

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

NEWSLETTER No 29 – MAY 2003

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.

It presently has members in: Austria, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom

Mission:

- 1. To evaluate the world's endowment of oil and gas;***
- 2. To model depletion, taking due account of economics, technology and politics;***
- 3. To raise awareness of the serious consequences for Mankind.***

Newsletters on Websites

This newsletter and past issues can be seen on the following websites:

<http://www.asponews.org>

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

www.isv.uu.se/iwood2002

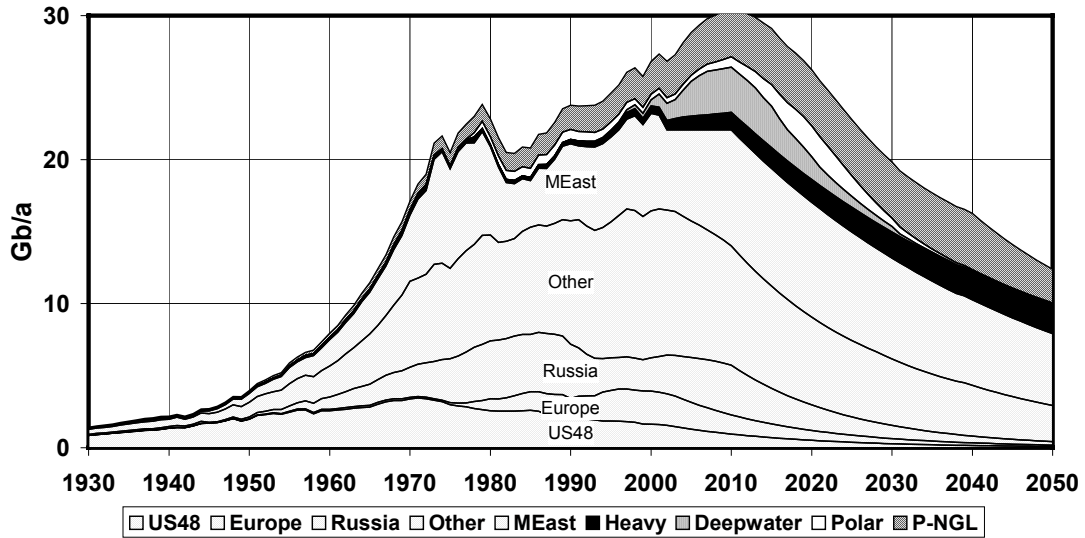
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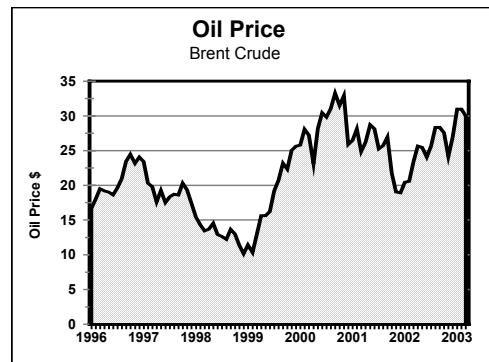
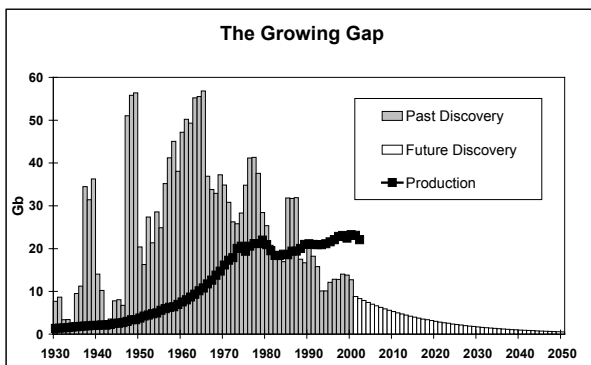
The Newsletter's e-mail address is aspoone@eircom.net

The General Depletion Picture

Oil & Natural Gas Liquids 2003 Base Case Scenario



PRODUCTION to 2075									
Amount			Gb	Annual Rate - Regular			Mb/d		
Regular Oil				Category	2005	2010	2020	2050	Total
Past	Future	Total		US-48	3.5	2.6	1.4	0.2	195
Known Fields	New Fields			Europe	5.1	3.7	1.9	0.3	76
896	871	133	1900	Russia	8.6	9.4	4.9	0.7	200
All Liquids				M.E. Gulf	17	22	22	13	749
986	1714	2700		Other	26	22	17	8	680
Status end 2002				Total	60	60	47	22	1900
Base Case Scenario :				Annual Rate - Non-Regular					
Flat demand to 2010 for Regular Oil from recession. M.East Swing Role ends in 2010				Heavy etc	2.8	4	5	6	300
Regular Oil includes condensate but excludes liquids from gas plants				Deepwater	6.6	9	4	0	63
				Polar	1.2	2	6	0	30
				Gas Liquid	8.2	9	11	6	400
				TOTAL	78	83	72	33	2700



