



## Houston ASPO Day 1 part 2

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Topic: [Miscellaneous](#)

Tags: [biofuel](#), [conference](#), [ethanol](#), [exports](#), [media](#), [nuclear](#), [peak oil](#) [[list all tags](#)]

The pace of information that comes at you during the ASPO meetings is so intense, and immediate that it is sometimes hard to capture all the information, particularly where it is tabulated data on a slide that is on the screen for only a short time. The organizers have, however, taken pity on the ineptitude of your humble scrivener, and from sometime in the morning (i.e. Saturday) they will have the Powerpoints up on [their website](#). For the full power of the debate you will still, however, have to buy the DVD's.

I had left you at the end of my [earlier post](#) with [George Baker](#) reviewing the situation in Mexico. We have seen [Cantarell](#) dramatically decline from the point that it was providing more oil than Mexico exported to the United States, to the current position where it produces significantly less. I asked George later about whether, given the choice between reneging on their contracts, and dropping internal use, which they would select. In contrast to Westexas views that countries will always look out for the internal demands first, he expected that they would fulfill their contracts. He was also curious as to why Pemex had installed an [FPSO](#) at the Ku Maloob Zaap field, since there is existing infrastructure that should have handled all the product. Mexican deepwater production is likely to come on in 2013, but the issue of cross-border fields has not been addressed.

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In a day of discouraging news, [Vince Matthews](#) came on to talk about "Oil, Minerals and the China Syndrome." He reviewed the change in the world supply of minerals over the past few years. It is a debate framed in the context of electricity growth. Of the last 7.2 Terrawatt increase China had 2.21 Twh; India 0.4 Twh; the U.S.A. 1.1 Twh. The rest of the world is growing toward our standard of living.

China is rich in minerals and resources, and yet, when Vince looked at the state of a range of minerals, China was not only a major producer (perhaps 1 or 2) but was also one of the largest importers. This has had an impact on commodity prices with this increase in demand.. It has also spawned a significant rise in [copper thefts](#) (and from the editor – also major thefts of billets of other material). The numbers that were put up in a series of slides showing the change in critical minerals told a shocking, yet consistent, story of change across a wide variety of minerals, in terms of the increase in price over the past few years.

Supply growth calls for increased technology, yet even though we have transformed from a wait of 6 months to get information from lab analysis, to the point that it is processed on the laptop on site, and within minutes of getting the raw data, yet production declines.

Natural gas is a fuel that is highly regarded in China and India, but U.S. demand peaked in 1973.

Although the gas has a number of advantages (particularly in power stations), the problems that companies encountered in the subsequent years have led many firms to move out to sources of more reliable supply, and thus, overall, demand has dropped. Which, in a way, is a good thing since production has also dropped since 2001. The only growth, apart from LNG imports now at 4 tcf or 20% of usage, will come from the Rockies.

He noted the success of nuclear power, where efficiencies of operation are now up to 90% operating time. The question of a reliable source of uranium has been sidelined by the use of military grade material from the recovery of FSU munitions, but this will soon be over, and leave a gap of 80 million lb/year that has to be made up.

The severity of the impact of Chinese demand on the American supply market was illustrated by an anecdote that Vince related about a plant owner coming to his office and complaining that molybdenum, mined in Colorado, and an integral part of the visitors operation, was simply not to be had, at any price. Colorado coal has gone from \$17 to \$37 on the spot market, but for long-term contract is still around \$20.

The luncheon speaker was [Matt Simmons](#) who has been here sensibly the whole conference. He noted the high quality of the speeches at the conference, but contrasted this with the recent [NPC report \(pdf\)](#) where 1500 people had labored to produce a 250-page report that “copped out” in facing the challenge on peak oil. It chose to just list differing views, without drawing any conclusion as to which was most credible. Matt plays close attention to a couple of tables from the [IEA](#) and noted that crude oil production peaked in May 2005. This is at a time that demand is growing, and he presented one of several worrying slides to the audience. Even if peak oil has not occurred, and he thinks it has, as the curve moves forward available supply is now below and falling behind potential demand, so that there is an initially small but growing gap between the two.

So now the questions come as to what to do next, is there enough capital to develop new sources in time, will it be spent, will we do the R & D to allow some discoveries to be developed, and will we make the best decisions, and who will know?

If we are indeed in the post-peak period then how fast will the decline now be. There have been quotes of 4.5%, but talking to rig operators he felt that the number was closer to 8-10% on current projects. The NPC estimates a value of 6.8% (remember that 1% is around 800,000 bd). The gap is growing not only with oil, but also with gas. And the question comes as to when we drain the gas cap on a reservoir, since at that point the field is finished.

For crude the supply ceiling is currently under the anticipated supply numbers for the fourth quarter of this year, and if we cannot sustain supply against that demand then we will enter a period of great uncertainty. If the demand is up around 90 mbd at the end of the year, there is no way that supply can be produced to meet that number. And while demand is fickle, it is also inexorable, so that the limitations on Deepwater in the GOM, and also off Nigeria, will have an impact relatively soon.

