THE ASSOCIATION FOR THE STUDY OF PEAK OIL AND GAS

"ASPO"

NEWSLETTER No 41 - MAY 2004

ASPO is a network of scientists, affiliated with European institutions and universities, 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.

The following countries are represented: Austria, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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.***

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This newsletter and past issues can be seen on the following websites:
http://www.asponews.org
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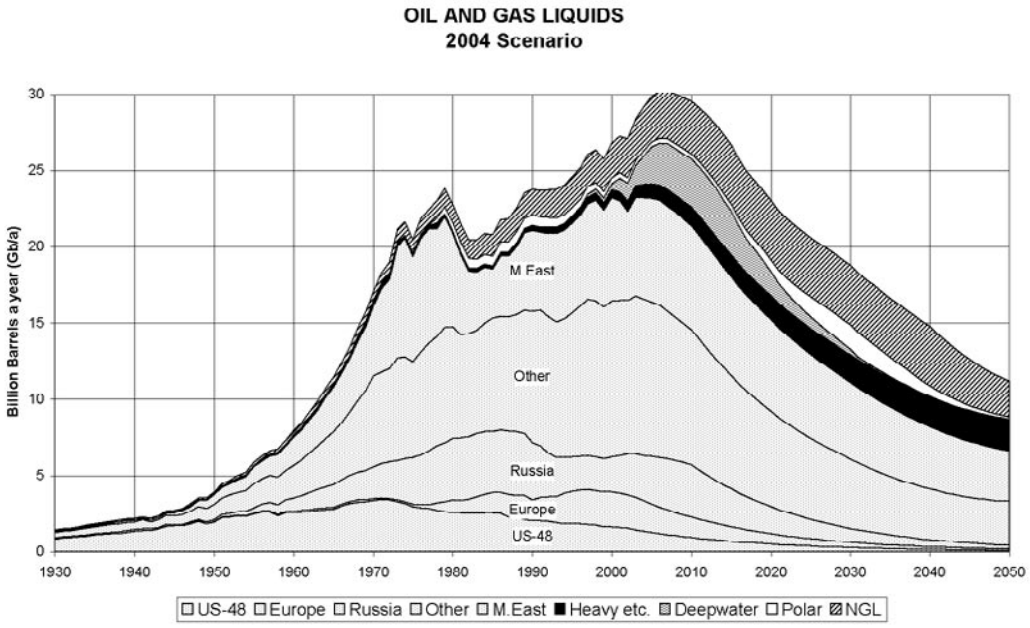
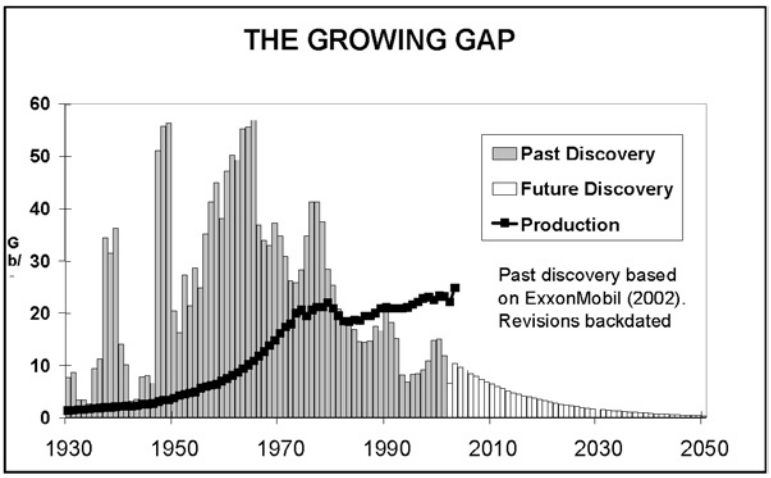
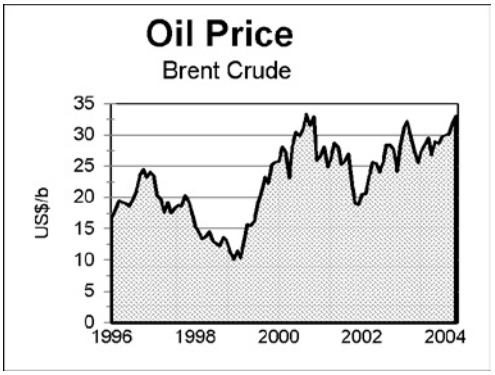


