total reserves amount to about 65 Tcf.

Production and Consumption

Oil production commenced in 1914 but did not rise significantly until after the Second World War with the discoveries in the Gulf of Suez. It passed 500 kb/d in 1979 to reach a peak of 922 kb/d in 1996, since when it has declined to about 600 kb/d. It will likely continue to decline in the future at about 5.8% a year. Consumption has risen steeply in recently years to reach 241 Mb/a, meaning that the country already a net importer.

Gas production commenced in 1935 and reached an early plateau at around 1.5 Gcf a year from 1941 to 1953 before falling steeply. A second surge of production came with the opening of the offshore in the Nile Delta to climb steeply over the last few years to almost 2 Tcf a year. It is now expected to plateau at about 2.2 Tcf/a for the next two decades before declining steeply. Consumption has risen in parallel. Along with related Gas Liquids, it will be an increasingly important source of energy for the population centres of Cairo and Alexandria.

The Oil Age in Perspective

It seems likely that *Homo sapiens*, as he first stepped out of Africa, followed the fertile Nile valley, which has been a focus of population ever since, being the site of early civilisations marked by the famous Pyramids and tombs that still attract the attentions of archaeologists.

Alexander the Great conquered Egypt in 332 BC, founding Alexandria, the second largest city, which became a centre of early learning. Egypt became a Roman colony in 32 BC, following the Battle of Actium, when its celebrated Queen, Cleopatra, endearing herself the Roman conqueror, Mark Anthony. In 642, it was taken by Arabs, who introduced Islam and their language, founding Cairo, the present capital, in 973. Saladin overthrew an existing Shi'ite dynasty in 1171 and the country converted to the Sunni sect. The country was later invaded by the Ottoman Turks in 1517, who operated a fairly delegated administration, entrusted to the surviving Mameluke leaders despite their military defeat. Napoleon led a short-lived French invasion in 1798, before Muhammed Ali, an Ottoman ruler of Albanian origin, established a new strong government that embarked on foreign conquests, including what is now Saudi Arabia and Syria.

British interest in Egypt stemmed from the Suez Canal, which was built by the French in 1869 and provided a strategic short cut to India, the jewel of the British Empire. An additional interest was the production of cotton by which to supply the textile mills of Lancashire. Rivalry with France for control of Egypt ended in 1904 when France withdrew in exchange for British recognition of French claims to Morocco.

Britain occupied Egypt when Turkey entered the First World War on the German side, declaring it to be a Protectorate. There were various moves to independence in the inter-war years with the establishment of puppet regimes but the country remained effectively under British control. In the Second World War, it saw the first decisive defeat of German forces at the Battle of El-Alamein in 1942. British influence dwindled after the war leaving the country more or less independent under King Farouk.

In 1948, Egypt, together with Syria, Jordan and Iraq, launched an attack in Palestine to oppose the creation of the State of Israel on Arab lands, but was roundly defeated. That setback indirectly led a group of Army officers, under Col. Nasser, to take control of government in 1952, declaring a republic one year later. Having failed to secure international finance, Nasser decided to nationalise the Suez Canal in 1956 to fund the construction of the Aswan Dam on the Nile, which was desperately needed to control irrigation and provide hydroelectricity. Israel took this opportunity to strike in what might have been a contrived attack, giving Britain and France a pretext to send in a military force to protect the canal. But they were ignominiously made to withdraw under US and Russian pressure.