182. ASPO Meeting in Paris

The revised programme for the **Second International Workshop on Oil Depletion** is as follows

Meeting Place: IFP Conference Centre, Rueil-Malmaison, Paris

Monday 26th May

- 08:00 – 09:00 **Registration**
- 09:00 – 09:30 **Opening Address : Olivier Appert** (Executive Director, Institut Francais du Pétrole)
- 09:35 – 10:05 **Michael Klare** (Hampshire College, USA)
Resource wars
- 10:10 – 10:40 **War for Oil (BBC Film)**
- 11:05 – 11:35 **Ali Bakhtiari** (NIOC, Iran)
A realistic view of long-term Middle East production capacity
- 11:40 – 12:10 **Ray Leonard** (Yukos Oil, Russia)
Can Russia make up the difference and for how long?
- 12:15 – 12:45 **Peter Gerling** (BGR, Germany)
The world's endowment with natural gas – The perspective from BGR's new energy study
- 14:00 – 14:30 **Pierre-René Bauquis** (IFP-School, France)
What energy sources for transportation in the 21st Century?
- 14:35 – 15:05 **Jean Laherrère** (AFTP, France)
Modelling oil production, energy consumption, population and the economy
- 15:10 - 15:40 **Malcolm Slesser** (Resource Use Institute, UK)
The physical modelling of future world energy demand
- 16:05 – 16:35 **Chris Skrebowski** (Institute of Petroleum, London)
The North Sea – Victim of Depletion
- 16:40 – 17:10 **Vincent Lepez** (IFP, France)
Modelling of remaining reserves in a mature basin
- 17:15 – 17:45 **Steve Andrews** (Energy Consultant, USA)
Oil Prophets: Looking at World Oil Studies Over Time

19:00 **Reception**

20:00 **Conference Dinner**

Tuesday 27th May

- 09:00 – 09:30 **Matthew Simmons** (Simmons & Co., International, USA)
The US Reaction to World Oil and Gas Depletion
- 09:35 – 10:05 **Kenneth S. Deffeyes** (Princeton University, USA)
Will 2000 turn out to be the peak followed by wildly oscillating oil prices?
- 10:10 – 10:40 **Colin Campbell & Anders Sivertsson** (ASPO & Uppsala University)
The 2003 Update of the ASPO Oil & Gas Depletion Model
- 11:10 – 11:40 **Jean-Marie Bourdairé** (World Energy Council)
Energy supply conditions and oil price regime.
- 11:45 – 12:15 **Jeorg Wind** (Daimler Chrysler)
Options for future transport fuels
- 12:20 – 12:55 **Maarten van Mourik & Richard Shepherd** (Consultants, France)
The economic drivers of peak production and the economic obstacles to renewables
- 14:00 – 14:30 **Gérard Friès** (IFP, France)
The contribution of technology: “creating” reserves
- 14:35 – 15:05 **François Cupic** (Total, France)
The ultra-heavy oil (tarsands) of Athabasca and Orinoco: what technologies? and what recovery rate?
- 15:10 – 15:40 **Werner Zittel** (LBS, Germany)
Renewable energy possibilities
- 15:45 – 16:15 **Paul Metz** (Inter-ger, Netherlands)
The contribution of renewable energy, energy efficiency and its political framework.
- 16:30 – 17:00 **David Callaghan** (Sea Energy, Ireland)
Risks and solutions to Ireland's Energy supply
- 17:05 – 17:35 **Kjell Aleklett** (Uppsala University, Sweden)
How to make the world aware that the party is over
- 17:40 – 18:10 **Short Presentations and Discussion**
(Opportunity for others to briefly introduce themselves and their work)
- 18:15 – 18:30 **Colin Campbell**
Closing remarks

Special Conference rates are available (by quoting IFP) at the following hotels

Malmaison -	Novotel Atria	(+331 4716 6060)
	Cardinal	(+331 4708 2020)
	Quality Hôtel	(+331 4732 2092)
	Les Arts	(+331 4752 1500)
	Ibis	(+331 4732 9696)

