

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

NEWSLETTER No 53 –MAY 2005

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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<http://www.energiekrise.de> (Press the ASPONews icon at the top of the page)

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A Spanish Language edition is available on www.crisisenergetica.org

A French Language edition is available on www.oleocene.org (press “Newsletter”)

CONTENTS

- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>531. Comment on the IEA’s World Energy Outlook 2004</p> <p>532. The Financial Community Wakes Up to Peak Oil</p> <p>533. Financial Consequences of Peak Oil</p> <p>534. The Second Great Depression : Causes & Responses</p> <p>535. The New Posture of the International Energy Agency</p> <p>536. Country Assessment – Vietnam</p> <p>537. ASPO International Workshop in Lisbon</p> <p>538. The Nuclear Option</p> | <p>539. A New Book from Deffeyes</p> <p>540. More oil mergers</p> <p>541. The Swedish Academy of Sciences to discuss Peak Oil</p> <p>542. Oil and Iraq</p> <p>543. Personal Energy Rights</p> <p>544. Oil Depletion Scotland</p> <p>545. Growing Awareness of Peak Oil</p> <p>546. Mystical Peak Oil forecasts</p> <p>547. BP Confession</p> <p>548 ASPO IRELAND</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

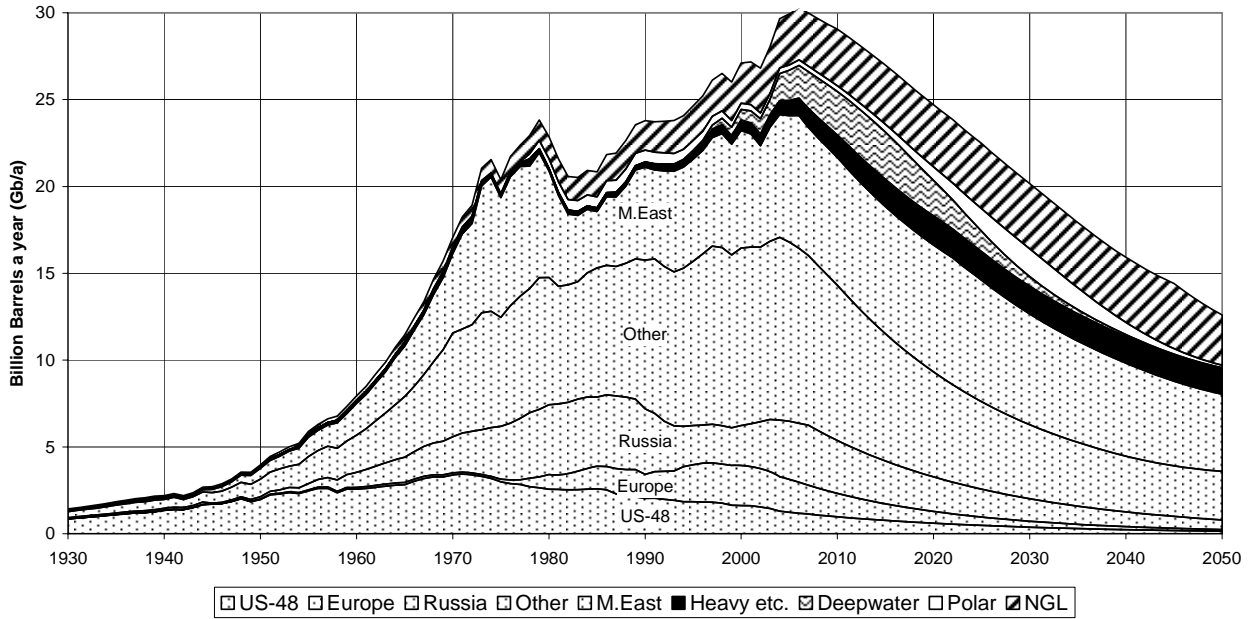
Calendar of Forthcoming Conferences and Meetings

Index of Country Assessments with Newsletter Reference

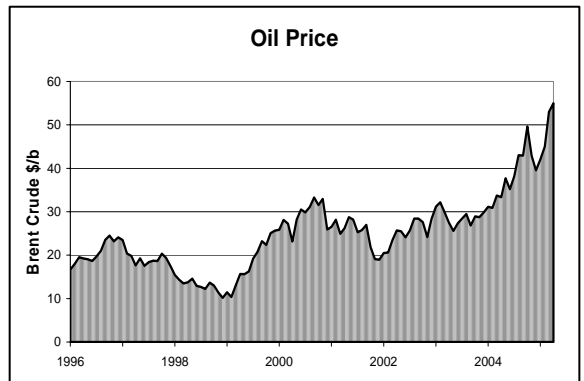
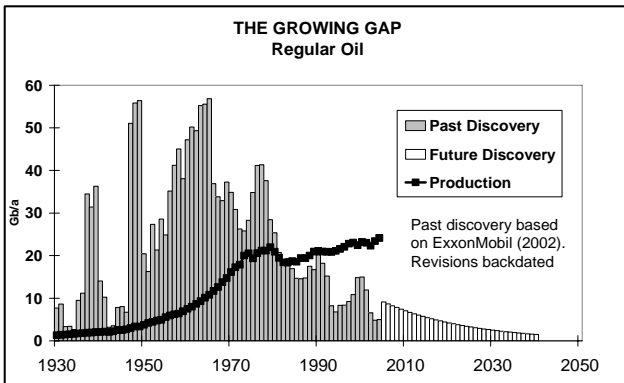
Abu Dhabi	42	China	40	Iran	32	Nigeria	27	Turkey	46
Algeria	41	Colombia	19	Iraq	24	Norway	25	UK	20
Angola	36	Denmark	47	Italy	43	Oman	39	USA	23
Argentina	33	Ecuador	29	Kazakhstan	49	Peru	45	Venezuela	22
Australia	28	Egypt	30	Kuwait	38	Russia	31	Vietnam	53
Azerbaijan	44	Gabon	50	Libya	34	S. Arabia	21	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