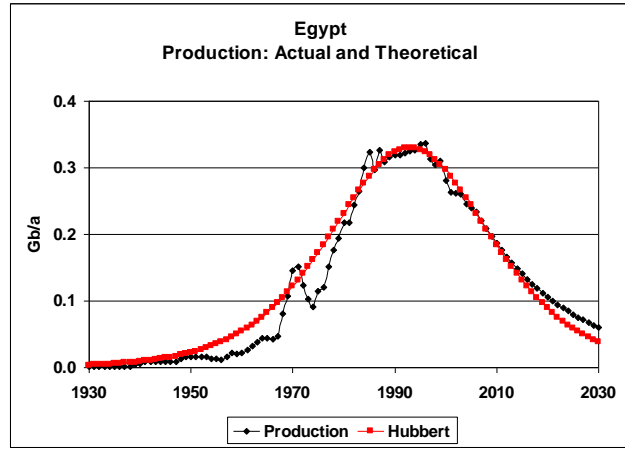
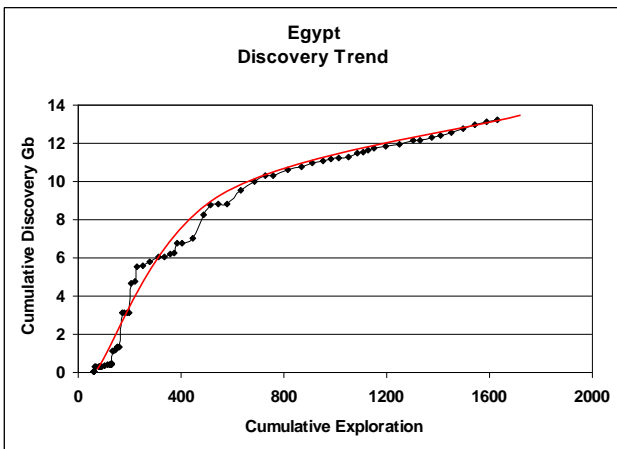
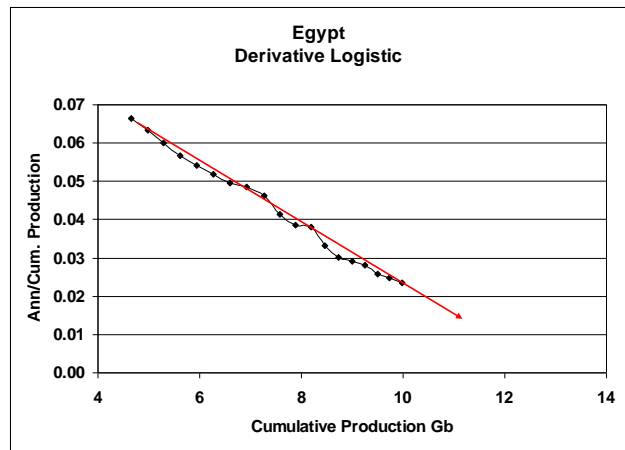
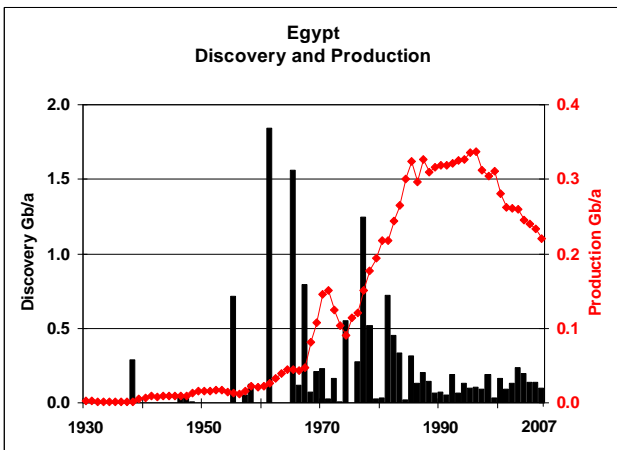
Col. Nasser emerged as an imaginative and strong leader of the Arab world, forming the United Arab Republic with Syria in 1958, which was however dissolved three years later by Syria. The continuing perceived threat by Israel led to various interventions and alliances over the ensuing years, culminating in the Six-Day War in 1967 when Israel launched a pre-emptive strike. As many as 10,000 Egyptians were killed in the hostilities, and Nasser resigned, only to die three years later.

He was succeeded by President Sadat, who, with Syria, launched the so-called Yom-Kippur War in 1973 as a surprise attack on Israel. Although not a total military victory, it did bring Israel to the conference table. The Oil Shock of 1974 was a related event, as several Arab countries tried to counter US support for Israel by briefly restricting oil exports. It led to a certain more even-handed US position under President Carter, who now began to court friendship with Egypt, making substantial "aid" payments. However, the failure to resolve the plight of the Palestinians led to simmering unrest, which resulted in the assassination of President Sadat in 1981 by a group of activists opposed to conciliation.

The present President, Hosni Mubarak, has since pursued a moderate policy, concentrating on economic development, on which progress has been partly countered by the effects of an exploding population. There

remains an undercurrent of deep frustration by those seeking to restore Arab confidence, which may erupt at any time, having been encouraged by the Anglo-American invasion of Iraq. The pressures are likely to grow as economic conditions deteriorate in the face of growing oil imports and high prices. Israel's recent attack on the Palestinians living in the Gaza Strip, bordering Egypt, may have further inflamed feelings in the country, and the world economic depression will no doubt affect living conditions. It would not be surprising if these circumstances trigger a new political environment, especially as the present President approaches his 80th birthday.

The country's need for oil imports will grow as domestic production continues to fall. But gas production can be maintained, and the country is blessed with a high level of solar radiation, which could help provide for its energy needs over the next few decades. Looking ahead it would be reasonable to expect growing Egyptian pressure on Libya, its oil-rich neighbour, which may take the form of close cooperation or, if that fails, outright hostility. It might provide the foundation for a new Arab power base following the frustrated dreams of Col. Nasser.



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)

~

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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