



Looking in the Rear View Mirror

Posted by [Phil Hart](#) on May 18, 2011 - 2:29pm



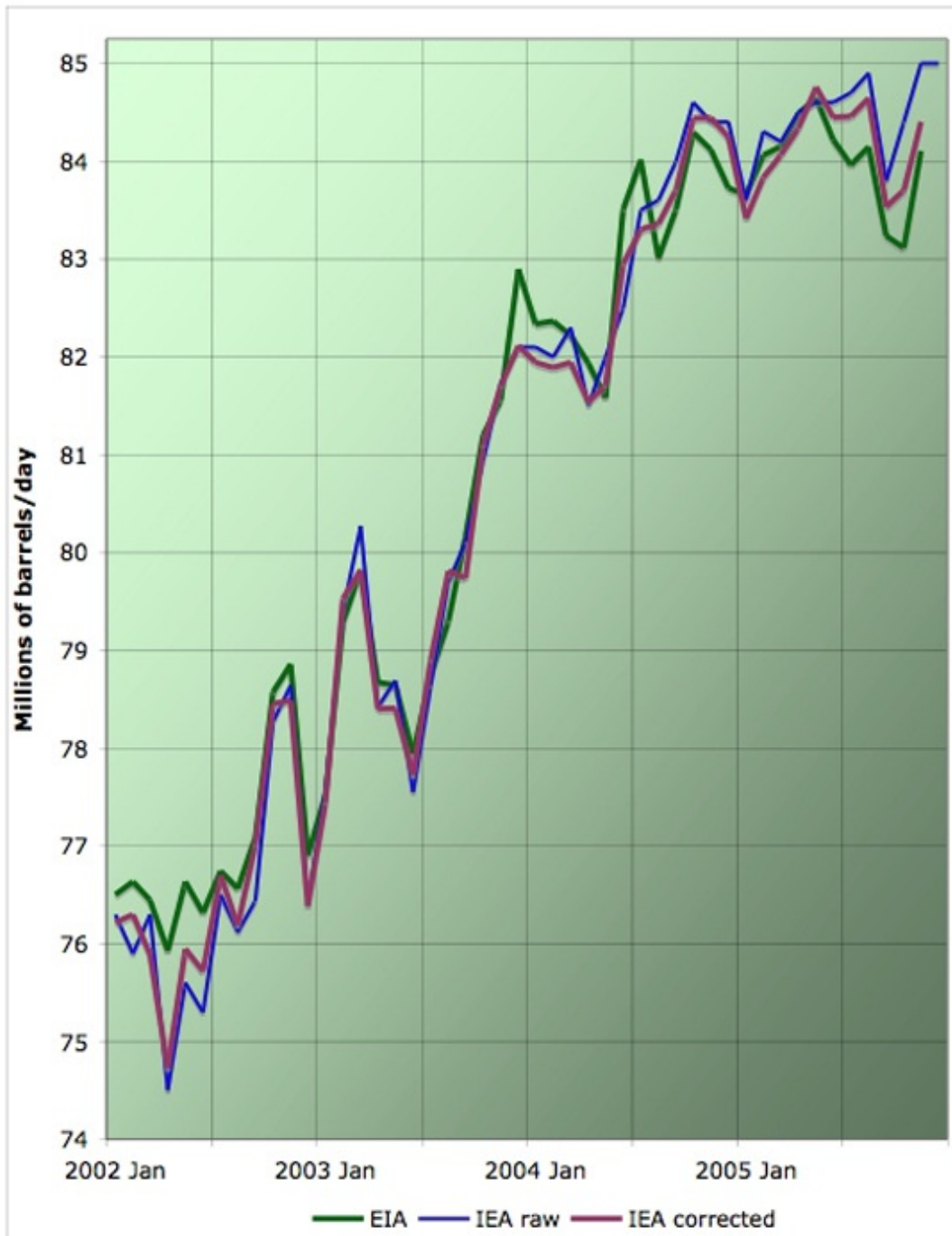
It has often been said that we would only be able to see peak oil by looking in the rear view mirror. It's well past time for a head-check, so this post provides a quick look back at production over the last five years and at some of the predictions I and others have made.

The Early Days

While the peak oil theory traces its roots back to M. King Hubbert in 1956, I think the contemporary peak oil movement can pin its origins on the Scientific American paper "[The End of Cheap Oil](#)" by Colin Campbell and Jean Laherrere in 1998. At some point those authors deserve a medal for the prescience of their work, and the rest of the world a slap in the face for ignoring it at a time when we could have usefully started the transition away from said cheap oil.