ESTIMATED PRODUCTION TO 2075									End 2003	
Amount			**Gb**	**Annual Rate - Regular**					**Gb**	**Peak**
Regular Oil					**2005**	**2010**	**2020**	**2050**	**Total**	**Date**
Past	Future		Total	US-48	3.6	2.6	1.4	0.2	195	1971
Known Fields		New Fields		Europe	5.0	3.6	1.8	0.3	75	2000
	780	150		Russia	9	10	5	0.6	210	1987
920	930		1850	M.E. Gulf	19	19	17	9	650	2006
All Liquids				Other	28	25	17	9	720	2004
990	1710		2700	**World**	65	60	42	19	1850	2005
2004 Base Scenario:				**Annual Rate - Non-Regular**						
M. East over-reporting corrected				Heavy etc	2.6	3	4	6	300	~
M. East assumed to be producing				Deepwater	5.6	8	4	0	60	2012
at capacity.				Polar	0.9	1	2	0	60	2037
Regular Oil includes condensate				Gas Liquid	8.2	9	11	6	400	2027
but excludes gasfield liquids				**All**	82	81	63	31	2700	2007





352. Saudi Reserves

The debate about Saudi reserves continues. Ken Chew, who is in charge of the database at IHS upholds the official numbers with the following comment

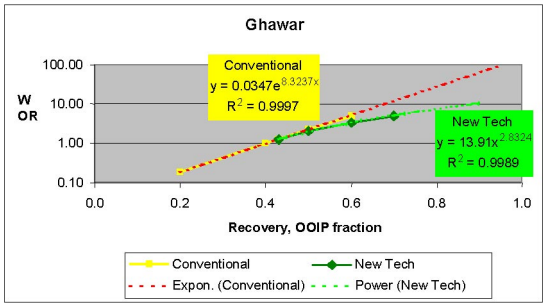
I'm afraid I disagree with you about what the ME countries are reporting.

They may be exaggerating, that is one thing, but when they clearly indicate that what they are reporting is remaining (as on the Iraq graph and the detailed Iranian field figures that I sent you) or, as in the Saudi case, show a graph indicating the build up of original discovered oil-in-place -04) from below 600 billion in 1982 to 700 billion in 2003, I think you owe it to your readers to report their numbers before disagreeing with them, rather than just pretending that these values don't exist and have never been reported.

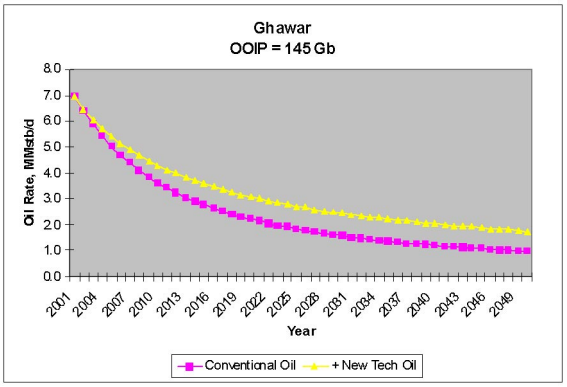
My point was that, reading your article, you come up with a convoluted calculation leading to what you believe the Saudi OOIP must be without ever mentioning the fact that they say it is 700 billion. To my mind, when you are aware of this figure, it is extremely misleading not to report it. By all means then go on to refute it if you can and let the readership make up its own mind.

It is interesting to note that if one accepts their 700 billion in-place and takes the 99 billion produced and 260 billion remaining, the RF is 51% which is near the mid-point of the range your Aramco engineers indicate for Ghawar.

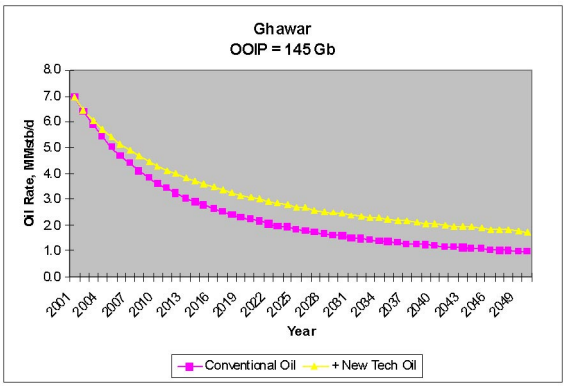
Others provide further information on the difficult reservoir in the Ghawar Field. The limestone reservoir is cut by faults and fractures, along which the injected water rises preferentially. The sophisticated multi-branch horizontal wells are a desperate attempt to tap the bye-passed low permeability zones and hold production up.



Much may also be learned from the presentation made by the Saud's at the IP Week in London (Feb 2004), which included a key plot of oil/water ratio versus percentage recovery. This is evidently a standard engineering procedure, and not a public relations exercise. The trend lines so depicted reveal the true position. The field is evidently in decline, and will have produced about 80 Gb by around 2010, when the water cut will have risen to 80%. Production can continue beyond 2010, but the percentage of oil will dwindle further. The new technology may extend the life by a few years, and the economic limit is low because the field is onshore and at moderate depth. The important point is not so much the size of what is left but the dwindling rate of extraction.