He noted the downside to an Oil Major underestimating the price of oil. By the time that a decision had been made to drill a second well in the Jack field, the available rigs had all been employed and back-ordered so that the next open window for use will be in a few years.

He repeated the concern about 4th Quarter world supply at a 85 mbdoe being faced with a demand of 88.2 mbd – where does the shortfall get made-up. There is no source that can now turn on, that fast, an additional supply of 3.2 mbdoe. And of that excess how long can the current

stocks last when faced with this level of shortage. We are, in short, already in a world of hurt even before the actual peak in supply arrives. His prediction for the annual drop in production for an average well is 6.7% and there is increasingly evidence that this will not be met by the supply options (He got a standing ovation at the end).

[Tom Petrie](#) spoke next on the Strategic Perspective. In regard to the current situation that Matt had outlined, with demand beginning to exceed supply, he wondered if current price signals work? There is a collaboration between Russia, China and Iran that does not bode well, and he recommended that listeners read “The Black Swan”, by [Nassim Nicholas Taleb](#). He felt markets were beginning to embrace peak oil, but that the situation with LNG was slipping past folk. Although 14 countries can supply LNG 10 are in OPEC and we can’t use historic patterns to judge the future response.

He noted that Peak Oil will hit the radar just after next years elections, but wondered what price it would take to limit demand, and that we need the gas pipeline from Alaska, which is there but cannot be installed.

He noted the “tragic mistake of corn-based ethanol”, which gained some applause, but does not gibe with what I am hearing elsewhere.

The next speaker was Joe Gladback, replacing Claire Farley. He note that the game is changing and that the Majors are now being hit. Having led, they are now more often sidelined. Looking at a growth in oil demand of 121 mbdoe by 2030, the question is from where will it come? Deepwater GOM won’t come on board until 2015, and that currently found under exploration may not appear until 2020. Russia and Middle Eastern supply remains limited, and while investment doubled, production remains flat. Deepwater is a place to look, but the incentives to do so are diminishing. As individual breakthroughs make less impact, so the incentive to do more reduces. It has been said that we may need to spend \$20 trillion to find all the oil we will need by 2020. In context 2006 spending has been around \$410 billion, so who raises this sort of money, spends it and manages the result. The Majors don’t have the prospects, the independents, being field focused won’t and the national gas and oil companies have other priorities.

[Jeffrey Brown](#) (our Westexas) then spoke about the question as to whether exports would peak before peak oil? He spoke to the integration of data on field production, exports and internal consumption, with example cases, that showed, for example, that with internal consumption of 5.7% growth per year, Saudi Arabia will stop all exports by 2035. Russia he felt was “watering out” under a decline rate of 5.1%. Norway will stop exporting in 2030 and the UAE in 2037. Averaging for the top 5 he found that the decline rate was 3.8%, with internal consumption rising at 1.8% pa. Demand is becoming the driver and dramatic changes will soon need to be made in fuel efficiencies in countries that can afford to.

[David Hughes](#) spoke to the chance that alternative fuels could bail us out. The need for an answer to the problem is due to its immediacy, and that with projected growth world energy may triple by 2030. Remember that 90% of the oil has been consumed since 1958 with 50% being consumed after 1984. 50% of natural gas has been consumed since 1988.

(Ed note: David Hughes has kindly corrected the following in [the comments](#) that follow this piece.)

Yet there is a lot of natural gas, it is just not in the U.S. but in the Middle East and Russia. North America has 10 years of gas left. We now need 4 wells to produce the equivalent of that achieved by 1 well in 1996. Costs have doubled since 1998. Rig cost has risen 30% since 2006, while Canadian production is dropping by 12%. (This again was a paper where I could not write fast enough to cover the info on the slides – which I recommend that you go see).

In the United States gas output was lowest since 1995, while there was a record number of 1400 rigs working, yet we are still sitting on a plateau of production expected to start declining at 1.5% a year. It may be that there will be 11 new LNG terminals (providing 15 bcf) but 26 terminal sites have been cancelled, and there was 1 new terminal in the GOM in 2005.

Coal has been used for a long time, but 90% of total coal consumption has been mined since 1909. It is the fastest growing energy source in the world, and it is spread around a bit. Growth is forecast at 74% through 2030. The U.S. exports coal and burns it for power, though there is a variation in calorific value between Eastern and Western U.S. coal. It is anticipated there will be a huge growth in coal demand across the world.

The new high efficiency boilers are 43.5% efficient, but with residential heating this can be increased to 60 – 70%.

Nuclear energy will face a huge boom since there is a need to replace the current reactors, let alone build new ones.