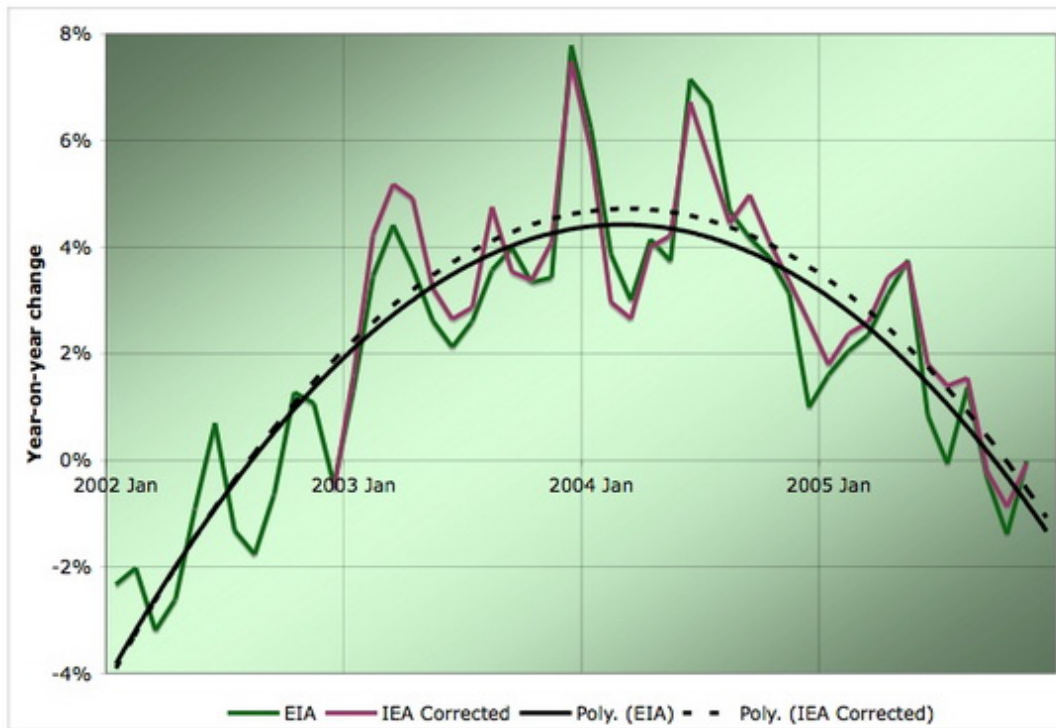
It was not until 2004 though, when oil prices began to move firmly above their long-term trading range that awareness began to grow at all significantly. I started work in the oil industry in the UK in 2001 but first heard about 'peak oil' from an outside source and joined the growing numbers following peak oil websites in October 2004. The Oil Drum was one of those sites I followed, soon after it was launched in March 2005.

February 2006



[Stuart Staniford's plateau updates](#) were a feature of The Oil Drum and I, like others, followed them closely. Charts like that above made it seem obvious that we'd hit the ceiling for oil production and it was just a question of when decline would begin.

While Stuart didn't take much of a position in writing the statistical updates, he did frequently include curve fits to the data. Although he explicitly stated they weren't forecasts, seeing those curves dropping below 0% growth rate was strongly suggestive to those looking for evidence that peak oil was near at hand.



Very shortly after Stuart's February 2006 post, [Dr Deffeyes defined a date](#) for peak oil:

I predicted that world oil production would peak on Thanksgiving Day, November 24, 2005. In hindsight, that prediction was in error by three weeks. **An update using the 2005 data shows that we passed the peak on December 16, 2005.** By 2025, we're going to be back in the Stone Age.

That's it. I can now refer to the world oil peak in the past tense. My career as a prophet is over. I'm now an historian.

I was considerably less certain about the timing than Mr Deffeyes, but at the end of February 2006, summarising Chris Skrebowski's Megaprojects analysis, I stated in [a submission](#) to an [Australian Government Senate Inquiry](#) that:

These industry figures indicate that new production coming online before 2008 will probably be insufficient to offset decline in existing fields, and that **falling total global oil production will be self-evident by 2010.**

Clearly that hasn't happened and I thought I was being conservative at the time. Somewhat more cautiously, in describing Colin Campbell's model, I also said:

The ASPO scenario forecasts a peak in 2010, with significant uncertainty on either side of this date. **We can only state with reasonable confidence that peak liquid production will occur at any time between now and 2015.**

November 2007

It was quite some time before the ever cautious (and I think remarkably objective) Stuart came to a conclusion that peak oil might be near at hand, in his post "[Is the Decline of Base Production Accelerating?](#)"

Overall, while there remains a lot of uncertainty, seeing this acceleration of base declines makes me lean a little further in the direction that the Russian situation of slowing production increases in the face of greatly increased rig counts also hinted at. **Specifically, it suggests that perhaps by sometime in 2008 we will have unambiguous declines in total liquids production, rather than continued plateau. I'm not certain at this point, but that's the direction I lean.**