If Ghawar, by far the largest field, has meaningful reserves of only about 30 Gb (ignoring the tail end), it is hard to imagine how the country as a whole can have 259 Gb as reported. It is more likely that that represents the amount discovered, possibly with optimistic recovery assumptions. It seems likely that the other Middle East OPEC countries are following the same procedure, especially in relation to OPEC quota, but we lack the detailed information that the Saud's, perhaps inadvertently, released.



The engineer, who previously worked on Ghawar, makes the following detailed comments

1. The Ghawar peripheral water flood is a tribute to flood management and excellent reservoir quality as evidenced by the 20% of OOIP recovered before significant water break-through.
2. Ghawar is at, or near, its mid-point of depletion, and has been declining since 1998 (whether by design or constrained by reservoir physics is unknown).
3. Depending on which OOIP quoted, current annual depletion of Ghawar is from 1.1 to 1.5% of OOIP.

4. Past fluid production can be quantified by using the conventional WOR vs. fraction OOIP recovery trend and historical oil production data.
5. In the late 1970s, Ghawar oil production was ~6.5 MMstb/d with very little water production. The total calculated fluid capacity of ~6.5 MMstb/d to 7 MMstb/d in the early 1990's suggests few additional wells were drilled during the intervening 15 year period. With the onset of increasing water cut to >40%, starting in the late 1990s, production volumes were increased (additional infill wells, artificial lift, and 3-phase separation), doubling fluid production to more than 15 MMstb/d. Oil production peaked in 1998 at nearly 8 MMstb/d. Since then water cut has increased to a current estimate >60% and is increasing at 3% points per year.
6. At 60% OOIP recovery, the WOR trend suggests that Ghawar will still deliver an economic 1 MMstb/day at ~83-84% water cut by ~2017-2022 "Emerging and New Technology" (e.g MRC, maximum reservoir contact multilateral wells) could add 0.9 MMstb/d and up to 20 Gb total from now until the end of the Century

353. Towards the Petro-Apocalypse,

The following article, roughly translated, by a former French minister appeared in a premier French newspaper. It picks up on the proposed Depletion Protocol that has been aired in these pages.

Towards the Petro-Apocalypse

by Yves Cochet

Le Monde 31.03.04

In a few years, the World's production of conventional oil will decline, while world demand does not cease to grow. The shock resulting from this structural oil famine is inevitable, given the dependence of our economies on cheap oil and the concomitant impossibility to lessen it in the time available.

We can only hope to deaden this shock, by making sure that this imminent prospect becomes a general mobilisation of our companies, imposing drastic consequences on all sectors of the economy. The penalty for not doing so is chaos.

This anticipation is founded on the method of the American geologist King Hubbert, who had correctly predicted in 1956 that the peak of the oil production in the United States would arrive in 1970. The application of Hubbert's reasoning to other countries gives similar predictive results to-day. All the giant oil fields, which are the only ones that count, are in decline, save in the "black triangle" of Saudi Arabia -Iraq-Iran. The peak of this oil in the Middle East should be reached around 2010, assuming the resumption of full Iraqi production, and accepting the growth of Chinese demand. The sectors most affected by the rise will be initially aviation and the agriculture, where the rising price of respectively kerosene and synthetic fertilisers will have a serious impact.

There is scope to reduce tax to lessen the impact of rising oil price to give a little breathing time. But later, other sectors, including, surface transport, tourism, petrochemicals and the automobile industry, will face the consequences of oil depletion.

This situation evidently leads to general recession. It is easy to see it coming, although we close our eyes to reality, preferring to ignore, deny or underestimate its impact. But there are some voices trying to draw attention to the gravity of the position.

Michael Meacher, former Minister for the Environment of the United Kingdom (1997-2003), recently wrote in the Financial Times that in the absence of a general awakening and immediate global decisions of radical changes as regards energy, "civilisation" will face its most acute and violent upheaval of recent history.

If we want nevertheless to maintain a little humanity to the life on Earth in the years after 2010, we must, as the geologist, Colin Campbell, suggests, invite the United Nations to agree today to an agreement, based on the objectives of allowing the poor countries to still import a little oil; preventing profiteering from the oil shortage; providing incentives for energy saving; and stimulating renewable energies.

To achieve these goals, the universal agreement will have to implement the following measures. Each State shall regulate the imports and exports of oil; no oil exporting country shall produce more oil than its annual Depletion Rate, such to be scientifically calculated; and each importing State shall reduce its oil imports to match World Depletion Rate

This necessary recognition of physical economic limits will confront the theories of classical economics and the in particular the policies of the United States, whose successive governments have never accepted any question regarding the viability of the "American way of life".

All American military interventions since the first oil crisis of 1973-1974 can be attributed to the fear an interruption in the supply of cheap oil. Furthermore it was the peak of American oil production in 1970, which made it possible for OPEC to take control. It led to this first shock, coinciding with the Yom Kuppur war. The West then tried to regain control, not by energy saving but by bringing in new oil fields of Alaska and the North Sea. The Iranian Revolution of 1979 triggered the second oil crisis, returning power to OPEC, while the Western economies paid for their oil dependence by moving into recession over the following years.