Other hotels in the vicinity include

Bougival -	Hotel Marechaux	(+331 3082 7711)
Puteaux -	Princesse Isabelle	(+331 4778 8006)
St Cloud -	Villa Henri IV	(+331 4602 5930)

Those looking for an imaginative travel agent, who works wonders with ticketing, could do worse than contact Andry Sophocles at Travel 2001, London. tel: +44207 431 2525
e-address : mail@2001travelandbeyond.com

Important : For security and other reasons, it is necessary for us to know in advance who are coming. Please therefore confirm by e-mail to C.J.Campbell (aspoone@eircom.net) if you have not already done so. Formal registration will be on arrival when the conference fee of €100 (€25 for students & the retired) will be collected to defray some of the costs. Almost 100 participants have registered already, and the press is well represented.

Those who are in a position to do so are asked to publicise the event within their own circles.

183 Petro-Dollar or Petro-Euro?

The following article, one of several, offers a possible explanation for otherwise incomprehensible actions. It was written before hostilities.

(Reference furnished by Ugo Bardi)

By Paul Harris - YellowTimes.org Columnist (Canada) YellowTimes.org –

There are many reasons for George Bush's single-minded drive toward Baghdad. In other articles I have written for YellowTimes.org, I hinted that a not so obvious reason for the drive against Iraq is Bush's war against Europe. In fact, I have now come to believe that is the primary reason for his Iraqophobia.

Whenever a nation decides to go to war, there are plans made for who is going to win and who is going to lose; no one goes to war expecting to lose, but it isn't always the obvious target of the aggression that is the real thrust behind the war. Sometimes, it isn't a case of what you expect to win from a war, but rather a case of what you hope someone else loses; and it doesn't have to be your stated enemy who you hope will sustain the losses.

In this case, Bush's hoped-for victim is the European economy. It is robust, and is likely to become much stronger in the easily foreseeable future. Britain's entry into the European Monetary Union is inevitable; Scandinavia will join sooner rather than later. Already, even without those countries, there will be 10 new member nations in May 2004, which will swell the GDP of the E.U. to about \$9.6 trillion with 450 million people as against \$10.5 trillion and 280 million people in the United States. This represents a formidable competing block for the United States but the situation is significantly more complex than what is revealed just by those numbers. And much of it hinges on the future of Iraq.

I have written before, as have many others, that this upcoming war is about oil. To be sure there are other reasons, but oil is the single most impelling force. Not in the way you might expect, however. It isn't so much that there are believed to be huge untapped oil reserves in Iraq, untapped only due to outdated technology; it isn't so much an American desire to get its grubby hands on that oil; it is much more a question of whose grubby hands the Americans want to keep it out of.

What precipitated all of this was not September 11, nor a sudden realization that Saddam was still a nasty guy, nor just the change in leadership in the United States. What precipitated it was Iraq's November 6, 2000 switch to the euro as the currency for its oil transactions. At the time of the switch, it might have seemed daft that Iraq was giving up such a lot of oil revenue to make a political statement. But that political statement has been made and the steady depreciation of the dollar against the euro since then means that Iraq has derived good profits from switching its reserve and transaction currencies. The euro has gained about 17 percent against the dollar since that time, which also applies to the \$10 billion held in Iraq's United Nations "oil for food" reserve fund.

So the question arises, as it did for George Bush, what happens if OPEC makes a sudden switch to euros? In a nutshell, all hell breaks loose.

At the end of World War II, an agreement was reached at the Bretton Woods Conference which pegged the value of gold at \$35 per ounce and that became the international standard against which currency was measured. But in 1971, Richard Nixon took the dollar off the gold standard and ever since, the dollar has been the most

important global monetary instrument, and only the United States can produce them. The dollar, now a fiat currency, is at a 16-year trade-weighted high despite record U.S. current-account deficits and the status of the U.S. as the leading debtor nation. The U.S. national debt as of April 4, 2002 was \$6.021 trillion against GDP of \$9 trillion.

Trade between nations has become a cycle in which the U.S. produces dollars and the rest of the world produces things that dollars can buy. Nations no longer trade to capture comparative advantage but rather to capture needed dollars to service dollar-denominated foreign debts and to accumulate dollar reserves in order to sustain the exchange value of their domestic currencies. In an effort to prevent speculative and potentially harmful attacks on their currencies, those nations' central banks must acquire and hold dollar reserves in amounts corresponding to their own currencies in circulation. This creates a built-in support for a strong dollar that in turn forces the world's central banks to acquire and hold even more dollar reserves, making the dollar stronger still.