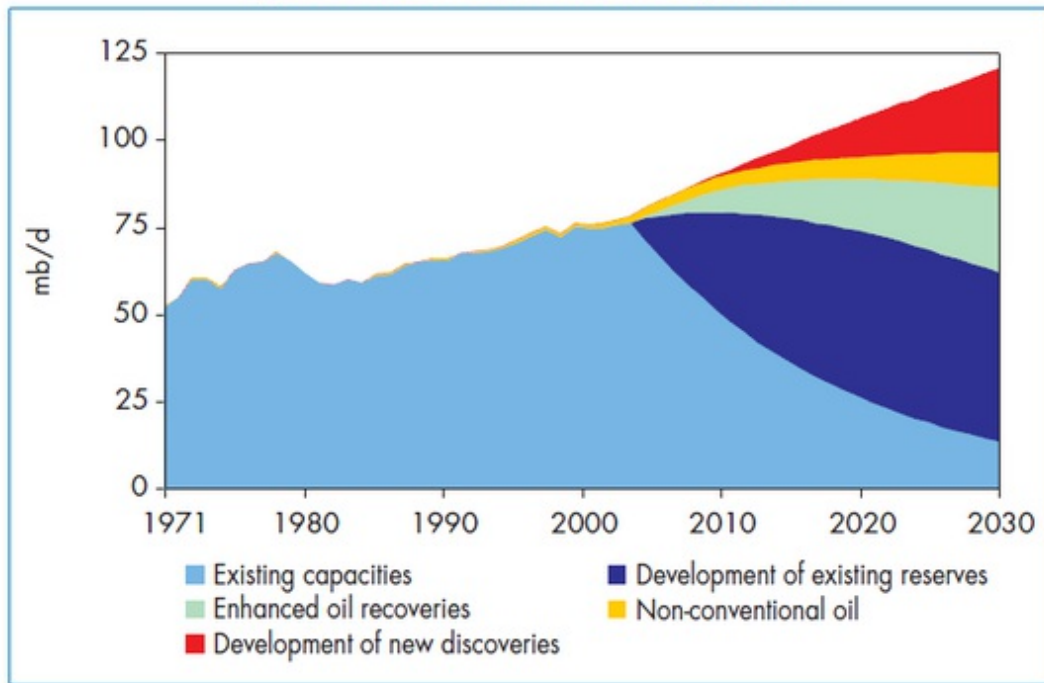
Many Oil Drum readers would have been more pessimistic than Stuart at the time, and with less caveats on their position. I think it's fair to say many of us did not think crude oil or total liquids production could be higher, however slightly, in 2011 than ever before.

The International Energy Agency

While I think some of us may have slightly over-stretched in the timing or confidence of our peak oil predictions, it's clear that we have been very close to the mark overall in raising awareness of this critical issue, one that more than five years later is still getting little more than zero response from Government.

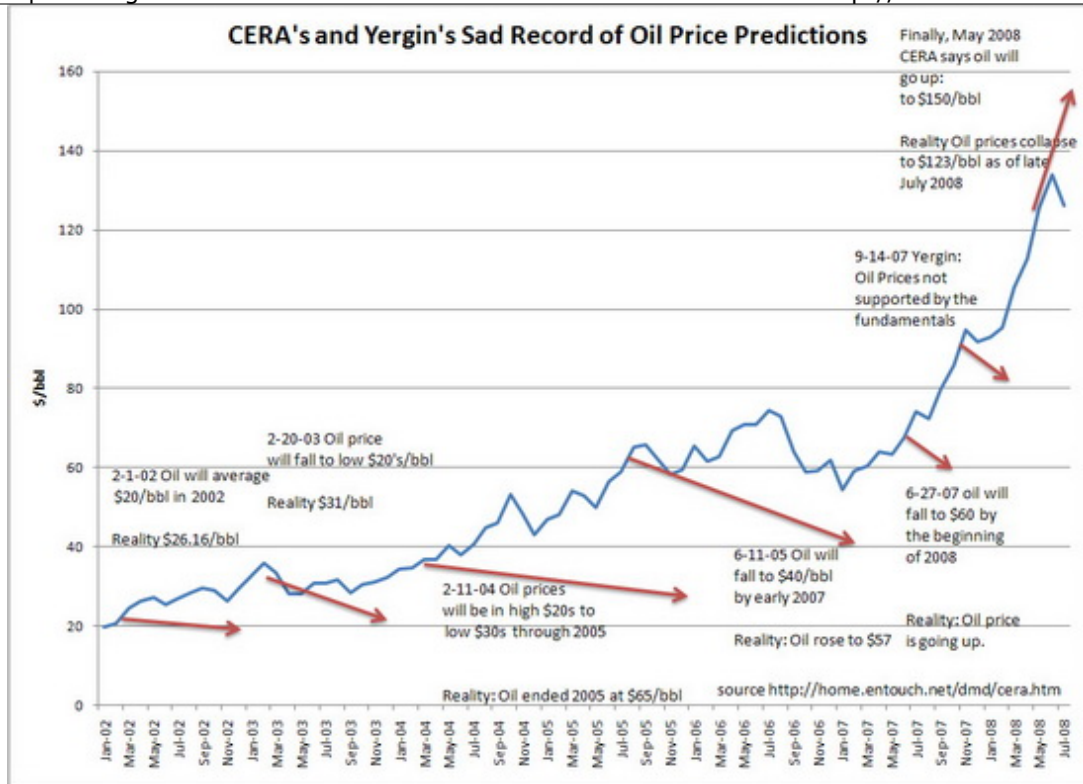
So there is room for improvement in the accuracy of our forecasts. Some other important people really did miss the boat entirely, though.