The General Depletion Picture

OIL AND GAS LIQUIDS 2004 Scenario



ESTIMATED PRODUCTION TO 2100								End 2004	
Amount			Annual Rate - Regular Oil				Gb	Peak	
Regular Oil			Mb/d	2005	2010	2020	2050	Total	Date
Past	Future	Total	US-48	3.4	2.7	1.7	0.4	200	1972
Known Fields	New		Europe	5.2	3.6	1.8	0.3	75	2000
945	760	145	Russia	9.1	8	5.4	1.5	220	1987
	905		ME Gulf	20	20	20	12	680	1974
All Liquids			Other	28	25	17	8	675	2004
1040	1360	2400	World	66	59	46	22	1850	2006
2004 Base Scenario			Annual Rate - Other						
M. East producing at capacity (anomalous reporting corrected)			Heavy etc.	2.4	4	5	4	160	2021
<i>Regular Oil</i> excludes oil from coal, shale, bitumen, heavy, deepwater, polar & gasfield NGL			Deepwater	4.8	7	6	0	70	2014
			Polar	0.9	1	2	0	52	2030
			Gas Liquid	8.0	9	10	8	275	2027
			Rounding		0	2		-7	
Revised	26/01/2005		ALL	82	80	70	35	2400	2007



531. Comment on the IEA's World Energy Outlook 2004

The following is a translation of a letter that has been sent on March 3rd by the Ludwig Bukow Systemtechnik Institute in Munich to Hans-Josef Fell, a prominent member of the German Parliament. It is particularly apposite given the IEA's subsequent radical change of posture (see Item 535)

Dear Mr. Fell,

The latest publication of the IEA, the 'World Energy Outlook 2004', leaves an ambiguous impression. The abstract and the press release speak on the one hand of great challenges for the future which will have to be overcome, while on the other hand, it is assumed that the worldwide primary energy consumption could climb in the coming decades by as much as 60%. This is especially true for growth in petroleum consumption, which is expected to climb from 77 million barrels per day in 2002 to 121 million barrels per day in 2030.

Upon reading the complete report, it is clear that the authors have a solid grasp of the underlying facts of the oil sector. Chapter 3, 'Oil Market Outlook', contains in its description of the current state of affairs many correct and vital pieces of information:

- The analysis of the reserves and the documented fossil record draws on the industry database of the IHS (and not on the statistics of the Oil & Gas Journal or the BP Statistical Review, both of which are unsuitable for a serious analysis). It is demonstrated that various sources for the estimation of the currently existing oil reserves all reach a similar conclusion.
- It is shown how dubious the current reserve figures of corporations and governments are. Therefore, the report rightly encourages a greater transparency given that dependable data is an essential precondition for the plans of governments and the oil industry.
- The concept of 'oil peak' is explicitly described as true and viewed as the essential paradigm shift of the future. The problem of the 'decline' in oil production in the existing production system is clearly addressed: in 2030, the oil fields of today will hardly be producing at all. The production will then almost completely have to come from new sources.

Many clues in this part of the text can only be interpreted to mean that the authors hold it for possible—if not for probable—that the supply situation will in the near future dramatically sharpen.

The report becomes problematic when dealing with long-term projections for future development. The basis is here no longer the reserves, but rather the 'resources', which are well known to be much larger. The USGS study of 2000 is used, as in the two previous editions of 'World Energy Outlook', to estimate the 'resources'. This is the methodological trick! The resource discussion in the study has no recognizable connection to the previous analyses of reserves; it is as if one were in a parallel universe. Several of the previously mentioned estimations, well suited for reaching conclusions about the total oil available (Estimated Ultimate Recovery), are simply ignored. This is especially true for the so-called industry database of IHS-Energy where reserve revisions of a field are attributed to the year of discovery of the field and not to the year of the revision.

The most probable projection of future development, given the trends of the past years, can be taken from the history of the documented fossil fuel records. The many, substantiated criticisms of the USGS study are not mentioned at all. As we have shown in several publications, the results of the USGS study are far off the mark of every observable development.

In brief, the projection of the IEA, based on the result of the USGS study, states that the resource basis is sufficient for a growth in production to 121 million barrels per day in 2030, and that the peak will come no sooner than that.

Still, many preconditions would have to be met before such a scenario could materialize. These range from assumptions concerning economic and political conditions affecting investment in the oil industry to the simple fact that the essential resource basis would have to be available for such growth to occur. It should be noted that if the worldwide oil reserves are in fact less than predicted by the USGS, then the oil peak could be reached sooner, perhaps even by 2015. Every attentive reader, even if only a little informed, cannot have the impression that the assumptions in the report are realistic.

There are thus two options for interpreting the report. The first option is to presume that the authors, despite knowledge to the contrary, intentionally paint a rosy picture for the future, a picture which allows an unbroken continuance of current trends over the coming decades.

The other option is to assume that the authors, standing under massive political pressure, had no choice but to describe the current situation realistically while obfuscating and concealing the key conclusions concerning future development. The political pressure may possibly have been exercised in the following manner: the USA, as one of the most important member states of the IEA, pressed the IEA to take the USGS study of 2000 as their basis, to bar critical investigations of other studies, and to reject even the consideration of other studies. If this is the case, then the conclusions about the future supply of crude oil would have been practically preemptory.

The portrayal of the IEA of the possibility of an unbroken continuation of future growth in oil supply is, given the clearly recognizable limitations, a false and dangerous signal.