This phenomenon is known as "dollar hegemony," which is created by the geopolitically constructed peculiarity that critical commodities, most notably oil, are denominated in dollars. Everyone accepts dollars because dollars can buy oil.

The reality is that the strength of the dollar since 1945 rests on being the international reserve currency for global oil transactions (i.e., "petro-dollar"). The U.S. prints hundreds of billions of these fiat petro-dollars, which are then used by nation states to purchase oil and energy from OPEC producers (except presently Iraq and, to some degree, Venezuela). These petro-dollars are then re-cycled from OPEC back into the U.S. via Treasury Bills or other dollar-denominated assets such as U.S. stocks, real estate, etc. The recycling of petro-dollars is the price the U.S. has extracted since 1973 from oil-producing countries for U.S. tolerance of the oil-exporting cartel.

Dollar reserves must be invested in U.S. assets which produces a capital-accounts surplus for the U.S. economy. Despite poor market performance during the past year, U.S. stock valuation is still at a 25-year high and trading at a 56 percent premium compared with emerging markets. The U.S. capital-account surplus finances the U.S. trade deficit.

Since it is the U.S. that prints the petro-dollars, they control the flow of oil. Period. When oil is denominated in dollars through U.S. state action and the dollar is the only fiat currency for trading in oil, an argument can be made that the U.S. essentially owns the world's oil for free.

So what happens if OPEC as a group decides to follow Iraq's lead and suddenly begins trading oil on the euro standard? Economic meltdown. Oil-consuming nations would have to flush dollars out of their central bank reserves and replace them with euros. The dollar would crash in value and the consequences would be those one could expect from any currency collapse and massive inflation (think of Argentina for an easy example). Foreign funds would stream out of U.S. stock markets and dollar denominated assets; there would be a run on the banks much like the 1930s; the current account deficit would become unserviceable; the budget deficit would go into default; and so on.

And that's just in the United States. Japan would be particularly hard hit because of total dependence on foreign oil and incredible sensitivity to the U.S. dollar. If Japan's economy tumbles, so does that of many other countries, especially the United States in a crescendo of dominos.

Now, this is the potential effect of a "sudden" switch to euros. A more gradual shift might be manageable but even that would change the financial and political balance of the world. Given the size of the European market, its population, its need for oil (it actually imports more oil than the U.S.), it may be rapidly approaching that the euro will become the de facto monetary standard for the world.

There are some good reasons for OPEC as a group to follow Iraq and begin to value oil in euros. There seems little doubt that they would relish the opportunity to make a political statement after years of having to kowtow to the U.S., but there are solid economic reasons as well.

The mighty dollar has reigned supreme since 1945, and in the last few years has gained even more ground with the economic dominance of the United States. By the late 1990s, more than four-fifths of all foreign exchange transactions, and half of all world exports, were denominated in dollars. In addition, U.S. currency accounts for about two thirds of all official exchange reserves. The world's dependency on U.S. dollars to pay for trade has seen countries bound to dollar reserves, which are disproportionately higher than America's share of global output.

It is important to note that the euro is not at any disadvantage versus the dollar when one compares the relative sizes of the economies involved, especially given the E.U. enlargement plans. Moreover, the E.U. has a bigger share of global trade than the U.S. and while the U.S. has a huge current account deficit, the E.U. has a more balanced external accounts position. One of the more compelling arguments for keeping oil pricing and payments in dollars has been that the U.S. remains a large importer of oil, despite being a substantial producer itself. But the EU is an even larger importer of oil and petroleum products than the U.S., and represents for OPEC a more attractive market, closer and less domineering.

The point of Bush's war against Iraq, therefore, is to secure control of those oil fields and revert their valuation to dollars, then to increase production exponentially, forcing prices to drop. Finally, the point of Bush's war is to threaten significant action against any of the oil producers who would switch to the euro.

In the long run, then, it is not really Saddam who is the target; it is the euro and, therefore, Europe. There is no way the United States will sit by idly and let those upstart Europeans take charge of their own fate, let alone of the world's finances.

Of course, all of this depends on Bush's insane plan not becoming the trigger for a Third World War, as it so readily might.

Excerpts from "The Real Reasons for the Upcoming War with Iraq: A Macroeconomic and Geostrategic Analysis of the Unspoken Truth" used with permission of the author, William R. Clark. This author owes a debt of gratitude to Mr. Clark and encourages you to read Mr. Clark's complete essay at:

<http://www.ratical.org/ratville/CAH/RRIraqWar.html>.

