



The Start of a New Semester: Some Changes in My Energy Lecture Slides

Posted by [Heading Out](#) on September 9, 2008 - 10:15am

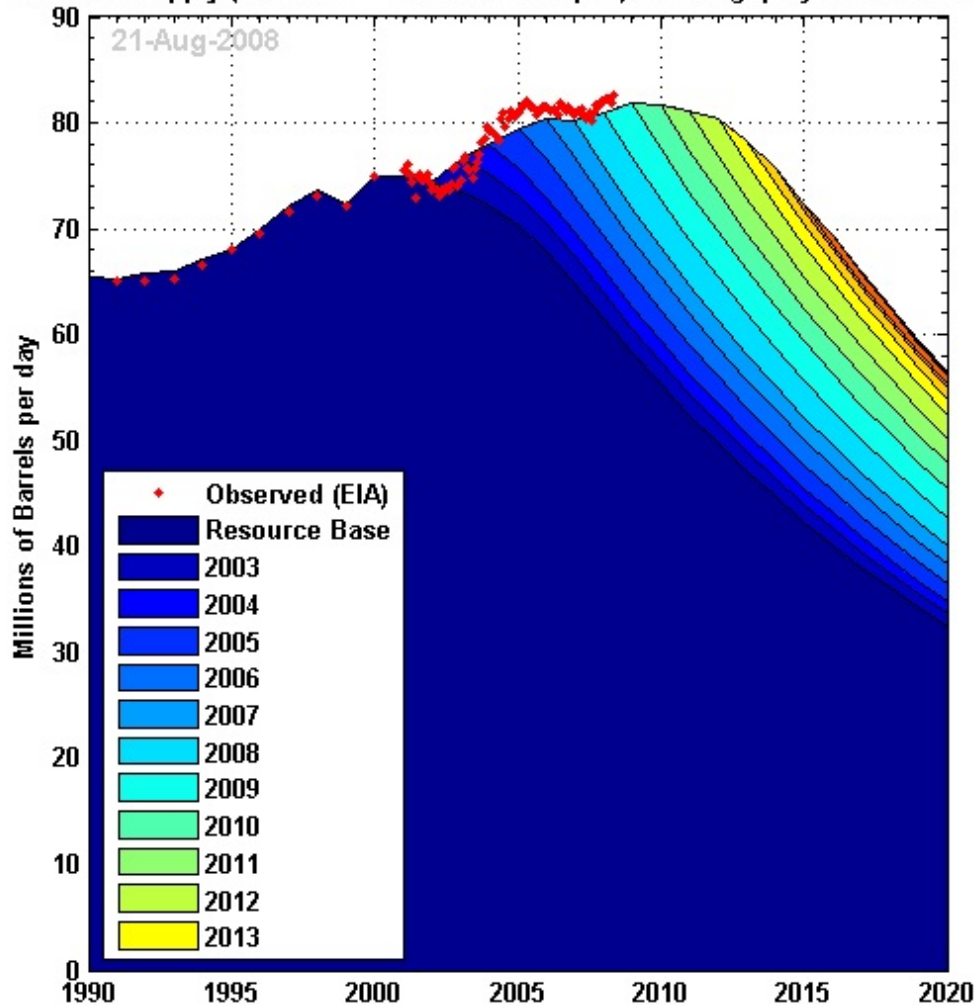
Topic: [Supply/Production](#)

Tags: [cantarell](#), [heading out](#), [megaprojects](#), [mexico](#), [original](#), [peak oil](#), [power](#), [power generation](#) [[list all tags](#)]

Although the days are still relatively hot and the sun high in the sky, this summer is coming to an end. The order has gone in for the wood that will help us heat the house this winter, and the students have arrived for a new semester. Which means, a little late as usual, it is time to dust off the lecture notes (which now-a-days come as Powerpoint presentations), and start the annual update.

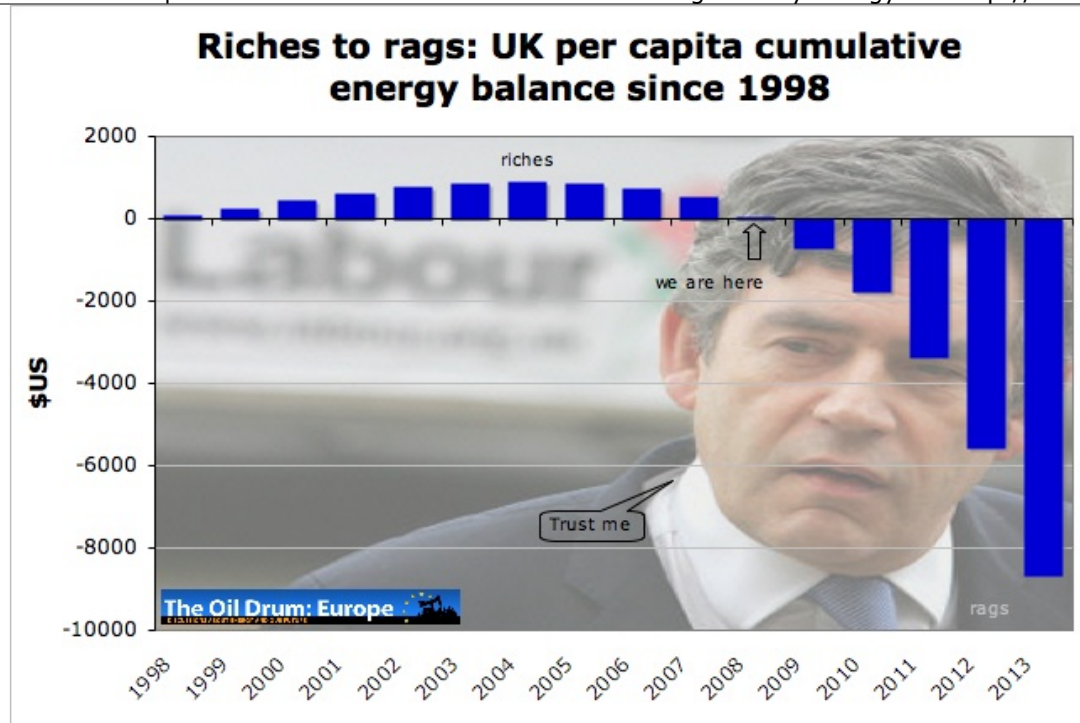
One of the classes that I teach deals with power, both generation and use, and so I start the semester with a review of where I see that we currently stand as an overview before getting into more mundane details, such as the inner workings of a generator. The spacing of a year between using these particular slides also gives a little perspective on how things have changed, and updating individual slides emphasizes where the most significant changes have been, in my opinion. So let me show you the slides I am adding or changing, and explain, relatively briefly, why.