Dear Mr. Fell, we therefore put the following questions to you:

- How do you and your fraction evaluate the WEO of 2004, and what conclusions do you draw from it?
- How does the federal government view these matters?

Sincerely yours, Jörg Schindler.....

Dr. Werner Zittel.....

532. The Financial Community Wakes Up to Peak Oil

Goldman Sachs, who shares a Chairman with BP, now hint at oil at over \$100 a barrel. While this may be a financial manoeuvre, it is nevertheless reflects the underlying resource constraints. A French bank goes even further forecasting prices above \$300 by 2015.

NEW YORK, March 31 (Reuters) - If oil were to hit \$105 per barrel, as suggested by a leading broker, it would spread ruin through the stock market and could spell disaster for everything from airlines to retailers to mining companies, analysts said on Thursday. Since the start of the year, oil has risen more than 25 percent to near \$56 a barrel. On Thursday, Goldman Sachs issued research saying oil markets have entered a "super-spike" period that could see prices go as high as \$105.

Goldman also raised its 2005 and 2006 New York Mercantile Exchange crude price forecasts to \$50 and \$55, respectively, from \$41 and \$40. A Reuters poll showed that analysts on average expected a mean price for 2005 of \$45.49 a barrel.

The analysts revised their super-spike range to \$50-\$105 per barrel from \$50-\$80 previously, noting demand and economic growth in the United States and China especially.

While oil companies benefit from rising crude prices, a diverse mix of companies, including Delta Airlines, Continental Airlines, Allied Waste, rail operator Burlington Northern Santa Fe Corp. and Kellogg Co. have all warned of fuel costs.

Airline industry analyst Robert Mann said the consequences of oil reaching \$105 would be so disastrous to the U.S. economy that it is difficult to isolate the airline industry within that scenario.

"It's bigger than that," he said. "I think it would ruin the economy. It would be catastrophic."

However, Tom Bentz, an analyst at BNP Paribas Commodity Futures Inc., said \$100 oil "is possible, but anything is possible".

"With OPEC (Organization of Petroleum Exporting Countries) capacity only a million (barrels per day) away from their limits and demand rising, add a major outage somewhere and sure it's possible," he said.

David Healy, auto analyst at Burnham Securities, said oil at that level would probably translate into a \$1.21 per gallon hike in U.S. gasoline prices. Gasoline prices at the pumps are already running at a record average over \$2.10 a gallon.

"For the high-income guy it's probably not going to make any difference in his buying or driving habits," Healy said. "If you raise gasoline prices that much you're putting a tax on the lower-income people ... it's like a huge regressive tax on low-income people."

For airlines and other transport companies, the effects of higher oil are easily understood. For other sectors, though, it will also have an enormous effect.

"If crude hit \$105 it would not be good (for mining)," said Victor Flores, senior mining and gold analyst at HSBC Securities. "Fuel or energy costs are 25 percent of costs in some operations."

The average spot price for gold last year was around \$415 per ounce. Flores noted the average cost of mining that gold was \$240 per ounce.

POWER PLAYS

The effect record-high oil prices would have on the power industry would be felt through similarly high prices for natural gas, which tends to rise and fall with oil.

Sanford Bernstein analyst Hugh Wynne said that power prices would likely surge in markets that depend heavily on natural gas for generation -- including New England, New York, California, Texas, Florida and the West.

He said high gas prices would be nearly immediately felt in deregulated markets, where companies could be expected to rapidly pass higher costs to customers.

"In those states, the impact of this would be higher power prices for consumers and higher profits for any generator that doesn't burn gas," Wynne said. He noted that higher gas prices would likely boost earnings at companies with large amounts of nuclear and coal generation in those markets, including TXU Corp., Dominion Resources Inc., Constellation Energy Group Inc. and Entergy Corp.

Separately, George Pipas, the chief U.S. sales and market analyst at Ford Motor Co., said a great deal depended on when oil hit \$105, since new technologies could mute the impact.

He said it could be devastating. "Then you've got issues that go far beyond the cost of gasoline. You've got the makings of what potentially could be a global recession, or depression, and at that point how much it costs to drive is kind of moot," he said.

ECONOMIC TUMULT

"If prices stayed north of \$75 per barrel for more than a few months, the U.S. economy would likely slide into recession, which actually would make it unlikely it would get over \$100," said Mark Zandi, chief economist for Economy.com. "I think the economy would break before we got to \$100 oil."

Those oil levels could also spell trouble for the overheated housing markets and, to a lesser degree, the commercial real estate market, where prices have been escalating by double digits.

At the end of the scale, higher oil costs would also limit the amount consumers spend on everything else.

"It would have a disastrous impact on consumer spending. (People) would not be able to spend as freely as they like," said Kurt Barnard, president of Barnard's Retail Consulting Group. "Unless your salary is increased commensurately, you certainly will have a lot less money left in your pocket after you fill the tank." (Reporting by

Michael Erman, Ilaina Jonas, Mark Weinraub, Steve James, Richard Valdmanis, Deepa Babington, Kyle Peterson and Thomas Brown)

533. Financial Consequences of Peak Oil

It is becoming evident that the financial and investment community begins to accept the reality of Peak Oil, which ends the First Half of the Age of Oil. They accept that banks created capital during this epoch by lending more than they had on deposit, being confident that Tomorrow's Expansion, fuelled by cheap oil-based energy, was adequate collateral for Today's Debt. The decline of oil, the principal driver of economic growth, undermines the validity of that collateral which in turn erodes the valuation of most entities quoted on Stock Exchanges. The investment community however faces a dilemma. It desires to protect its own fortunes and those of its privileged clients while at the same time is reluctant to take action that might itself trigger the meltdown. It is a closely knit community so that it is hard for one to move without the others becoming aware of his actions.