[Paul Harris is self-employed as a consultant providing Canadian businesses with the tools and expertise to successfully reintegrate their sick or injured employees into the workplace. He has traveled extensively in what we arrogant North Americans refer to as "the Third World," and he believes that life is very much like a sewer: what you get out of it depends on what you put into it. Paul lives in Canada.]

Paul Harris encourages your comments: pharris@YellowTimes.org

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184. Canada begins to feel the heat

It was inevitable that sooner or later Canada would wake up to the fact that its resources of oil and particularly gas are being rapidly depleted by increasing exports. It has no obvious reason to subsidize its manufacturing competitors by providing them with cheap energy. Russia is likely to reach the same conclusion in relation to Europe before too long. *(Reference furnished by Alan Hammaker)*

OTTAWA, ONTARIO - The Council of Canadians strongly condemns the US Ambassador, Paul Cellucci, for raising the spectre of deteriorating US-Canada relations to extract energy concessions from our governments. Cellucci has again called for increased energy integration as he continues to publicly chastise the Canadian position on the unsanctioned attack on Iraq. He is in effect calling for implementation of the discredited Bush Continental Energy Plan as he spoke this afternoon at a luncheon hosted by the Association de l'industrie électrique de Québec.

Since first publicly censuring Canada for its stance on the Iraqi invasion, the US Ambassador has consistently tied the US disappointment with Canada to a call for greater continental energy integration. In every subsequent speech, Cellucci has used the issue of Canada's lack of involvement in the war to forward his primary agenda, which is securing Canadian support for the Bush Energy Plan. "This is a classic bullying tactic, Cellucci is using threats of a trade backlash because of our anti-war stance, but the implication is that if we hand over our energy, we may still get away without a drubbing, said Anil Naidoo, Campaigner with the Council of Canadians. It's like we're in fourth grade again: it reflects the new schoolyard subtlety of America's foreign policy. Sadly, it seems to be working on our CEOs who are off on their own "Washington Peace Mission" next week." Since giving last week's speech at the Economic Club of Toronto, Cellucci has gone to the heart of the BC oil and gas region and is now in Quebec, Canada's largest electricity exporter. Canada is already part of a continental energy agreement for oil and gas, through NAFTA. Article 605a of that agreement, states that Canada cannot reduce the amount of energy going to the US without also reducing our own consumption. This currently guarantees the US 60% of our production, and more as the export ratio continues to climb.

"With the recent backtracking on drilling in the Arctic National Wildlife Refuge, the US is even more desperate to consolidate its energy imports, said Naidoo, the next phase is to try and ensure deregulation and integration of our electricity grid as well as harmonization of our regulatory policies. If we don't push back, we will continue to see increasing prices, greater market volatility, and damage to our economy; as Canadians are forced to bid, in a weaker currency, against US consumers, for our increasingly dwindling energy resources." Canada's other NAFTA partner, Mexico, in article 25 of their Constitution, maintains control of energy resources and has secured an exemption from NAFTA's energy chapter. The Council of Canadians has called on the Canadian government to abrogate NAFTA's energy clause (notwithstanding the whole agreement) and keep energy out of all future trade agreements, reject further integration through Bush's Continental Energy Plan, and implement a program for transition from fossil fuels to cleaner, renewable sources of energy.

185. Wealth in a finite world

With the mindset of the Industrial Revolution when Man was perceived to be Master of his Environment on a Planet of Limitless Resource, and the economic principles that were built on that perception, the gaining of wealth has been generally regarded to be a desirable objective. Children go to school to pass examinations in a selection process leading to higher education and better paid jobs. The clever deal and smart angle now permeate all transactions, even the simplest, as purveyors vie with each other for profit. Debt and usury lubricate the system to the same end. This mindset speaks of

endless prosperity as a realistic objective. But now we are increasingly forced to recognise that it is not a planet of infinite resources but of very finite ones, none more so than the energy supply that makes the entire system tick. The logic of that realisation reveals that one man's wealth sooner or later becomes another's poverty. The Communists and the Socialists sought what they perceived to be a fairer distribution of wealth, but they did not question wealth itself, simply wanting a greater share of it. Perhaps Christ was on the right track when he forecast that "the meek shall inherit the Earth". If so, we face a monumental change of mindset as conventional energy supply declines during the first half of this Century: no wonder the transition is a time of tension and war. We may come to perceive that only wealth earned on renewable energy from the sun, wind and tide, or their derivatives, becomes a laudable net gain for everyone.