In their 2004 World Energy Outlook, the IEA included the key chart below, with a forecast in their reference scenario of 121 million barrels per day in 2030. Every report since, they have been revising that peak figure down by as much as 5 million barrels a day each time, which has made for several fairly dramatic downward revisions in a row.

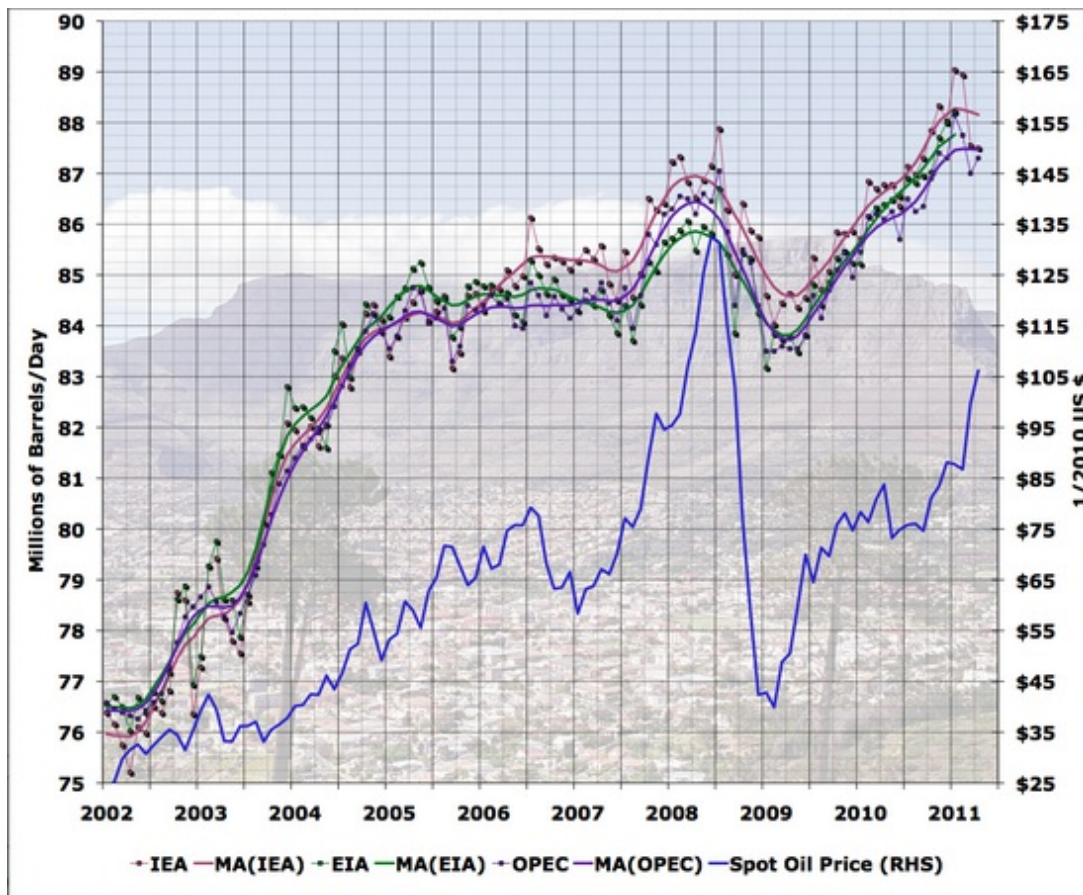
Figure 3.20: World Oil Production by Source

What I now find amazing is that Fatih Birol at the IEA has the gall to say [recently](#) that *'I think it would have been better if the governments had started to work on it at least 10 years ago'*. This despite his organisation arguing against the need to be concerned about peak oil more recently than that. The IEA has radically changed its tune now, which is welcome, but admonishing Governments for not taking earlier action should come with a significant 'mea culpa' of their own, since the IEA were the ones supposed to be providing the best advice.