In this situation, interest shifts to commodities and to short term trading to benefit from daily or hourly fluctuations in price, implying that there are few valid genuine long-term investments left.

The scene is set for the Second Great Depression, but the conservatism and outdated mindset of institutional investors, together with the momentum of the massive flows of institutional money they are required to place, may help to diminish the sense of panic that a vision of reality might impose. On the other hand, the very momentum of the flow may cause a greater deluge when the foundations of the dam finally crumble. It is a situation without precedent.

534 The Second Great Depression : Causes & Responses

The following is the summary of a presentation to the Edinburgh Conference by C.J.Campbell, which extreme as it may sound, seems consistent the new posture adopted by the International Energy Agency, see Item 535 below.

The Second Great Depression : Causes & Responses

SUMMARY

Oil was formed but rarely in time and place in the geological past, which tells us that it is subject to depletion. It also has to be found before it can be produced. Finding oil is primarily a matter of geology, notwithstanding the technical, political and economic factors. So, an understanding of petroleum geology forms the bedrock for forecasting future production.

Depletion itself is easy to grasp as every beer drinker knows: the faster he downs his draught, the sooner it is gone. However, the issue is not about finally running out of oil, which will not happen for many years. What does concern us – and most gravely– is the long downward slope that opens on the other side of peak production. Oil and Gas dominate our lives, and their decline will surely change the World in radical and unpredictable ways.

How has this self-evident reality been so successfully confused and denied? In short, oil companies under-reported discovery to comply with strict Stock Exchange rules, and revised reserves upwards over time, delivering a comforting but misleading image. But those days are over, forcing the major companies to find reserves by merger rather than in the ground. Some OPEC countries, for their part, started reporting *original*, not *remaining* reserves, as they vied with each other for quota, explaining why their reported reserves have barely changed for 20 years. Furthermore, definitions of the several categories of oil and gas are confused. Public data are grossly unreliable.

Production has to mirror discovery after a time lapse, as amply demonstrated in one country after another. The peak of production comes broadly when half the total has been consumed. Deciphering the conflicting evidence as well as possible indicates that approximately 944 Gb (billion barrels) of *Regular Conventional* oil have been produced; 764 Gb remain in known fields (*Reserves*); and 142 Gb are *Yet-to-Find*. If so, the midpoint of depletion was passed in 2003, meaning that peak production is imminent. On present estimates, the overall peak of all categories of oil arrives in 2006, with that of oil and gas combined coming about two years later.

A widely held myth proclaims that technology will deliver more, when its main impact has been to hold production higher for longer, accelerating depletion. The observed growth in reserves has been an artefact of reporting, not technology, save in special cases.

The First Half of the Age of Oil now closes. It lasted 150 years and saw the rapid expansion of industry, transport, trade, agriculture and financial capital, allowing the population to expand six-fold. The financial capital was created by banks with confidence that Tomorrow's Expansion, fuelled by oil-based energy, was adequate collateral for To-day's Debt.

The Second Half of the Age of Oil now dawns, and will be marked by the decline of oil and all that depends on it, including financial capital. It heralds the collapse of the present Financial System, and related political structures, speaking of a Second Great Depression.

But there are survival strategies. Governments may be persuaded to sign the Depletion Protocol whereby imports are cut to match world depletion rate, such that world prices fall into reasonable relationship with cost, and

profiteering from shortage avoided; the current monumental waste of energy may be reduced; renewable energies from wave, tide, wind, solar, hydro and geothermal sources may be brought in; and the nuclear option re-evaluated.

The survivors, whose numbers may not greatly exceed those of the pre-oil age, may find silver linings as they rediscover rural living, regionalism, diversity and local markets, coming to live in better harmony with themselves, each other, and the environment in which Nature has ordained them to live. But the transition will be a time of great tension, including international tension as consumers vie for access to dwindling supplies, and as city life becomes unsustainable.

535. The New Posture of the International Energy Agency

The IEA, which has long formulated scenarios of ever upward supply driven by market forces on a planet of near infinite resources, now adopts a radical new position urging its member governments to introduce draconian policies to curb demand. It pretends that the measures are to meet some short term supply interruption, whereas they are clearly long term in nature, implying a long overdue recognition of the inevitable peak and decline associated with depleting a finite resource. The IEA is evidently a convenient front for its member governments, who are now forced to adopt a new posture, the old one having been discredited by high oil prices and the growing awareness of Peak Oil throughout the World. (see also Item 531).

Commuters should plan for oil shock

Thursday, April 28, 2005 Posted: 9:20 AM EDT (1320 GMT)

PARIS, France (Reuters) -- Car-pools and driving restrictions could help shave at least a million barrels a day from industrialized nations' oil demand in the event of a supply crisis, the International Energy Agency has said.

They are among measures an IEA study 'Saving Oil in a Hurry' says consuming nations must plan to ease potential shortages and price rises which could result from a large disruption to international supplies. Oil prices have already risen to record highs above \$58 this year as surging demand in Asia's emerging economies pushes world supplies close to current capacity. Goldman Sachs bank has warned of a potential 'super-spike' to \$100 a barrel.

"We find that there are a number of different measures available that, at relatively low implementation cost, could together save upwards of a million barrels per day of oil, if implemented aggressively across all IEA countries," said IEA Executive Director Claude Mandil.

Tighter motorway speed limits, special lanes for shared cars, free or cheaper public transport, a more compressed working week, and more telecommuting to reduce travel to and from work were among other measures suggested in the study.

Energy ministers from the 26 industrialized nations the IEA advises on energy policy will discuss the proposed demand measures at a two day meeting in Paris next week. "Along with supply-side measures (such as use of strategic oil stocks) this may help countries cope with supply disruptions and avoid physical shortages and associated price spikes," Mandil said.