186 ASPO Depletion Plot Recognised

Prominence to the ASPO Depletion plot and other familiar graphs was given in an article on Global Oil and Gas Depletion in the April edition of the *Petroleum Review*, the journal of the Institute of Petroleum. The report was based on a meeting of the Institute of Energy. The theme of the annual address of the Institute of Petroleum was also depletion. It appears therefore that at long last the subject is beginning to receive the attention it deserves amongst the leaders of industry. It reflects a shift of position by the oil companies following the lead given by ExxonMobil in its recent admission that discovery peaked almost forty years ago. This may be the first step towards governments and the European Union finally bracing themselves to accept the message with all that it implies.

187. Country Assessment – Ecuador

This month we take a look at a third country in Latin America, namely Ecuador

Ecuador

Ecuador is the second smallest country in Latin America, covering some 286 000 km² on the northwestern corner of the continent. It comprises three very different terrains. In the west, lie partly barren coastal lowlands, supporting extensive banana plantations and the busy port of Guayaquil, at the head of the Gulf of Guayaquil. Next follow the impressive Andean ranges, capped by active volcanoes rising to over 6300m, with the capital Quito, lying in a verdant intermountain valley. In the east lies the so-called Oriente, a vast tract of tropical rain forest, drained by the headwaters of the Amazon. Also to be mentioned are the Galapagos Islands in the Pacific, whose exceptional fauna was made famous by the pioneering studies of Charles Darwin in 1836. The country supports a population of some 12 million, living principally in the vicinity of Guayaquil on the coastal lowlands and in Quito, the capital. The vast Amazon headwaters are sparsely populated, partly by some surviving Indian tribal groups. In racial terms, about one quarter are of European extraction, one third are native Indian, some speaking the Quechua tongue, and the balance is a mixture, including a small percentage with Negro ancestry.

The early history, when the country was occupied by various Amer-Indian tribes, is little known, but in the 15th Century it was invaded by the Inca Empire from the south under Atahualpa, giving it some national status. In 1534, Ecuador fell to Benalcazar, a lieutenant of Pizarro, the Spanish Conquistador. Quito, the capital, was founded, retaining to this day some colonial architecture. The Indians of the Andes accepted Spanish rule, but conflict continued in the rest of the country. Moves to independence followed during the early 19th Century, Ecuador being liberated by Simon Bolivar's forces at the Battle of Pichincha in 1822, being fought at an altitude of 3300m on the outskirts of Quito. At first it formed part of a union with Colombia and Venezuela, but seceded in 1830.

The subsequent history has been fairly typical of Latin America. Wealth has been concentrated with a few families, and weak democracies have alternated with military governments. In this connection, mention may be made of the Velasco Ibarra phenomenon. He was a voluble and highly strung man of aristocratic background (1893-1979), who was elected President in 1933 on a somewhat socialist platform, having travelled the country on mule-back winning the Indian vote. His idealism was not however matched by a practical ability to govern. His incompetent rule would lead the military to reluctantly intervene, forcing him into exile. Calls for a return to democracy would then lead to new elections and the return of Ibarra to power, with the process being repeated many times over the next forty years.

In terms of foreign policy, Ecuador has fought a losing battle against its stronger neighbours for control of the sparsely populated and ill-defined Amazon headwaters: the last adjustment being in 1942, when under US pressure, it was forced to cede extensive territory to Peru. The country has faced various financial crises in recent years, which led to attempts to peg the sucre to the dollar in 2000. It is also being adversely affected by incursions from various Colombian dissident groups, some connected with the global trade in narcotics.

The three-fold geographic division of the country reflects its underlying geology, giving different petroleum prospects. A crustal suture, forming a line of weakness followed by the Amazon River, separates the Guyana Shield to the north from the Brazilian Shield to the south, each flanked by discrete segments of the Andes. Prior to late Tertiary uplift, the proto-Amazon itself flowed westward into the Gulf of Guayaquil at the intersection of Ecuadorian and Peruvian Andes, building up a delta, complete with source rocks and reservoirs for oil and gas. Oil seepages on the Peruvian sector had been known since the earliest days, leading to the discovery of one of the world's first giant fields La Brea – Parinas in 1869. An extension of the trend into Ecuador was confirmed in the early years of the last century when a number of small oilfields were developed on the Ancon Peninsula by Anglo-Ecuadorian Oilfields (later acquired by Burmah Oil). They are now at an advanced state of depletion. Gas has also been found offshore, presumably because the source-rocks are gas prone and have been partly depressed beneath the oil window. The rest of the Pacific littoral is effectively non-prospective, being deficient in source rocks.

