



## The Changing Oil Supply Perspective - Opening Lecture Class Note Changes

Posted by [Heading Out](#) on August 26, 2009 - 10:16am

Topic: [Supply/Production](#)

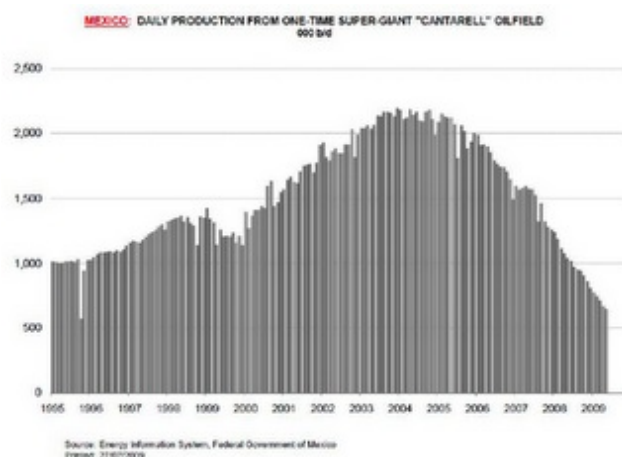
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It's the start of a new Semester, and at the beginning of my Power class I spend the first lecture reviewing where I think we stand on the Energy supply to the United States. This has changed a bit since last year and so I thought I would run through some of the changes that I made to my lecture this year, in the same way as I did [last September](#). Since the greatest impact is likely to come from the changing sources of supply that the US has had to go to, with the change in levels of production, I began with this slide:

Country	Mbd	Country	mbd
Canada	2.28	Nigeria	0.62
Venezuela	1.38	Angola	0.52
Mexico	1.23	Brazil	0.40
Saudi Arabia	1.12	Algeria	0.28
Russia	0.84	Iraq	0.27

*Sources of Oil imported to the US in May 2009 (EIA)*

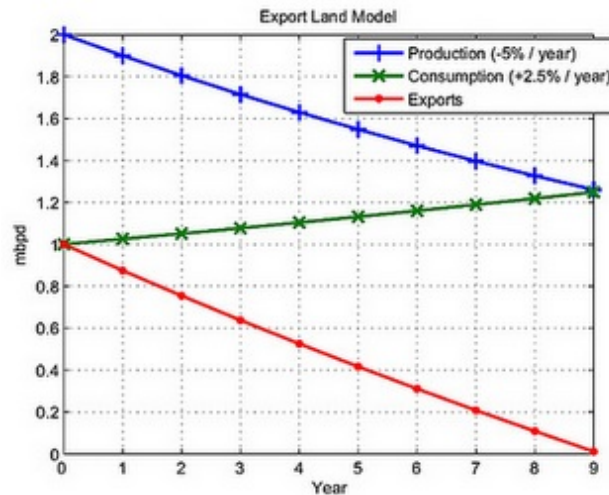
It is interesting to see the relative amounts from Mexico, Saudi Arabia and Russia and the first thing to note is the decline in Mexican supply, brought about by the dramatic drop in production from Cantarell. (H/t Nate Hagens).



*The peak and decline of Cantarell – where Mexico got most of its oil.*

That drop has already shown up as a decline in Mexican exports to the US of over 800,000 bd. At

this point I introduce them to the [Export Land Model](#) (ELM) of Jeffrey Brown, which basically points out that after a nation's economy has grown (and oil consumption with it) during the high production years, then as oil production declines (as above) it is the export market which suffers more, as the country retains more of its product for its own use.