During the early 1980s, the Americans again sought to retake the control of oil by financing and providing arma-

ments to Saddam Hussein during the Iranian War. It also secured the complicity of King Fahd of Saudi Arabia to increase crude exports to the West. We may ask if that was responsible for the renewal in the Western belief in an unlimited oil abundance and it unswerving greed for oil. It stimulated the Iraq wars of 1991,and 2003, which involved estimated deaths in the100 000 300 000 range, costs in the100 to 300 billion dollar range, and an annual Defence Department of 400 billion dollars

During same the fifteen last years, the multiple conflicts of the Balkans may be explained in terms of a US policy to open routes for the export of the Black Sea and Caspian oil to Adriatic ports via Bulgaria, Macedonia, and Albania, thus breaking the stranglehold of Russia

The geopolitics of oil have permitted all the pacts with the Islamic Fundamentalists, from Central Asia to Bosnia, and other cynical relations with terrorists, epitomised by Tony Blair's recent trip to Libya, which made it possible for Shell to increase its reserves at the cost of a few hundreds of million dollars.

The current American project for a Greater Middle East, under the banner of humane and democratic government, is nothing other than an attempt to place a definitive hand on the oil wells of the area.

For more than thirty years, American and European leaders have been mesmerised by the control oil supply, without perceiving the imminent energy crisis from depletion. Despite what was said by Rene Dumont and the ecologists in the Presidential campaign of 1974, the Governments of the industrialised countries continued - and continue -, to believe in a quasi-inexhaustible supply of cheap oil, notwithstanding its cost in the deterioration of the climate and human health by emissions and greenhouse gases. They did so rather than to organise the de-carbonisation of their economies.

However, the oil crisis, which now arrives before the end of the decade, differs from all precedents. This time, it is not geopolitical but geological. The Oil Shocks of 1973 and 1979 were politically inspired by OPEC, and were in due time resolved, but today it is the wells themselves that decline. Even if the United States managed to impose its hegemony on all the oil fields of the world (except Russia), neither its army nor its technology can conquer the power of depletion, as imposed by Nature

There is no possibility to find another fuel as cheap, convenient and efficient as conventional oil with its many uses. The investment of 100 trillion dollars could not deliver a substitute

As for Natural Gas, it lacks the aforesaid qualities of oil and will in any event reach its peak of production about ten years after oil, around 2020.

The only viable way forward is to cut demand by an international agreement as outlined above, which will force us to give up our addiction to the black gold. Without awaiting this delicate international agreement, our new regional elected officials and our next European representatives should give priority to do everything possible to reduce oil demand in their areas. Without some form of rationing, the market will deliver soaring prices and inflation affecting all sectors of the economy

Oil at 100 dollars the barrel will not spell a simple oil crisis, but the end of the World as we know it.

Yves Cochet is former Minister for the Environment and Regional Planning, and representative of the Green Party in Paris.

354 A Dire Energy Situation unfolds in Argentina and Chile

As countries face domestic production shortfalls, they will be ever less inclined to export, whatever the price, and despite the dictates of the global market proclaiming that the resources of the world belong to the highest bidder. This can only exacerbate the global supply position. A separate report (Reuters April 8th) mentions that gas shortages are having a crippling effect on the copper production of which Chile is the World's leader.

BUENOS AIRES, Argentina, (Reuters) - Argentina's worst energy crisis in 15 years threatened to spread through the region Wednesday with Chile facing shortages of imported natural gas and other nations looking for ways to ease the pressure. The situation, fuelled by rising demand as Argentina's economy rebounds, led the government Wednesday to limit monthly natural gas exports to 2003 levels through September.

At least three electrical plants in northern Chile will be affected by a 10.5 percent cut in supplies starting Thursday, Chilean officials said. And Uruguay expects reductions in electricity imports from Argentina.

"Any measures must target demand because there is simply no more gas," an energy sector source based in Buenos Aires said on Wednesday, adding that local demand for natural gas has surged 25 percent in the last year.

Late Wednesday, Uruguay's foreign minister proposed to his Brazilian counterpart that the Mercosur trade bloc -- which includes Brazil, Argentina, Uruguay and Paraguay -- create an energy bank to avoid shortages among members.

Bolivia, Chile and Peru are associate members of the bloc.

Brazil, Venezuela and Bolivia have pledged to help Argentina through the crisis, caused by gas shortfalls and a dry spell that has reduced hydroelectric power.

Chile depends on Argentina for more than 90 percent of its natural gas needs, and more than 35 percent of electric-

ity in Chile comes from natural-gas-burning plants.