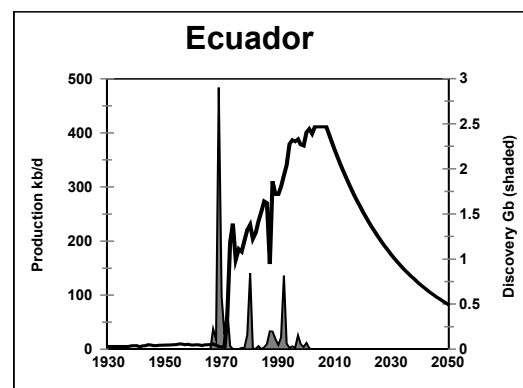
ECUADOR		Regular Oil
Rates Mb/d		
Consumption	2002	0.132
per person b/a		4.0
Production	2002	0.34
	Forecast 2010	0.39
	Forecast 2020	0.37
Discovery 5-yr average Gb		0.02
Amounts Gb		
Past Production		3.3
Reported <i>Proved Reserves</i> *		4.6
Future Production		4.7
	From Known Fields	4.4
	From New Fields	0.3
Past and Future Production		8
Current Depletion Rate		3.6%
Depletion Midpoint Date		2007
Peak Discovery Date		1969
Peak Production Date		2004

*Oil & Gas Journal

The geological potential of the vast Sub-Andean basin to the east of the mountains was recognised from the earliest surveys. Its remote location was a serious deterrent to exploration, although Shell did mount a heroic campaign drilling a number of anticlines in the foothills in the late 1930s and 1940s. The discovery by Texaco in 1962 of the Orito Field in neighbouring Colombia opened a new chapter, leading the same company to a series of giant fields, across the border, being located on gentle structure in front of the foothills. The source rock is the same prolific Middle Cretaceous claystone (*La Luna Fm* equivalent) as is responsible for most of the oil in Colombia and Venezuela. Reservoirs occur in overlying and underlying Cretaceous sandstones, as well as locally in the lower Tertiary. Towards the south, the main source-rock trend swing westwards to be consumed in the Andes, which explains the disappointing results of exploration in southern Ecuador and eastern Peru. Discovery reached a peak in 1969. The construction of a trans-Andean pipeline to the Pacific allowed production to start, with exports providing a substantial income. Production now stands at about 400 kb/d, the capacity of the line. The depletion peak has been accordingly somewhat delayed by the limits to export, not being expected until 2004. Production is likely to have fallen to about 250 kb/d by 2020 and 80 kb/d by 2050. Ecuador's consumption stands at 132 kb/d, meaning that its own needs are secure for a long time to come.

A state company, CEPE, was formed in 1972, later to be reconstituted as Petroecuador, which acquired the rights of Texaco in 1990 under a form of nationalisation. Ecuador flirted with OPEC membership for a few years, before realising that it had insufficient capacity to justify restricting production to support global price. It is possible that the Gulf of Guayaquil may yield modest gas production. The country has no known non-regular potential, but there is a slim chance of deepwater discovery at the frontal sections of the proto-Amazon delta in the Gulf of Guayaquil.

Ecuador has reached a mature stage of exploration. Wildcat drilling reached a peak of 18 a year in 1972 and is now down to around five a year. The decline is expected to continue to reach an end around 2020. Reserves are reported at 4.6 Gb by the Oil & Gas Journal, which seems fairly accurate.



188. New Books

The *Essence of Oil and Gas Depletion* compiled by C.J.Campbell from ASPO Newsletters and other material is now available from Multi-Science Publishing, 5 Wates Way, Brentwood, Essex CM15 9TB England. Fax 01277 223453 or mscience@globalnet.co.uk

The *Party's Over* by Richard Heinberg is essential reading for anyone interested in oil depletion, and its consequences. (ISBN 0-86571-482-7)

Another valuable book is *Overshoot* by William R. Catton Jr. As Roger Bentley has pointed out, many early studies saw the writing on the wall, as this book written in 1982 certainly did. It opens with a foreword by Stewart Udall, President Kennedy's far seeing Secretary of the Interior.

Grün Gewint – die letzte Ölkrise und danach by Rudolf Rechsteiner (associated with ASPO in Switzerland) is an impressive, well-illustrated, work explaining the oil crisis and the scope for renewable energy. (ISBN 3-280-05054-5)

198 Iraq and OPEC

The Anglo-American invasion of Iraq was accomplished with comparatively little resistance, but still there is no sign of the so-called weapons of mass destruction which were said to threaten the world and justify the action. Some think that their absence converts the invasion into raw aggression. The evidence may yet be planted unless the UN Inspectors are allowed to verify the situation. The long suffering Iraqi people themselves give little sign of welcoming their "liberation" which caused mutilation, death and ruin, as well as the destruction of priceless manuscripts, artefacts and architectural gems. Looting and the collapse of civil order have marked the first days of "peace", offering perhaps a windfall for the world's rare arts auction houses.

