



Where can I find up-to-date rigorous peak oil projections?

Posted by [Gail the Actuary](#) on August 30, 2010 - 10:30am

Topic: [Demand/Consumption](#)

Tags: [hubbert linearization](#), [modeling](#), [peak oil](#) [[list all tags](#)]

This is a letter I received from a reader (with the name changed). Below the fold is an expanded version of my answer to him. I would be interested in what other people's thoughts are on this subject as well.

Hello,

My name is John Smith. I have been following the peak oil situation since about 2005. A few years back I thought I had a handle on what I could expect from peak oil. Then, the recession hit, and changed (delayed) everything.

My problem is, I have not seen an rigorous peak oil studies/projections that take recent events into account on peak oil projections going forward. As an expert on the subject, could you please point me to some literature that would be of help?

I do not know what the future holds, but it is clear to me that realities have changed, and with it, the timeline of peak oil.

Regards,
John

Dear John,

Curve fitting techniques including [Hubbert Linearization](#), and forecasts based on amounts of reserves and dates of discovery, can be useful tools but, unfortunately, they provide only rough estimates. Now that we are so close to the peak oil date, the deficiencies of these techniques become more of a problem, because a difference of 5 or 10 years in peak date becomes more of an issue.

One thing that these techniques do not tell us is how much oil is really economic. In a way, this is equivalent to saying that these techniques do not tell us how much oil has a high enough Energy Return on Energy Invested (EROEI) that it really can be recovered and sold at a price that customers can afford. We are only now learning what this price might be. A rough estimate is that if the prices are above [about \\$85](#) a barrel, they will send the economy into recession. It may be that in some places, enhanced oil recovery can be economically used, while in other places it is too expensive, and reserves should be adjusted accordingly.

Another problem with this type of technique is that these techniques were developed in a period

when the world economy was growing rapidly, and it was reasonable to assume that the world economy would continue to grow rapidly. Thus, it seemed reasonable to assume that as much oil as could be produced, would be produced. But once oil production starts hitting economic limits, it sends the economy into a downward spiral. Instead of inadequate supply, what one gets is inadequate demand, because the value that the oil can produce is too low to provide consumers enough benefit that they can afford to buy high priced oil, plus all of the other goods they need to sustain their lifestyles. It is not clear that these techniques model inadequate demand as well.

It seems to me that what one really needs is models which consider both geological factors and economic factors, but at this point, I don't think we really have good models of this type. It is not just recession that is an issue, either. For example, if a country's tax rate on oil companies goes up, I would expect oil production to go down. It may be higher tax rates on oil companies that bring us down off the current peak oil plateau--not geological constraints.

It would probably also be helpful to adjust the models to reflect improvements in technology. If a better method is developed for extracting very heavy oil, for example, extraction of some such oil may become economic, when it has not been in the past.

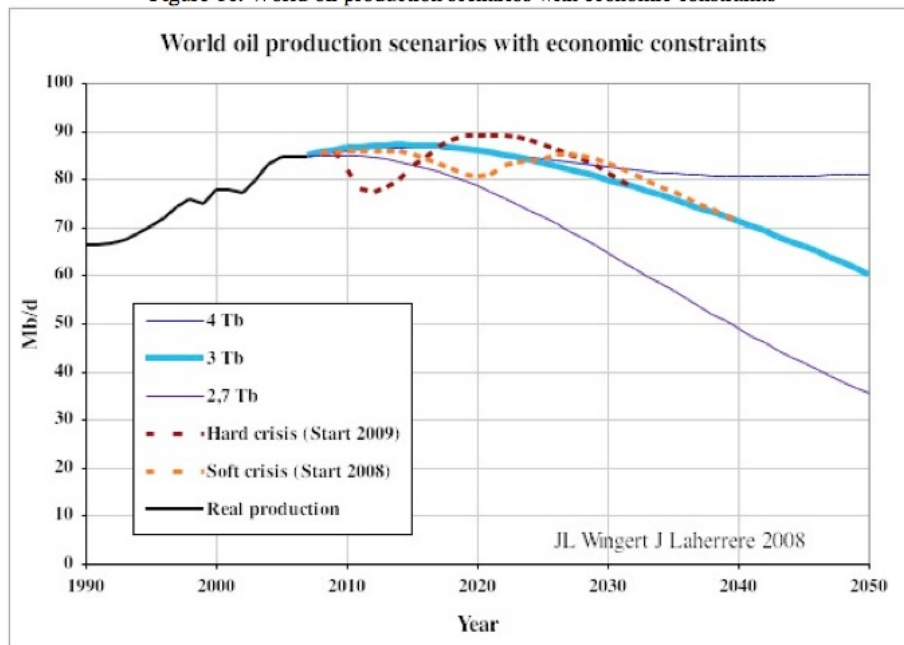
Recent Forecasts

We published one [recent post](#) showing peak oil projections, but which did not look at economic issues. This was Steve Mohr's thesis. He used several techniques which give a range of peak oil dates from 2005 to 2019. Regarding OPEC Oil Production, in his [thesis paper](#) itself, he says, "OPEC oil production peaks broadly in line with literature peak dates which range from 2008 to 2042." All of these are very broad ranges.

Another recent estimate of peak oil dates is [Forecasting World Crude Oil Production Using Multicyclic Hubbert Model](#) by Ibrahim Sami Nashawi, Adel Malallah, and Mohammed Al-Bisharah of Kuwait University, published in March 2010. This model estimates a peak date of 2014. It was discussed a bit in Drumbeat. It also does not consider economic issues.