Confidence crisis

Political tensions in big Middle East producers such as Iraq, Iran and Saudi Arabia have undermined confidence in security of supply from the region, which pumps a third of the world's 84 million barrels daily oil needs.

Civil unrest in Africa's biggest producer Nigeria has been another flashpoint, while oil production in Venezuela, a big supplier to the United States, is still suffering the fallout of a general strike two years ago that slashed capacity.

The IEA, set up in the wake of the 1970s oil shocks, already requires member states to keep emergency stocks that can be released if at least seven percent of IEA members' oil needs -- currently equivalent to 3.5 million barrels a day -- is disrupted. As well as a stock draw down, which could release as much as 12.9 million barrels a day onto international markets, member countries can also decide to enforce measures that cut demand by 7-10 percent.

The proposed demand measures could suit either large-scale supply disruptions and for smaller or more localized supply disruptions in individual countries, the report said. "A reduction in IEA transport fuel demand of even a few percent could have a substantial dampening effect on surging world oil prices," the report said.

Rationing

The IEA report said rationing schemes to prevent panic fuel hoarding in a supply crunch are unpopular, expensive and difficult to maintain. "Governments should generally try to move quickly to approaches that are likely to be less costly to society," it said.

"The key is to provide viable alternatives to very inefficient single-occupant vehicle driving."

The most cost-effective policies, with implementation costs less than \$50 per barrel saved include information programs to promote telecommuting and flexible work schedules, 'ecodriving', car-pooling, odd/even day driving bans, and in some cases, speed reduction policies, the report said. Policies that are not cost-effective include reducing public transit fares, increasing public transit service frequency, constructing car-pool lanes and purchasing home computers for half of all telecommuters.

The IEA urged governments not to interfere with market forces. "Higher oil prices give consumers an important signal to conserve fuel. Governments should not take actions that dampen this market signal," the report said.

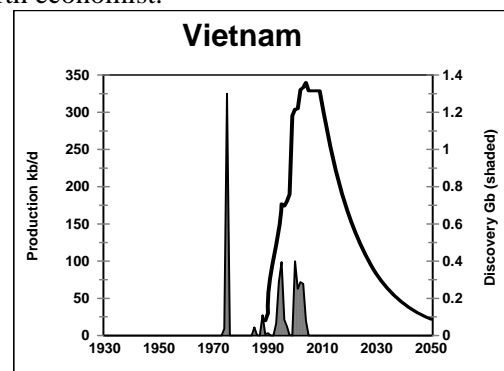
536. Country Assessment – Vietnam

Vietnam forms the eastern margin of Indo-China, covering some 330 000 km². Its continental shelf extends into the South China Sea and the southern part of the Gulf of Thailand. The land is dominated by two rivers systems: the Red River in the north; and the Mekong in the south, which are separated by a coastal strip, some 50 to 150 kms wide. The Annamese Mountains run parallel with the coast, rising to a summit of 3100m, being flanked by high plateaux. The people, now numbering 81 million, are of mixed Indo-Chinese origins with a long history. The territory formed part of the Chinese Empire during the first millennium before gaining independence. Conflict erupted periodically in later years between the inhabitants of the two river systems, leading to the development of separate kingdoms: one based on Hanoi in the north, the other on Saigon in the south. The French appeared on the scene in 1788 assisting the southern kingdom resist invasions. They returned in 1857 mounting a full-blown military invasion which led to the eventual incorporation of the territory into the French Empire. It became a rather extreme society of privileged landlords, middle men and money-lenders controlling a huge landless peasantry. The French language and Catholicism were introduced. Movements towards independence took root during the early years of the 20th Century, being led by Ho Chi Minh, a sailor who settled in Paris in 1917 before joining the international Communist movement. He returned home to form the Indochinese Communist Party in 1930. Various peasant revolts, in which landlords and officials were killed, were put down but the movement grew in strength until the Second World War, when the Vichy Government of occupied France authorised the entry of 30 000 Japanese troops. When the Japanese surrendered in 1945, Ho Chi Minh emerged as a forceful resistance leader, proclaiming the Democratic Republic of Vietnam. The French however were resolved to recover their colony, and did so in 1946 with British help. At first, they tried to reach an accommodation with the Communists, but that failed, leading to a guerrilla war ending in defeat at Dien Bien Phu in 1954, despite military aid from the United States. The country was then divided under the Geneva Accords into the communist Democratic Republic in the north and an anti-communist regime in the south, led by Ngo Dinh Diem. The latter, a Catholic, was supported by US financial aid, and later declined to participate in unified elections across both territories as provided by the Geneva Accords. Renewed guerrilla attacks by what became known as the Viet Cong followed. Diem was assassinated in a coup that led to greater US military involvement, which erupted into full scale war in 1965. As many as 47 000 American soldiers lost their lives in a particularly vicious campaign, marked by the butchering of women and children, the shelling of villages and the use of a gruesome defoliant, but it was without notable success in breaking the resolve of the Viet Cong. Finally, President Nixon was forced to sue for peace in 1973, and two years later, Communist forces entered Saigon in triumph. In 1976, the Socialist Republic of Vietnam was finally proclaimed with a capital in Hanoi. But life has been difficult under the desperate conditions of this war torn country. Doctrinaire Communism has since been gradually replaced by a more pragmatic system of government, albeit one still characterised by a high level of State control.

In geological terms, the country is broken up by a series of easterly-trending lineaments, which probably reflect ancient transcurrent fault lines. The Red River follows one such feature giving a structural depression, filled with deltaic sediments having mainly gas prospects. Another lineament, off the Mekong delta in the south, extends eastwards to the disputed Spratley Islands. It gives rise to an uplift, known as the Con Son Swell, which is flanked by structural depressions. The northern one comprises a 4000m deep trough filled with Mio-Pliocene sediments, which have yielded several important oilfields. The oil was sourced in the basal Tertiary sequence and migrated into both overlying reservoirs and, locally, into the fractured and weathered volcanic rocks below. The latter occurrence has been taken the adherents of an abiogenic origin of oil as evidence for their flawed theory, so beloved by the flat-earth economist.