A former Shell executive has been given the job of rebuilding the oil industry but not much progress is reported yet. The status of Iraq's membership to OPEC is an interesting issue, not so far attracting particular comment. OPEC's much needed task of managing swing production in the face depletion would become much more difficult if Iraq no longer contributed. Continued membership would clearly be in the best interest of the world as a whole, but would hardly be welcomed by the occupying powers, desiring access to oil. OPEC has now increased its production quota as follows, presumably to make good the shortfall from Iraq. It must now be close to capacity and will be increasingly hard pressed to maintain this level of production in the face of the depletion of its ageing giant fields.

Algeria	0.8 Mb/d	Libya	1.4	Venezuela	2.9
Indonesia	1.3	Nigeria	2.1	OPEC10	25.4
Iran	3.7	Qatar	0.7	Iraq	2.0
Kuwait	2.0	Saudi Arabia	8.3	OPEC11	27.4

BP, facing a demonstration outside its annual shareholders meeting, states that it has no plans to re-enter Iraq unless welcomed by an Iraqi government recognised by both the world community and the Iraqi people. It may have to wait. No such compunctions deter the US contractors: Bechtel has already been awarded a \$680 million contract to rebuild electricity and water supply facilities.

The British and American people rallied loyally to the flag while the hostilities were in progress, but may now be inclined to ask some penetrating questions of their governments to explain just what this exercise was really about and just where it is supposed to lead. Meanwhile the scale of anti-American feeling throughout the world reaches new heights, while Britain's role is probably regarded more with a sense of puzzlement and pity as people wonder how its government was duped into supporting the invasion on grounds that have now evidently proved to be false.

199. Per Capita Oil Consumption and Production

The following table shows per capita consumption of some representative countries (1998 population data and 2002 consumption data). The United States heads the list of wasteful consumers, but it is curious that Ireland, a small European country, should be almost as bad. It presumably reflects the recent prosperity, which leaves the towns and roads choked with traffic. Population density may also be a factor: people in sparsely populated rural areas may be more dependent on transport over longer distances. The Indians have found out to live on very little oil, which makes them better prepared for the future. It would be interesting to develop a happiness factor and ask if there is reason to think that Indians in their daily lives are less happy than the citizens of the United States? Rather, it may be that change is the difficult challenge: the profligate may find it hard to become parsimonious, resorting to violence in their frustration.

Per capita production shows those who are currently living within their means, although production in all countries is set to decline in the years ahead. The discrepancy between world production and consumption presumably reflects stock changes, refinery gains and the normal confusion arising from using different data sources. (Production is taken from the Oil & Gas Journal and Consumption from the BP Statistical Review).

Country	Population M	Consumption Mb/a	Consumption per capita b/a	Production Mb/a	Production per capita b/a
USA	263	7154	27	2817	11
Canada	31	708	22	1016	33
Ireland	3.6	66	18	0	0
Norway	4.4	78	18	1246	283
Japan	126	1980	16	4.4	0.04
France	59	742	13	9.5	0.16
Germany	82	1023	13	26	0.32
UK	59	602	10	821	14
Iran	62	413	6.7	1259	20
Russia	145	896	6.2	2695	19
Brasil	162	681	4.2	543	3.35
Egypt	63	201	3.2	274	4.3
China	1242	1840	1.5	1241	1
India	984	757	0.8	245	0.25
World	5926	27481	4.6	24105	4.1

200. Rimini Conference

The Pio Manzu International Research Centre, which is a consultative organ of the United Nations and UNIDO, is holding a conference in Rimini in Italy on October 18th - 20th, entitled "The Economics of the Noble Path, Fraternal Rights, the Convivial Society, Fair Shares for All"

The Scientific Committee has Henry Kissinger as Honorary President and Mr Gorbachev as President. It states its objective as "Research and activity aimed at promoting the development of an interdisciplinary culture, safeguarding the dignity of humanity, and encouraging co-operation among the geopolitical areas of the world"

C.J.Campbell of ASPO has been invited to participate in Workshop 3 under the chairmanship of Al Gore to address the subject: "Water or Oil : the Assets of Living Nature are not up for Sale"

The Newsletter very much welcomes contributions from ASPO members and other readers, who wish to draw attention to items of interest or the progress of their own research.

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