Jean LaHerrere and Jean Luc Wingert published an analysis in October 2008 called [Forecast of liquids production assuming strong economic constraints](#). It develops a peak date range of 2012 to 2027. It concludes:

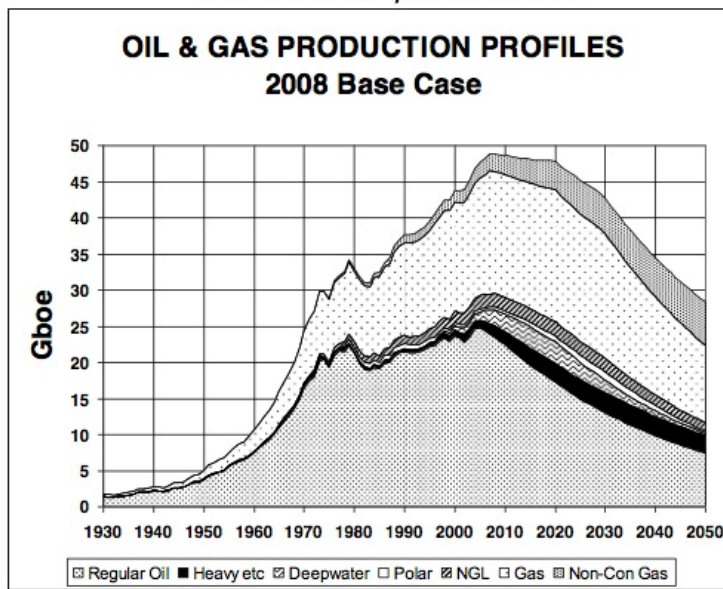
Figure 16: World oil production scenarios with economic constraints



Since 2001 we in ASPO France have claimed that future oil production will be a bumpy plateau with chaotic oil price, but we did not plot any curve, only saying that the smooth peak model (below-ground constraint only) with the estimated ultimate could be disturbed by above-ground constraints. The strong financial crisis the world is now facing will of course have some impact on the world economical situation and oil consumption. Is the financial system going to collapse or not and how quickly is it going to recover? We do not try to answer these questions but imagined two crisis models. Reality will probably be none of the two but we can see that with these simple scenarios, the possible oil peak dates vary below 90 Mb/d from 2012 to 2027 with the same ultimate of 3 Tb. The tensions on oil production will be realised for some years, the risk would be to forget the necessary efforts that have to be made to increase our energy efficiency.

Colin Campbell used to publish forecasts of world oil production, but retired from this after ASPO Ireland's [Newsletter 100](#) in April 2009. In the final newsletter, this forecast was shown:

The General Depletion Picture



ESTIMATED PRODUCTION TO 2100										
Amount			Annual Production - Regular Oil					Total	Peak	
Regular Oil			Mb/d	2008	2010	2015	2020	2030	Gb	Date
Past	Future	Total	US-48	2.9	2.6	2.1	1.7	1.1	200	1970
Known Fields	New		Europe	4.0	3.5	2.5	1.8	0.9	75	1999
1054	736	110	Russia	8.8	8.2	6.8	5.7	4.0	230	1987
	846		ME Gulf	20	20	20	19	16	673	1974
All Liquids			Other	28	27	23	19	14	722	2005
1156	1269	2425	World	64	61	54	47	36	1900	2005
2008 Base Scenario			Non-Conventional							
Regular Oil excludes Heavy Oils			Heavy etc.	4.3	5.0	6.5	7.2	7.7	226	2030
(inc. tarsands, oilshales); Polar & Deepwater Oil; & gasplant NGL and Refinery Gains of ~3%			Deepwater	5.9	6.6	8.1	8.1	4.7	89	2013
			Polar	1.4	1.5	1.7	2.0	2.3	52	2030
			Gas Liquid	5.1	5.5	5.6	5.9	5.6	156	2020
Reference date : end 2008			Rounding				-1	-1	2	
Revised	10/03/2009		ALL	81	80	75	70	55	2425	2008

Dr. Campbell's forecasts did not particularly take into account economic conditions, as far as I know. He expected oil production to decline after 2008.

There have also been a number of forecasts based on analyses of [oil megaprojects](#), by Chris Skrebowski and by "ace" (Tony Eriksen) and by Sam Foucher. These studies are fairly different from the general modeling done by others, mentioned above, in that they look specifically at large known projects, and when they are expected to be online, and compare these to expected losses in oil production due to natural declines in oil production. They require keeping abreast of a large amount of detail data, and even then a considerable amount of judgment is required: If capacity of a given amount will be added, how much will really be produced, and for how long? How much impact will infill drilling and enhanced oil recovery have? The most recent projection of this type that we published was by "ace". It was published in [November 2009](#), and showed oil production declining production after that date.

Information on Connection between Oil Production and Recession

If you want to read more about the connection between oil prices and recession, one possibility is Jeff Rubin's book, "Why Your World is about to get a Whole Lot Smaller." I have also written about the issue, for example, in [this post](#) and [this post](#) and [this post](#).

We will continue to run posts forecasting future oil production, using modeling techniques, as they

Thanks for asking.

Sincerely,

Gail Tverberg, Editor
The Oil Drum



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