*Export Land Model (ELM) of Jeffrey Brown, showing the more rapid decline of exports, as production falls in a country, yet internal demand continues to rise.*

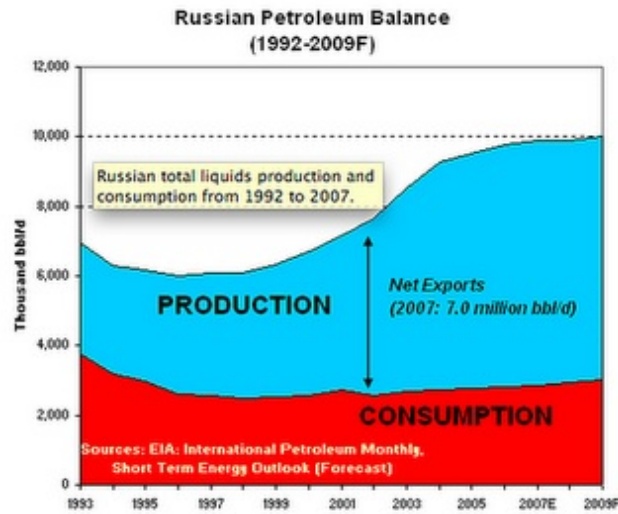
While Mexico is the most dramatic example of this at the moment, it is important to consider Russia next. We used not to get much oil from Russia, but as the table above shows, that situation is changing. (Russia to the Rescue was the theme of a made for TV movie [Oil Storm](#) back in June of 2005, where they sent us a couple of oil tankers which “saved the day”. At the time \$75 a barrel for crude and \$4 per gallon for gas was considered to only happen if the US was damaged by a hurricane and the Saudi terminal at Ras Tanura was attacked.) Well now they are sending more and regularly, but the question relative to the ELM is how long can they keep this up.

Exports from Russia dropped 5.2% in 2008, but have [crept up](#) some 0.2% since January, with Russia exporting about half its production. The big question about that, however, is that a pipeline is going in at the moment that will start shipping 300,000 bd of oil [from Russia to China](#) and to Japan. Given that overall Russian production is expected to decline (one of their major fields at Samotlor is now producing at 750,000 bd, when at peak it [produced 3.2 mbd](#), and now that it is 80% depleted the [water cut is 90%](#).)



*A well at Samotlor ([TNK-BP](#))*

So with increased amounts of internal consumption (it is using [about 2.8 mbd](#) internally), it is becoming another example of the ELM.



*Russian production, consumption and exports (note that according to Rosstat Russia is [now exporting](#) around 5 mbd) ([from the EIA](#))*

With both these countries exports declining, the question is becoming who will be the next to step in and provide additional oil for us. Saudi Arabia has dropped production [to 8 mbd](#) to keep the price up, and there are some questions about the future production – and I refer to the pictures from [Satellite over the Desert](#) that I have used before to question Saudi long term production ability. I also note that Saudi Arabia is [now consuming 2.2 mbd of oil](#) and demand is rising. There is, [for example](#), this

Estimates on how much crude it is burning differ, but the kingdom's own data show it has risen in recent years, and it could be as high as 470,000 bpd of crude this year, up 62 percent from 2008, consultancy FACTS Global Energy says.

A Saudi source familiar with the kingdom's energy sector said the maximum it could burn at power stations would be 300,000 bpd, although another 120,000 bpd could be burned to power refineries and other facilities related to upstream production.

Aramco claim to have the capability of producing 12 mbd of oil, but again I remind the class that this includes the oil from Manifa, which cannot be produced until it can be refined and that won't be until 2013 at the earliest.

And thus one comes to Canada, and so there is the quote from [the Wicks Report](#) that the Alberta oil sands will provide half of North America's imports. The level of those imports is shown in the first table, and the oil sands are not now predicted [to get to 2.7 mbd](#) until somewhere around 2018, up from the current 1.3 mbd. So with the oil sands being the increasingly major supplier of oil to Canada as the conventional reservoirs deplete, it does not look as though Mr Wicks Report will prove realistic, and we will need to look elsewhere to make up supply shortages for ourselves.

At which point it is timely to point out that the UK will be competing with us for the remaining world supplies of oil, and that China and India, with their burgeoning car sales, will also be adding an mbd or so to their demands for oil next year.

The one bright hope that I end the oil section of the lecture with is that, with ethanol production at around 750,000 bd there is a new candidate supplier of jet fuel. The Japanese airliner that tested fuel this past winter used [Camelina](#) as the source for the jet fuel. It seems to have more going for it than corn or cellulosic based ethanol, at this point in the evaluation.

It is nice to end the section on an optimistic note, and the message from the above is that there are going to be jobs for the students when they graduate, and it will likely remain so for the length of their careers.



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