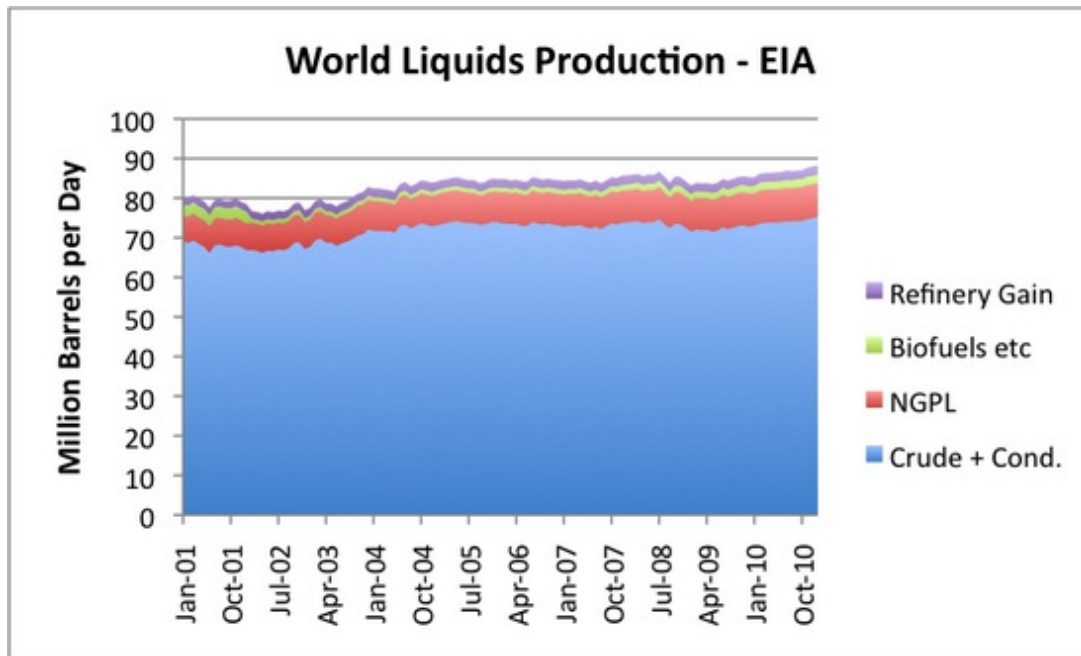
Of course, the only people further from the mark have been CERA. [This chart](#) is still priceless:



Where Are We Now?



On his blog '[Early Warning](#)', Stuart has updates again for the plateau following tragedies among us. The chart above is from his April 2011 update (currently offline). Gail in her latest update has this



Compared to total production, the difference between 2011 and 2008 is marginal, but this is not 'self evident' decline, which is what I wrote five years ago in that Senate Inquiry submission about where I thought we would be now. (The one fairly weak caveat is that if there had been no financial crisis, and oil demand had remained strong, then we may be seeing decline now from a slightly higher level in between).

I think there are two main reasons why production capacity now can still be holding above its previous peaks:

- 1 – The high oil price environment up to 2008 spurred a frantic response from oil companies to develop previously marginal economic fields, with those decisions now bringing a delayed last gasp production increase.
- 2 – Actual decline rates for fields in production are at the lower end of expectations.

Likely it is a combination of both, but moderate decline rates must play a large part. If the worst case assumptions about decline rates from 2006 were correct, it would not have been possible to have production at this level in 2011, given the volume of new projects delivered since then.

In an impressive piece of recent analysis here, Sam Foucher & J. Michael Bodell have made their own comprehensive estimate of decline rates in '[Crude Oil and Liquids Capacity Additions: 2011-2015](#)':

In matching our production capacity forecast with available production capacity history for conventional oil, the implied world decline rate for the resource base is between 3.4 and 3.6 percent. **This decline range is at the low end of values used in the literature but it is consistent with the short-term decline rate used by the IEA (World Energy Outlook, 2010).**

In many ways, that is good news, as although decline rates are likely to increase (slowly), they may be more moderate than most expected, which increases the chances that we can adapt on

Future Supply

Remarkably, we are now in a situation where some of the most thorough peak oil forecasts are closer to the IEA forecasts than to more pessimistic peak oil views. The 2008 Outlook from Kjell Aleklett's group at Uppsala University in Sweden looks positively optimistic, although there are many caveats:

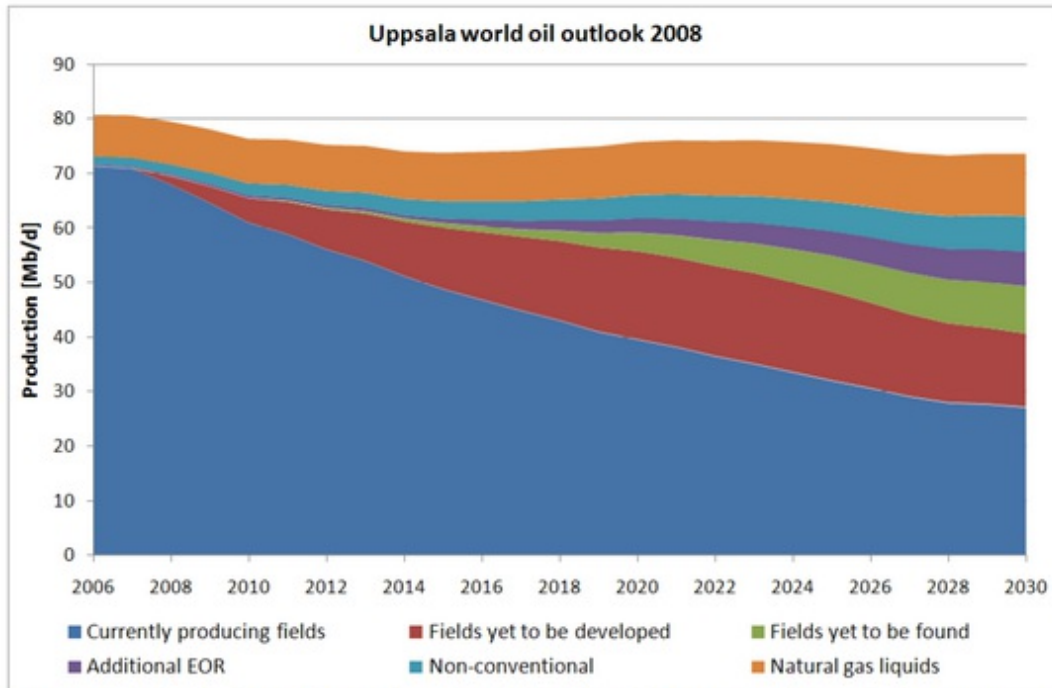
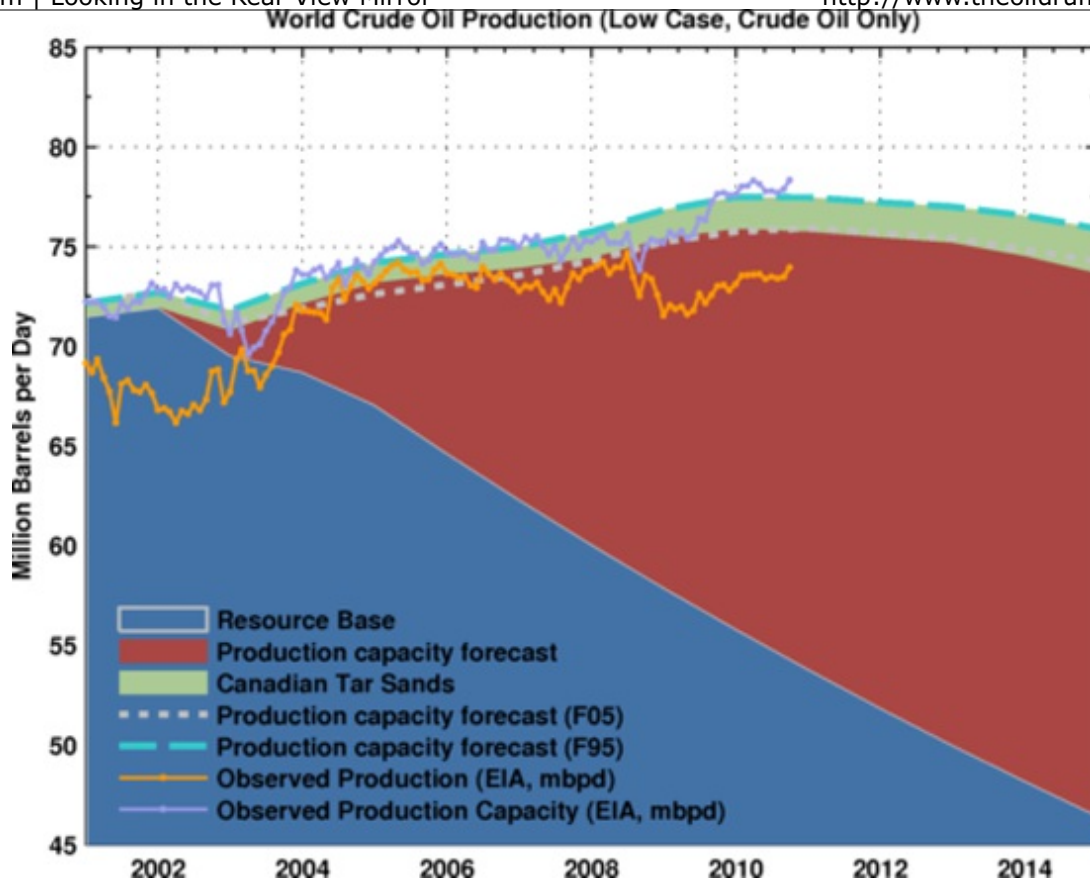


Figure 15: Total oil production based on IEA data, but using realistic depletion rates of remaining recoverable resources, minor adjustments for non-conventional oil and recalculation of NGL to oil equivalents. The production volumes from fields yet to be developed or found should be regarded as optimistic.

[Sam and Michael's comprehensive post](#) above also portrays a pretty moderate situation, even in their low case (shown) over the next five years. Their high case has production capacity still increasing a little to 2015.