Oil exploration commenced in the early 1970s when the Canadian independent, Sunningdale, secured rights from the Saigon government whose oil policy at the time was administered by a Jesuit priest: he being perceived to know about matters natural. Elf and Mobil later joined the search, but the rights were annulled with the formation of a national company, PetroVietnam, backed by Russian technical aid. BP and other foreign companies later responded to invitations to explore the shelf following a change of policy.

Some 160 wildcats have been drilled, finding a total of 3 Gb of oil and some 20 Tcf of gas. Exploration drilling peaked in 1994 when 20 wildcats were sunk, but the annual rate has now dwindled to less than half that number.



The principal discoveries were Bach Ho (1975) with 500 Mb; Dai Hung (1988) and Rang Dong (1994) with about half that amount each. It does not appear to be a very prospective area, and future exploration is unlikely to yield more than, say, another 350 Mb, mainly in small fields. Much misplaced media interest is directed at the disputed Spratley Islands, which are commonly depicted as being rich in oil when they are more likely to be no more than coral reefs resting a crystalline uplift associated with the Con Son Swell.

Oil production commenced in 1989 and has risen to a plateau at 340 kb/d, constrained by the facilities. Decline is expected to set in around 2009 at about 6% a year. The prospects for gas are somewhat greater, especially for the Red River basin and adjoining waters in the north. Vietnam can remain a modest net oil exporter until around 2020 at current rates of consumption.

537. ASPO International Workshop in Lisbon

More than 200 participants have already registered for the ASPO Conference in Lisbon. Many journalists and several film crews are planning to attend. Complete information on the event, including an updated programme and registration form are available at <http://www.cge.uevora.pt/aspo2005/>. The E-mail contact address is: aspo2005@uevora.pt.

IV INTERNATIONAL WORKSHOP ON OIL AND GAS DEPLETION

Lisbon, Portugal, the 19-20th May 2005

Updated Information

The Conference is hosted by the Calouste Gulbenkian Foundation, with the sponsorship of both that entity and *PARTEX Oil and Gas*, while the *Geophysics Centre of Évora* at the University of Évora has taken responsibility for the organisation. The programme includes contributions from over 25 international leading specialists on topics including:

- Reality in Oil Exporting Countries: The Supply Limits
- Impacts of Depletion in Oil Importing Countries: The Demand Pressure
- How-Much Regular Oil and Non-Conventional Oil: Utopia versus Reality
- The Case for Political Action: The Depletion Protocol
- The World Past Peak Oil Age

538. The Nuclear Option

Several comments regarding the assessment of the Nuclear Option by John Busby in Item 498 have been received. Geoffrey Greenhalgh points out that nuclear fission is a concentrated energy source, such that 1 kg of uranium yields the same amount of energy as 22 000 kg of coal, or 15 000 kg of oil, whereas the alternative renewables are diffuse sources. The electricity supply from a 1000 MWe nuclear station with a life of 60 years is equivalent to that produced from several thousand wind generators with a much shorter life, despoiling the hillsides with their rotating blades. He adds that nuclear energy is the cleanest in terms of carbon dioxide emissions. Lastly, he points out that much uranium can be recovered from “spent fuel”. Thorium is also being used as a raw material, as for example in India where there are large deposits.

Perhaps after all, nuclear power can come to the rescue, although it does have a certain sinister aura, as tourists on the Loire valley in France may feel when, having passed the mediaeval chateaux, they come to those huge nuclear cooling towers belching steam. Some may intuitively roll up the windows fearing radiation, while the cows in the nearby fields happily munch the grass without evident ill-effect.

Professor Slessor makes the following contribution to the debate:

Item 498, March issue, 2005

In item 498 (March, 2005) John Busby pointed out that the Uranium fuel cycle for nuclear power embodies quite a bit of fossil energy, and so has a carbon dioxide emission component. At this moment, with the present relatively high grade ores being exploited, this emission is relatively small - about 290,000 tonnes per GW-year of nuclear-powered electricity generation, that is about 0.035 kg/kWh, compared (for example) to 0.41 for the overall average emissions for UK electricity generation. Busby has demonstrated that as Uranium resources are depleted, moving along the inevitable Hubbard curve, there will come a time when not only will the net energy become negative, but the carbon dioxide emissions will rise also to unacceptable levels. He has pointed out that the projected demand for nuclear power will inevitably require the exploitation of these leaner ores, thus limiting the potential for thermal nuclear power. I find myself in agreement with these findings, but it is important not to give the impression that moment has already arrived, nor will for some time to come.

539. A New Book from Deffeyes

Professor Deffeyes has written another excellent book *Beyond Oil – The View from Hubbert’s Peak* (ISBN 13 978-0-8090-2956-3) written in his penetrating yet humorous style. The title is aptly chosen as the

peak of oil itself is not particularly relevant whereas the long decline that comes into view on the other side of it most certainly is. Hubbert is remembered for his famous bell-shaped curve, but in fact his main contribution was to draw attention to fundamental impact of declining energy supplies on humanity.