Argentina's gross domestic product jumped 8.7 percent in 2003 after a devastating four-year recession, during which its economy shrank by 20 percent. Officials have expressed concern that energy shortages could imperil the nation's recovery. The government has criticized gas firms for not investing in infrastructure and exploration, but companies say they were greatly hampered by a two-year rate freeze and sharp currency depreciation in 2002.

EMERGENCY IMPORTS, POWER CUTS FOR ARGENTINA

Referring to firms within the energy sector, President Nestor Kirchner said Wednesday evening: "We will not accept any pressure or extortion by these economic groups. They will have to invest, they will have to generate the product, and they will have to work for the good of Argentina."

On Wednesday, Argentina's energy secretary traveled to Brazil to ask that country to keep supplying power to Argentina to ease the crisis, a Brazilian government official told Reuters, speaking on condition of anonymity. A Brazilian government source told Reuters Wednesday night that Brazil would continue supplying Argentina with electricity on an emergency basis without interrupting the service.

Emergency electricity imports from Brazil allowed the government Tuesday to lift nationwide voltage cuts imposed 24 hours before. Argentina has cut power by 20 percent to about 30 local industrial users, such as steel and auto makers, forcing them to turn to more expensive fuel-oil generators.

Officials in Venezuela, the world's No. 5 oil exporter, pledged Wednesday to export fuel-oil and diesel to Argentina in coming months. And Bolivia said it was willing to raise natural gas exports to Argentina as long as the gas does not end up in neighboring Chile, with which it has had a long-standing territorial dispute. Bolivia has 55 trillion cubic feet of natural gas reserves, second only to Venezuela in Latin America.

FEWER NATGAS EXPORTS

It is not completely clear how Argentina's move to limit natural gas exports to 2003 levels will affect energy firms operating in the country.

"There won't be any changes in older, long-term contracts because exports will be the same as in 2003. But what will be halted are additional sales to clients seeking more gas," said an energy sector source, who asked not to be named.

Because recent dry weather has also cut hydroelectric power in Chile, firms there have been buying more gas to generate power, the source said. Companies sell gas at a third of the regional market price in Argentina due to the currency depreciation and rate freeze. And so a limit on exports "will hurt energy companies economically," another source said.

(Reference furnished by Julian Darley)

355. Country Assessment - Algeria

Algeria covers an area of about 2.3 million km^2 , supporting a population of about 30 million people. They are concentrated along the northern seaboard, where the capital, Algiers, is located. The Atlas Mountains, which comprise two main ranges separated by a high plateau, border the Mediterranean in the north, with the highest peaks rising to 2500 m, while in the south lies the Sahara Desert. A northerly trending divide separates it into two arid depressions covered in sand dunes: the eastern desert lies at an altitude of about 600m, while the western one locally drops below sea level. The Hoggar Mountains in the far south rise to as much as 3000m, exposing geological sequences that give a clue to what lies below the deserts.

The country was originally occupied by Berber tribes, but was invaded by Arabs during the first millennium, bringing the people into the fold of Islam. Later, the country was incorporated into the Ottoman Empire, partly as a defence against Spanish incursions. The coast became home to pirates threatening Mediterranean trade, which led France to invade in 1830, successfully subjugating the country over the next twenty years. French settlers arrived in increasing numbers to eventually dominate the country, which was later incorporated into the French State. Algerian soldiers fought for France in the First World War: many survivors to remain in metropolitan France, supporting their families at home with remittances. Even so, a strong thread of nationalist feeling survived to erupt during the Second World War. By 1954, the National Liberation Front initiated a phase of what would now be called terrorism, seeking to re-establish an independent Islamic State. France sent in an army to suppress them, while various moves to political compromise were attempted. Finally in 1959, General de Gaulle began to bow to the inevitable of self-determination, which followed in 1962. As many as 10 000 French troops and 250 000 Muslims had lost their lives in the struggle. Many French settlers returned to the homeland on independence, their departure crippling the local administration and much of the business life. The economy collapsed, with revenues from newly found oilfields being the only bright light. Facing these problems, the new government adopted a policy of central planning, being a form of Islamic Communism, similar to that enjoyed by Iraq, prior to the invasion. Border disputes with Morocco over the ownership of iron-ore deposits led to a short war in 1963. Remittances from the large number of Algerian workers in France continue to be an important element in the economy. It appears that while the independent government has been moderate and pragmatic, the country retains its revolutionary traditions and outlook. In 1992, the Army intervened to suspend an election

that would have returned the Islamic Salvation Front, and some 150 000 civilians lost their lives in the subsequent repression. Mr Bouteflika has been running the country with the support of the Army, but has now been endorsed by new elections. It remains to be seen how the country will react to the growing movement towards pan-Arab solidarity provoked by the invasion of Iraq. The military will likely retain a strong hand in government, even with the return of a form of democratic process.