Meanwhile, the IEA has effectively called the top on crude oil production, making them look almost pessimistic by comparison. How things have changed!

IEA World Energy Outlook 2010

Global oil production reaches 96 mb/d in the New Policies Scenario, the balance of 3 mb/d coming from processing gains. Crude oil output reaches a plateau of around 68-69 mb/d by 2020 — **marginally below the all-time peak of about 70 mb/d reached in 2006**, while production of natural gas liquids and unconventional oil grows strongly.

The IEA has wiped more than 20 million barrels per day off their 2030 forecast over the last five years, while some of the more comprehensive peak oil forecasts now see a plateau or no more than moderate declines for some time yet, bringing the two views closer together than seemed possible five years ago.

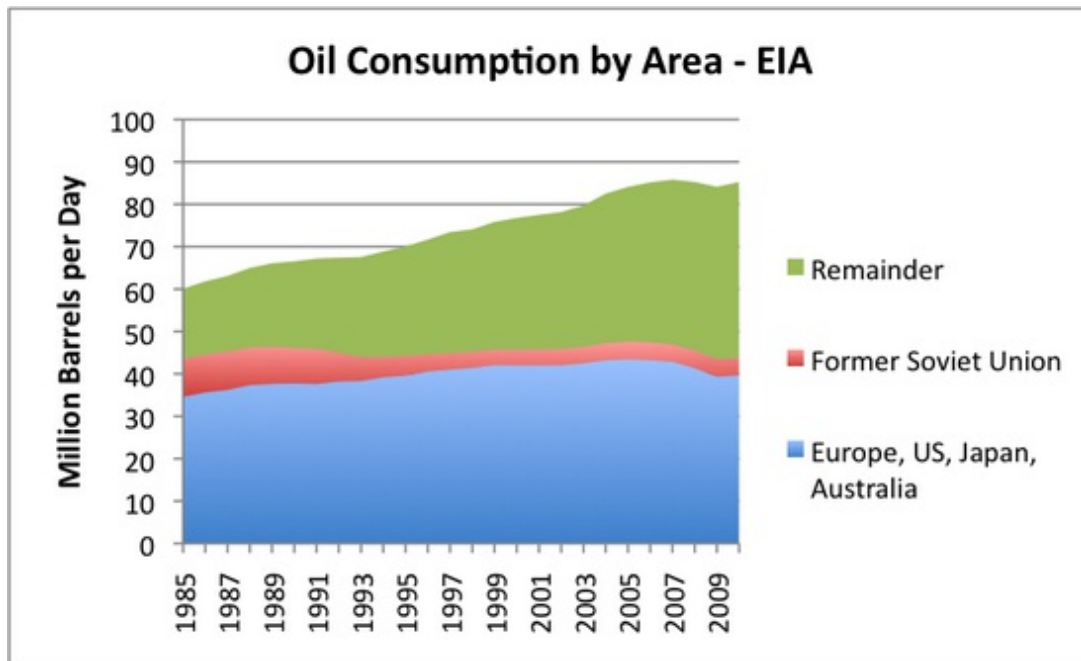
Rather more questionably the IEA do still see total liquids growing, albeit slightly, all the way to 2030. Equally, there are many here who would see the Uppsala Group and Sam's forecast as optimistic, but we should look carefully at what has happened over the last five years and understand how that has been possible before being too confident in such a view.

My view now is that resources in the ground may be sufficient to allow for global capacity to continue on this 'undulating plateau' a little longer, or for decline rates to at least be moderate in the short-term. But the geopolitics of the major oil producers, and Iraq in particular, could mean that actual production capacity falls (just a little) short of what resources in the ground might otherwise sustain. But it is only a hypothetical world where resource limits do not interact with