The first change has been to alter the slide that used to show the general situation, from the ASPO curve on oil supply that I have used in the past, to that from the Megaprojects analysis, using the [August 2008](#) projection. However, instead of the featured curve from that article, I replaced it with the one that comes near [the bottom end](#) of the comments.

World Oil Supply (Crude Oil + Natural Gas Liquid) and Megaproject Contributions

In contrast with the earlier curve, Khebab plotted this with a decline rate of 5.2% rather than the 4.5% decline used in the derivation of the main plot, and given the reports of higher decline rates I am no longer comfortable using the lower number. My main reason for the change was to highlight the changing impact of an increase in decline rate, and so I contrasted this with the original predication that came at the top of Khebab's post.

In order to justify my emphasis on the change I had then (in what turned out to be a back-to-the-blackboard moment) to explain the reasons for depletion, and the change in the rate brought about by the increased use of horizontal wells. To show the reality of the change and its impacts I used the example of Cantarell, but just changed the wording on the slide to note that though the field peaked at over 2 mbd in 2004, it is now (again from [comments](#)) below 1 mbd (the July figure was 973,668 barrels/day). The decline curves for the North Sea also emphasise the higher rates, and I added to them this year the plot that [Euan](#) made of the coming decline in British fuel supplies.



To explain why there was going to be no salvation from the Middle East I combined another visit to the board (to explain water floods) and then added the aerial plots of wells that [JoulesBurn](#) has posted, as a supplement to the section through Abqaiq, as an illustration of my comment that I cannot see production from that area being sustained more than four years from now. The plots show that the most recent wells are concentrated along the crests of the anticlines.



Turning to natural gas, the most promising development of the year has been the increases in production due to the development of the Barnett, Utica, Haynesville and Marcellus shales. It has

just been hailed by [the NYT](#) as possibly marking the start of a era in energy production. However, after a couple of slides showing their location and the [advanced technology](#) being used to get the gas out, I reverted to the pessimism of an [earlier post](#) where the very short life of those wells was discussed. (I will save a comment about the Pickens Plan and the projected use of natural gas supply that it calls for until next year.)

There was a short discussion of Barnett shale production, led by DownSouth, [last week](#) which led me to the [Texas Railroad Commission reports](#) and the transience of some of the well lives is illustrated by production numbers from different fields of the Barnett Shale. I chose the numbers from the [Golden Corral field](#) as illustrative for the class.

Pre-2003 0
 200313,010 mcf
 20041,708 mcf
 20050
 2006129
 20078,869
 2008867

With U.S. gas production declining it was then worth adding a couple of pictures from [Jerome](#), first showing the gas pipelines running from Russia into Europe.



And then, following the ongoing situation in Georgia, to show the pipeline map, to which [Jerome](#) has also referred.

Caspian Region Oil Pipelines (U)



Putting these two together, allowed me to wax pessimistic about the supplies of fuel from the Central Asian states, such as Turkmenistan and the overall problems of supply for the West as China acquires gas from a pipeline into the region. It also allowed a couple of remarks about the predatory nature of Gazprom and the recent problem that BP has encountered in working in Russia, as emphasis to the likely future of fuel supplies from that part of the world.

The lecture went on to talk about the problems of supply in the face of the growing domestic use by producers (the Export Land Model) and some concerns about the political power shifts that are now underway.

It concluded with some thoughts on possible solutions including some slides on the Oil Sands of Alberta, the heavy oil deposits in the United States and elsewhere, and the potential impacts of other fuels. Although the hydrogen caravan passed through town last week, I saved a comment on that technology to the following lecture in the section related to batteries (which also included pumped storage). The class ended, after repeating comments and slides that have appeared here before on both corn and cellulosic ethanol, with a short discussion on the use of fire underground for either in-situ combustion of coal, or for the THAI process in Alberta. Personal experiences in the difficulties in monitoring and controlling the flame front in such circumstances ended the class on the same pessimistic note as that on which it began.

And yet I had to request a larger classroom, since the additional students overfilled the original (albeit small) room. So perhaps there may be some ray of hope for the future, with the increasing number of students coming into the business - but alas it will take too long to train them and to find the necessary solutions for this to get us out of the problem years that we are now entering. And apropos a comment last year, where 4 students had worked in operations over the summer where they were asked to participate in load shedding, this year there was only one.



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