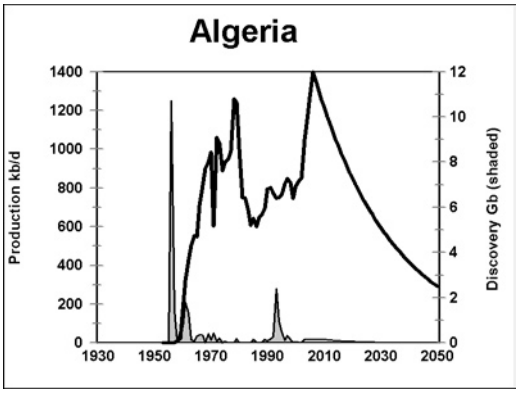
In geological terms, the Atlas Mountains form the boundary between the African and Eurasian tectonic plates, being subject to severe recurrent earthquakes. The country did not at first appear to hold much promise for oil. The mountains to the north were too disturbed, while the margins of the African Shield beneath the Saharan sands appeared less than attractive, but the perseverance of the French explorers was eventually rewarded. They discovered a series of northerly trending Palaeozoic basins beneath the desert sands, which were evaluated by regional refraction seismic surveys and deep boreholes. This effort led to the discovery of a buried arch at Hassi Messaoud, where flanking Silurian source-rocks have charged Cambrian sandstones with oil. Triassic salt above has contributed to the seal. The field, found in 1956, contains some 9 Gb of oil, making it the largest in Africa.

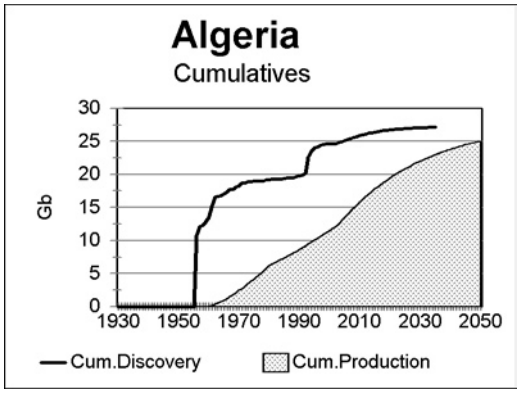
ALGERIA		Regular Oil
Population M		**32**
Rates Mb/d		
Consumption	2003	0.17
per person b/a		1.9
Production	2003	1.0
	Forecast 2010	1.2
	Forecast 2020	0.85
Discovery 5-yr average Gb		0.03
Amounts Gb		
Past Production		12.5
Reported Proved *Reserves**		11.3
Future Production - total		15.5
From Known Fields		13.3
From New Fields		2.2
Past and Future Production		28
Current Depletion Rate		2.4%
Depletion Midpoint Date		2006
Peak Discovery Date		1956
Peak Production Date		2006

* Oil and Gas Journal

Exploration was stepped up in the adjoining basins, where the main source rocks in the Silurian had been buried into the gas-generating zone, giving a series of major gas-condensate discoveries, dominated by Hassi R'Mel with about 100 Tcf. Additional Devonian source-rocks were later found in other areas, providing a second cycle of oil and gas discoveries, which are generally of small to moderate size.

The political situation associated with independence, led to a curtailment of exploration, the establishment of a State Oil Company, SONATRACH, and a decision to join OPEC. But later during the 1990s, the country decided to re-admit foreign companies, partly with a view to securing gas exports to both Europe and the United States. This policy was rewarded by a series of new discoveries, including several in the remote Ghadames Basin, which straddles the border with Libya.





Some 1100 wildcats have been drilled. The peak was in 1962 when 66 were drilled, before the number fell to the present level of 20-30 a year. Exploration is here expected to end around 2035.

Algeria boasts four giant oilfields : Hassi Messaoud (1956) with 9 Gb; Zarzatine (1957) with 1Gb; Rhourde El Baguel (1962) with 600 Mb and T-F Tabankort (1966) with 500 Mb, and as many giant gas fields, dominated by Hassi R'Mel.

Past production of oil amounts to about 12.5 Gb, and future production is here tentatively assessed at about 15.5 Gb, of which about 2 Gb are expected to come from new discoveries. Production is currently running at 1 Mb/d, and is expected to rise to a peak of 1.4 Mb/d by 2006 at the midpoint of depletion, before falling to about 850 kb/d by 2020 and 300 kb/d by 2050. Consumption is running at 62 Mb/a, meaning that Algeria can remain a net exporter for another

fifty years assuming no increase in domestic demand. There remains however a sneaking suspicion that these estimates may prove too high, if official reports have been exaggerated for OPEC quota considerations. In common with other OPEC countries, Algeria's reserve reports remained implausibly unchanged, with 9.2 Gb (curiously equivalent to the total discovered in Hassi Massaoud) being reported for 11 years until 2003, when an increase to 11.3 Gb was announced. The issue is further confused by the production of gas liquids (NGL) and liquefied gas (LNG).