It was thus appropriate that he was followed by Scott Pugh who noted that the industry had seen 5000 reactor years with safe operation. He recommended Senator Peter Domenici's book "A Brighter Tomorrow." He noted that in order to maintain an adequate oil supply we needed to find the equivalent of one new Saudi Arabia every four years. Since that is unlikely we will need to find an alternative and the best alternative is to switch cars over to running on electricity. (There was a plug-in Prius in the foyer of the meeting floor). But this will need 1000 x 2,000 MWe power stations at \$3 – 4 billion apiece. However once built the operating cost for the power would be \$0.0172 per kWh. Recently plants run 90% of the time, and provide a steady consistent base load.

Plants built initially to last 40 years are now in for consideration of a life extension to 60 years, at which time they must be replaced. 27 reactor operators have stated they plan to renew, and 44 permits have already been granted. He showed a map that showed the regions of the grid showing spare capacity, and this is rapidly disappearing. Thus we need, either 50 nuclear, 261 coal powered, or 273 NG plants in the near future. The cost will not be cheap, for \$1 billion you get either a 1000 MWe nuclear plant; a 1500 MWe coal plant or a 5000 MWe natural gas plant. But there is the issue of the availability of supply. And, in contrast to coal, the amount of nuclear waste generated each year is only 3 cu m. (All the nuclear waste generated so far would cover a football field to a depth of 15 ft). However he did note that, because of safety interlocks, when a nuclear power plant shuts down it takes a week to restart.

For a contrast the next speaker was [Kyriacos Zygourakis](#) who spoke on biofuels – the great green hope. He noted that the claims for biofuel suggest that we can produce a lot, but some of it isn't there yet, such as cellulosic. As well as light plants need nutrients and water. Using input energy as a metric of performance he also questioned if we had enough land, enough energy, what the impact would be on carbon dioxide levels, on water availability, and on food production. He noted that ethanol is alive and well in DC if not doing quite as well everywhere else. He did not think that corn ethanol would ever displace more than 5-6% of the gas volume, but every little helps. However it only helps if we can do it economically. And here he noted that the difference between the energy input being below the energy output for corn comes from the secondary product (distillers grain), which provides the swing volumes to make it a positive operation. He gives ethanol a 1.2 on EROI in general, but only 0.72 in Georgia, but notes that a plant only converts 0.03% of the sunlight that falls on it into product. With cellulosic ethanol there is 750 million tons of dry biomass that can replace 30% of the US gasoline demand, when perfected. However

proponents exaggerate the yields and neglect that only 60% of the biomass can be converted into ethanol. It is assumed to make the process profitable that the lignin component of the biomass will be burned to generate the heat required in the process, but he felt that this was a zero sum game.

For switchgrass the EROI is 8 times the fossil fuel input, though that also assumes that the lignin be a source for the heat required in refining. We need 24 million acres, while total cropland is now 434 million acres, with harvested cropland being 303 million acres. He assumes a yield of 25 ton/hectare but it can vary from 2 – 20 ton/acre. (He thinks an achievable target is 10 ton/hectare), but does not think that there will be enough energy from the lignin so that, in the final analysis he sees switchgrass having an EROI of 1.42.

He had no time to cover biodiesel, but has problems seeing that soybeans or canola could meet the scale of the demand that will be placed on biofuels. He sees the energy balance for biodiesel being at around 1.9, though two studies have shown that it is less than 1. It does produce less GHG than corn ethanol, does not need large plants and can be produced locally.

There was not any time for questions, though the moderator noted that the speaker on nuclear power might want to wear a Kevlar suit before wandering into the reception.

The formal program closed with [Tom Whipple](#) talking about the Media. Prior to the talk the organizers of the conference noted that they had developed a new Award for those that volunteer their time to the cause of Peak Oil. They have named it the Whipple Award and Tom was the first recipient.

He asked, why are we here, given that the MSM barely covers the subject. Reasons he has been given include “absolute nonsense,” “never heard of it”, and “readers don’t want to hear about it.” Without a smoking gun we cannot get attention, and won’t until an event occurs. The GAO and NPC reports got zero attention. Does this matter. Yes it does, since without public awareness and pressure politicians will not do anything.

As an example of the problem he noted that the LA Times had a story on oil price that ran when oil hit \$88 a barrel. Of the possible causes only at the bottom of the list of possibles was there the note that the IEA had predicted we would use 88 mbd at the end of this year. (But no indication as to why this might be a problem). It will take severe shortages before we see the attention the story needs.

As noted earlier [James Kunstler](#) then gave a brief review of the activities to date, noting along the way that he had just written a novel set in the future that looks back on this crisis. He noted that the meeting was dominated by males, and had a bias toward bean counting. He noted that we have a leadership problem, and in large measure are denying the problem. We need leadership politically, educationally, environmentally and in the media.

That was a brief run through the main talks on the first day. More will follow later. Again I encourage those that were there to chip in. As I saw with Jim Kunstler's remarks we obviously all hear a different side of the presentations.



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