540. More oil mergers

Union Oil of California was one of the pioneers in California having been established in 1890, and has jealously guarded its independence. Shell acquired a 25% holding in the 1920's, but was forced to dispose of its holding under US government pressure. In the 1980s, Union also saw off the corporate raider, Boone Pickens. It expanded internationally under its dynamic leader, Fred. Hartley, securing stakes in the North Sea and the Far East, being at one stage involved with the proposed gas pipeline through Afghanistan, employing the present President, Hamid Karsai, as a consultant. But last year, it managed to replace only 18% of its 1.75 Gb of reserves. The Chinese, who desperately need access to foreign oil, were bidding for it as was the Italian group ENI, but the company finally fell the Chevron-Texaco for \$18 billion. In present circumstances, it sounds like a bargain to buy reserves in the ground at \$10 a barrel. The reserves of the new combined group amount to 12 Gb, from which it plans to produce 3 Mb/d next year. This is a depletion rate of 9%, which means that production is likely to fall to about 1 Mb/d by 2018 apart from whatever falling new discovery may yield. Evidently Chevron, having already merged with Gulf and Texaco, recognises that acquisition by merger is a much better strategy than looking for what is not there to find.

In parallel, Shell, a latecomer to the merger game, is reportedly making a bid for the Australian company, Woodside.

One may suppose that Marathon or Occidental will be the next to go. There would be good reason to amalgamate Shell, Total, Agip and Repsol to form a strong European group, although that would probably offend EU competition rules, built on outdated economic theory.

541. The Swedish Academy of Sciences to discuss Peak Oil

The prestigious Royal Swedish Academy of Sciences is to address Peak Oil on May 26th. It is responsible for the Nobel Prize awards, funded originally by the Nobels, who pioneered Caspian oil in the 19th Century.

Running out of oil - scientific perspectives on fossil fuels

Are we running out of oil? Well, the very last drop will be so expensive that nobody can afford it! This seminar will focus on the "future" of fossil fuels. How much oil and gas is hidden in this planet? And what are the alternatives?

Moderator: Peter Sylwan.

Programme

13.00 - Welcome and Introductory Remarks by Gunnar Öquist, Sec. Gen. KVA Lena Torell, President, IVA

13.10 - A world addicted to oil and gas: Kjell Aleklett, President of ASPO, Professor of Physics, Uppsala University Discussant: Gunnar Agfors, Director GA Consultant

14.00 - Geological aspects on oil and gas supplies: Knut Bjørlykke, Professor of Sedimentology and Petroleum Geology, Oslo University Discussant: David Gee, Professor in orogen dynamics, Uppsala University

15.10 -The end of cheap oil? Structural or cyclical change in the global oil market: Herman Franssen, President International Energy Associates Inc., Washington Discussant: Karl Göran Mäler, Director of the Beijer Institute, KVA

16.00 - Filling the gap: Leif Magne Meling, Manager, Statoil International

16.30 - Discussion involving the speakers, panel and audience.

17.15 -Panel members: Tommy Nordin, Director, Swedish Petroleum Institute Christer Sjölin, Director, Member of the Energy Environment Committee, IVA Gia Destouni, Professor, Technical Hydrology, Royal Institute of Technology Bert Bolin, Professor em. in Meteorology, Stockholm University

542. Oil and Iraq

Hans Blix, the former UN Weapons Inspector, adds his name to the list of those who see a link between control of Middle East oil and the invasion of Iraq.

Blix says war motivated by oil

07:46 AEST Thu Apr 7 2005

AP - Former UN chief weapons inspector Hans Blix has said that oil was one of the reasons for the US-led invasion of Iraq, a Swedish news agency reports. "I did not think so at first. But the US is incredibly dependent on oil," news agency TT quoted Blix as saying at a security seminar in Stockholm.

"They wanted to secure oil in case competition on the world market becomes too hard." Blix, who helped oversee the dismantling of Iraq's weapons programs before the war, said. Another reason for the invasion was a need to move US troops from Saudi Arabia, TT reported.

Competition over oil is creating tension between the United States and China, Blix said, suggesting nuclear power as a more environmentally friendly source of energy. "I believe the greatest threat in the long term is the greenhouse

effect," said Blix, who's become a vocal critic of US leaders since he retired from the UN last year. He defended the United Nations, despite recent scandals including allegations of corruption in the oil-for-food program for Iraq. "The criticism is, in my view, a revenge from American political circles for the defeat over Iraq," Blix was quoted as saying. *(Reference furnished by Kjell Aleklett)*

543. Personal Energy Rights

Malcolm Slessor draws attention to a proposal in his book *Not by Money Alone* (ISBN 1-897788-72-6) whereby the citizens of a country would be allocated a certain ration of energy, which would be freely tradable as a form of currency. The total available would match the Government's policy for energy consumption. The energy content of goods and services would thereby be reflected in their price, encouraging efficiency. It sounds like an admirable mechanism by which countries could implement the proposed Oil Depletion Protocol, requiring countries to limit their oil imports to match world depletion rate.

544. Oil Depletion Scotland

The Peak Oil Conference organised by Depletion Scotland in Edinburgh on 25th April proved to be a very successful event attracting over 200 participants and much media attention. The speakers (Wilson, Campbell, Skrebowski, Simmons, Spaven and Leggett) covered the issue of peak oil itself in terms of reserves, varying depletion rates and actual developments, before moving on to consider the impact on the economy, including particularly transport, and solutions in terms of renewable energy. A lively discussion on many aspects of the subject ensued demonstrating a remarkable new public awareness of the scale of the problem. The abject failure of government to properly address the issue was also evident from the words of its spokesman.

545 Growing Awareness of Peak Oil

The growing awareness of peak oil is reflected by the fact that the ASPO website www.peakoil.net received a record number of 60 000 hits during April. *(Information furnished by Kjell Aleklett)*

546 Mystical Peak Oil forecasts

Brian Regan takes a look at the etymological origins of oil, drawing attention to religious hints of Peak Oil and the ensuing Apocalypse. Perhaps the Holy Grail, when finally located, will prove to be a Hubbert Curve.