Past gas production amounts to 55 Tcf, with future production here estimated at 140 Tcf from known fields alone. Annual production stands at 3 Tcf/a, so there is ample scope for exports to continue far into the future. The country is the World's second largest producer of LNG, having 16% of the market. The United States is a major customer. Gas is also exported to Europe through pipelines to Italy (850 Gcf/a) and Spain (300 Gfc/a), whose capacities are to be increased. Two new pipelines to supply gas to France and Germany are planned

In short, Algeria can look forward to a prosperous future, becoming one of Europe's premier sources of oil and gas as prices are set to rise, perhaps greatly. If that were not enough, the country clearly has great potential for solar energy. Perhaps the immigrants in France, who are now denied their headscarves under a new ordinance, will be tempted to head for home in increasing numbers.

356. ASPO - Third International Workshop in Berlin

Third International ASPO Workshop on Depletion will be held in Berlin on May 25th and 26th. Key speakers will address Europe's oil and gas supply in the face of world depletion, and consider the social, political and economic consequences. A large number of participants have already signed up with the Secretariat from whom the detailed programme is available.

Contact: Sabine de Vries at s.devries@bgr.de

357. New Book and Presentations

A new book has been prepared for ASPO readers and others. It comprises a plain-language explanation of the depletion issue set to the theme of a much-needed public inquiry in which a judge takes evidence from witnesses after rigorous cross-examination. A CD in a back pocket contains ten Power Point Presentations with accompanying speaker notes. The objective of this work is to provide an easily understood guide for the benefit of everyone: the Cabinet Minister, the Business Leader and the Schoolteacher, stimulating presentations and discussions in a widening range of interest groups. Priced at Euro 20 (US$ 24 UK £14), it aims at the general public. Orders may be placed by e-mail to info@eagleoffice.net or to the Eagle Office in Ireland +353 2822922 (fax +353 2822923).

358. A new awakening

Soaring oil prices in the United States continue to stimulate new interest in the issue of depletion, attracting attention to the work of ASPO and its members who are widely reported. Although still being under editorial pressure to deliver the so-called "balanced view", mentioning the counter views of flat-earth economists, with their eternal comments that 19th Century fears of running out proved erroneous, the thrust of the new articles decidedly accepts the notion of peak oil. The following item from Reuters is typical of the new genre.

ANALYSIS-Murky OPEC data muddies oil reserves debate
By Barbara Lewis

LONDON, April 5 (Reuters) - A regulatory vacuum over how oil producing countries measure their reserves has stoked debate on how much oil and gas the energy industry really has left.

International scrutiny has intensified over reserve assessments since super major Royal Dutch/Shell's two downgrades to its proved reserves this year sent shock waves through the investment community. Companies are subject to examination by regulatory bodies such as the U.S. Securities and Exchange Commission, but a country's own estimate of how much oil it holds is virtually unchecked. Uncertainty is greatest among members of the Organisation of the Petroleum Exporting Countries (OPEC), for whom size of reserves may soon play a part in determining all-important quota distribution.

"Without question, reserves reported for OPEC members don't fit the strict definitions of those reported by the U.S. or most European countries," said Bob Tippee, editor of the Oil and Gas Journal, which reports country-level reserves.

Saudi Arabia, which with 260 billion barrels holds easily the world's largest oil reserves, was thrust into the spotlight on the issue when analyst Matthew Simmons questioned whether the kingdom's reserves were really as big as it said.

The charges stung state oil company Saudi Aramco into a vigorous defence with a rare public rundown of its resource base, saying it expected to add at least 150 billion barrels to the company's proven oil reserves by 2025. "We have plenty of oil. We have the potential to add more than anyone else," said Mahmoud Abdul Baqi, vice president of exploration at state oil firm Saudi Aramco. Even so, Simmons still questions whether Saudi Arabia has enough capacity to plug any supply gap. "No third-party inspector has examined the world's most important insurance policy for years," he said.

PEAK OIL?

The information on reserves held by other OPEC producers -- who together own around 80 percent of the world's proven oil reserves -- has been just as patchy, say some analysts.

"If you look at the record of reserves reported by these countries since the late 1980s, they have barely changed," said analyst and geologist Colin Campbell, who has long been concerned that oil supplies are close to their peak.

The issue is becoming hot as reserve assessments look likely to become part of a new formula being developed to assess how OPEC should allocate production quotas.

As members such as Algeria, Nigeria and Libya vie for a bigger share of overall cartel output limits to reflect growth in capacity, countries are considered keener than ever to emphasise the scale of their resources.

Second biggest OPEC producer Iran last year raised its estimate of oil reserves by 35 percent to 131 billion barrels from 97 billion.

"The truth is that we just do not know, but are entitled to ask some serious questions," said Campbell, a trustee of the London-based Oil Depletion Analysis Centre and chairman of the Association for the Study of Peak Oil and Gas.

"It seems (OPEC members) may have been reporting total found, not the amount remaining .... and may have made sense from an OPEC quota standpoint because it avoids the need for perpetual renegotiation as production changed the relationships," Campbell said.

Those pessimistic about the extent of world supplies said revelations by Shell and other companies that they had overestimated their oil and gas reserves could be symptomatic of a much bigger miscalculation.

"The real problem is that the driver was that they were finding less," said Chris Skrebowski of Britain's Energy Institute. He has mapped new projects coming onstream and concludes they are inadequate to meet the world's growing demand, fuelled by booming economies such as China. "You find there is a pretty chunky amount of stuff coming onstream in the next two-to-three years. After that, there's really not enough," said Skrebowski.

More optimistic analysts, however, cite new technology and production growth in areas like West Africa and Russia."It (the rate of decline) is very much slower because we know more, we have more infrastructure in place," said Oystein Noreng, professor of petroleum economics and management at the Norwegian School of Management.

But some argue that in the face of reasonable doubt, a cautious investor should assume that the pessimists are correct. That could imply devastatingly high oil prices and a loss of faith in oil companies' shares. "We will only realise the precise timing of peak oil production after the event," said analyst Richard Webb, founder of RAW Capital, a company providing investment and trading research. "But conservative risk management requires investors to reappraise the outlook for asset valuations before it occurs."

ASPO was represented by C.J.Campbell in two BBC Programmes. The first, recorded on April 13, was a dramatised evaluation of the impact of an attack upon Saudi Arabia's export terminal. The second on April 20th was a more general evaluation of peak oil and its impact.

359 Does the IEA deliberately aim to mislead?

A casual meeting with a member of the International Energy Agency revealed that it is at work on the next Energy Outlook, and is desperate to find a way to show that peak oil cannot arise before 2030. A foretaste of this was also publicly presented in the workshop of the Swiss Federal Energy Office (see Item 334). In short, the stratagem is to take the USGS Mean Undiscovered and Mean Reserve Growth combined with Reserve to Production Ratio to demonstrate that there is enough to support growth to 2030, the convenient end of the study period. It evades the implication that production would have to fall like a stone in 2031 to respect even those numbers. The EIA did much the same with its earlier scenarios by assuming a 2% growth to a midpoint peak followed by a 10% decline, that succeeded in delaying peak to 2037, notwithstanding that a global 10% decline offends the physics of the reservoir.

The significance of this casual encounter is the recognition that the IEA studies derive not from ignorance or incompetence, but deliberately policy, based on the fear that any realistic assessment would cause panic, as the member governments are not remotely prepared. A similar reading has also been reported by a former member of the UK Department of Trade and Industry, who says that the peak and decline of the North Sea is accepted internally, but the Minister finds it politically expedient to ignore the issue. The government is already in enough difficulty over its Middle East policy and immigration issues without drawing attention to the desperate energy crisis that stares it in the face.

360. Updating the Depletion Model

Work proceeds in updating the depletion model as summarised on Page 1. It is less than an exact science to try to spot the anomalies in the data and to formulate realistic forecasts. It is an ongoing process, with the current status being reported. The present model departs from earlier ones in recognition that the Middle East no longer has sufficient spare capacity to discharge a swing role. A volatile epoch of recurring price shocks and consequential recessions dampening demand and price is now regarded as more likely, with terminal decline setting in and becoming self-evident by about 2010. The flat-earth detractors will relish pointing out that the estimates change, but others may take it as progress.

361.The End of Fossil Energy and a Plan for Sustainability

An admirable small book with the above title has been written by John Howe, an engineer, who sets out the evidence in a lucid, thorough and thoroughly scientific manner. It is highly recommended reading, and available from the author howe@megalink.net

362. Resource Wars

A special issue of Geopolitics (V9/1 Spring 2004) entitled *The Geopolitics of Resource Wars - Resource dependence, Governance and Violence*, includes a paper by Susanne Peters explaining how the quest for overseas resources, especially oil, is a new threat to global security.

363 Peak Oil this Decade confirmed by Oil & Gas Journal

Writing in no less than the Oil & Gas Journal, Mr Bakhtiari of the National Iranian Oil Co forecasts a global peak of oil production around 2007, confirming the doubts expressed about Saudi capacity (see Item 352 above). It is significant that the Oil & Gas Journal, perhaps the premier industry journal, has come to accept that the issue of an imminent peak is of critical importance.

364. Denmark raises awareness of Oil Depletion

An excellent publication *Oil-Based Technology and Economy - Prospects for the Future* by Klaus Illum has been published jointly by the Danish Board of Technology and the Society of Danish Engineers (www.tekno.dk), based partly on a conference in Copenhagen in December 2003

The distribution of the newsletter by modern methods has been made possible by a generous philanthropic gesture from Mr O'Byrne. Contributions from ASPO members and other readers, who wish to draw attention to items of interest or the progress of their own research are welcomed

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