The word "oil" (Öl/huile/oleo, etc.) derives originally from the early Greek root "*elaiw-*," meaning "olive tree, olive" - a root itself borrowed from an unknown Aegean language, perhaps Cretan. A feminine (nominative singular *-a*) or neuter (*-on*) ending added to this stem specified whether, respectively, the olive tree (or "berry" - our "olive"), or its oily juice ("olive oil") was meant. In the most prominent dialects, the "w" (Greek letter "F," called "digamma") slowly disappeared from the root.

With some modifications, this feminine-neuter doublet was borrowed into Latin twice, once early and once late: feminine "*elai(w)a*" ("olive") became, depending on the time of the borrowing, either Latin "*oliva*" or "*olea*," while the neuter "*elai(w)on*" ("oil") turned into "*olivum*" or "*oleum*." (The Latin "v" - semi-vocalic "u" - was originally pronounced like English "w" and hence reflects the time of the borrowings by its presence or absence.) In the classical world, "oil" normally meant olive oil, so this etymological development was quite natural. As for the word forms, eventually only "*oliva*" and "*oleum*" survived into later Latin, and thence into modern Western languages. "Petr-oleum" (i.e., *oleum* from *rock*, Greek-Latin "*petra*," whence also the name "Peter") had to wait a long time yet before acquiring a distinct and scientific name.

Connected with this linguistic history is a quasi-religious curiosity. It appears in an old list of papal labels called the "Prophecies of Saint Malachy" (*Prophetiae Sancti Malachiae*), a catalogue of slogans in Latin which purport to allude to the reigns of Popes from 1143 until "the end of time." According to this list, the new Pope, Benedict XVI, elected on 2005 April 19, is the penultimate pontiff, after whom will come the last Pope, coincidentally named "Peter," a Roman (*Petrus Romanus*), in a time of persecution and a dreadful apocalypse of some undefined sort which will include the destruction of the "seven-hilled city" (usually thought of as Rome, but perhaps, with "*Romanus*," a metaphor for the West generally as opposed to the Greek East).

The "Prophecies" assign to Benedict XVI the quizzical label "*Gloria olivae*," normally translated literally as "Glory of the olive." If one were to interpret the Latin in an updated manner appropriate for today, however, one might go back to the ancient root of "*oliva*" and understand the word as a metaphor for oil - specifically, petroleum. "*Gloria*" (literally, "glory," "fame") might then be viewed as the "height of popularity" - connoting, essentially, the cresting of oil's use by mankind. In other words, the phrase "*Gloria olivae*" could be interpreted as a reference to the Pope of the time of Peak Oil: the Pope who is here, now.

547. BP Confession.

The following article from Reuters suggests that BP, which has been a leader in the denial of peak oil, begins to shift its ground by admitting to declining production.

BP says oil fields declining

NEW ORLEANS - Oil company BP's existing oil and gas fields are posting production declines of about 3 per cent, Tony Hayward, the company's chief executive for exploration and production, said on Wednesday.

"That piece of the portfolio as a whole is declining around 3 per cent," he told an energy conference.

The company's key profit centers, which exclude its stake in Russian TNK-BP and new output from Azerbaijan, are expected to produce about 2 million barrels of oil equivalent per day in 2005 and are showing different decline rates, he said.

"Alaska is mostly flat; the North Sea is declining somewhere between 6 and 8 per cent; and our South America business is growing, but taken as sub-segment of E&P, it's declining around 8 per cent," he said.

Energy analysts have pointed to sharper decline rates at producing fields as a key reason for rising oil prices, which hit record highs on the New York Mercantile Exchange on Monday.

Rising demand in Asia, particularly China and India, has soaked up excess production, creating a tight supply-demand balance and driving up prices, analysts say.

Some industry participants have estimated that overall decline rates for existing producing fields could be as high as 8 per cent, forcing companies to aggressively drill for new supplies to keep production levels from falling.

BP's five-year average costs for finding and development were US\$4.65 (\$6.65) per barrel of oil equivalent, Hayward said, in line with company expectations for a figure between US\$4 and US\$5.

Reference furnished by Julian Darley)

548. ASPO IRELAND

ASPO is a network of scientists in universities and government departments, now representing most European countries. It is evolving to encourage the development of independent national organisations operating within their own resources and spheres of interest, yet maintaining common links.

ASPO Ireland has been established under this structure, and has commenced work on developing a comprehensive oil and gas database and website www.peakoil.ie where can be found a searchable catalogue of all previous Newsletter items, to which will be added country and region depletion profiles and other material.

The Newsletter incidentally now has a direct readership of more than 1000, being also reproduced on several websites, including Spanish and French language editions.

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:

May 17th - Delft University of Technology "Where to find tomorrow's oil", **Delft, Holland** [Gilbert]

May 18th - SYNBIOS - the Syngas Route to Automotive Biofuels in **Stockholm**. [Alekklett]

May 19-20th - 4th ASPO International Workshop, Gulbenkian Foundation, **Lisbon** [various]

May 26th - Are we Running Out of Oil? Royal Swedish Academy of Sciences; **Stockholm** [Alekklett]

May 31st Oil and Gas Operations summit 2005, 31 May - 2 June 2005, **Dubai, UAE** [Alekklett]

June 18-19th - Permaculture Conference, **Cork, Ireland** [Campbell]

June 22nd - 2nd European Solar Thermal Energy Conference, **Freiberg**, Germany [Gilbert]

June 22-25th - Fourth Forum for Debate, **Salamanca, Spain** [Alekklett]

July 3-4 - Renewable Energy Conference. **Ljubljana, Slovenia** [Zagar, Gilbert]

October 28-30th - Pio Manzu Energy Conference, **Rimini, Italy** [Campbell]

[Information on future events for inclusion in the Calendar is welcomed]

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