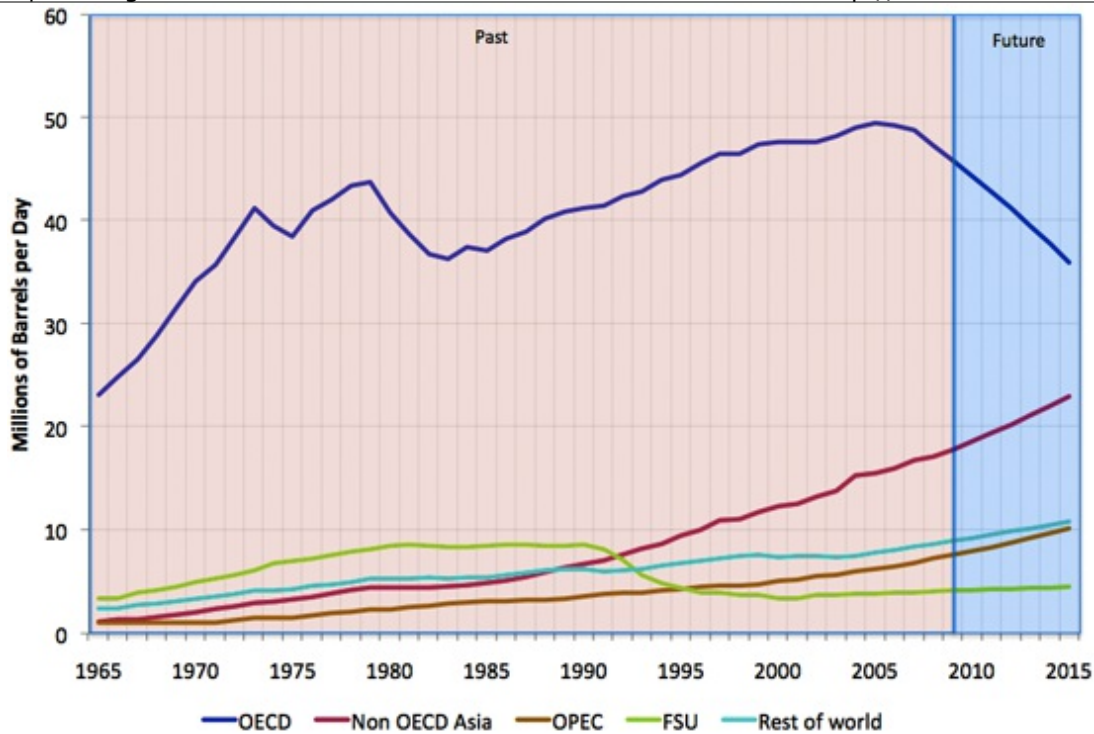
geopolitics and such above-ground factors only become a concern when you're near the below-the-ground limits.

Who Gets the Oil?

It would be wrong to take much comfort from these forecasts though. Even by the IEA's own analysis, the growth in demand from developing countries leaves OECD countries with declining oil consumption from this point forward (see '[IEA Calls Peak on OECD Demand](#)'). That message has barely been heard, let alone accepted and acted upon by any OECD Government, despite the evidence already showing that trend in play for many OECD countries (as in this chart also from [Gail](#)):



In "[Oil Supply Constraints on US Recovery](#)", Stuart also explored this theme. The following chart of his extrapolates trends in oil consumption assuming that total global oil supply remains flat to 2015. The growth in demand from developing Asian countries and the oil exporting countries leaves the OECD facing pretty stark declines, even before global peak oil.



So the first phase of the financial crisis has already delivered a transfer of 3-4 million barrels per day of consumption from developed to developing countries. OECD countries are not likely to ever see that production back again and it's hard to see how imminent further OECD declines can be avoided. That realisation, which is yet to come, will be a shock on its own.

Future Demand?

In many ways, the supply side of the equation looks clearer now than it did five years ago. The demand side, on the other hand, is decidedly uncertain.

If the global economy, or China and some of its developing nation colleagues should find a way to steam ahead momentarily despite the extraordinary debt deleveraging that is underway globally, then resource limits will quickly put a cap on such growth. The timing is impossible to predict, but a continuing volatile cycle of firm demand and high prices followed by periods of demand destruction and collapsing oil prices seems all but inevitable now.

Oil Prices and Market Uncertainty

Oil prices will be unpredictable, and at times could be surprisingly low. Oil companies are their own worst enemies and will keep producing flat-out until prices fall below the marginal cost of production for any given field. It's the future investment decisions which take the biggest hit and that impact on supply is not felt for years. The short-term market can easily be flooded by even a small drop in demand.

Such volatile oil prices seriously handicap commercial incentives to respond to peak oil. Without certainty on the minimum oil price, investors can get burned if the result of their extended product development arrives on the market at the wrong time, even though the long-term average price may be high. The extension of this argument is that we need the equivalent of an electricity feed-in-tariff for oil prices - government's need to set an oil price floor which gives investors some certainty. Government's can take the gap between their floor and the market price as a tax, which could be used to ameliorate the higher price spikes. I'm not naive about the chances of such a policy being implemented though.

Summary

Predicting the future has not gotten any easier. Here at The Oil Drum, we picked up early on one of the great themes of the 21st century. Others denied the evidence until well after it was staring them in the face. But it is much harder to see where things go from here.

The second half of the 20th century was defined by remarkable growth in oil consumption, population, credit and debt, and all manner of other things. Neo-liberal economists have become accustomed to getting out their rulers to make predictions of the future and holding all spell-bound with their macro-economic prescriptions. I think those days of extrapolating the past as a useful guide to the future are over, and the sooner we develop a new economic paradigm the better. The future is likely to be one of discontinuities and sharp transitions and our rudimentary models and bureaucratic systems will not be up to the job.

If deleveraging of the record amounts of debt in every corner of the global economy is not already enough to start a downward spiral (still unexpected by the mainstream), then a ceiling on oil supply and the inevitable price response to force declines primarily in OECD countries will trip us up anyway. That forced transition to declining consumption for OECD countries could feel pretty painful rather soon, even before global oil supply decline sets in.

The good news is that resource decline rates look lower than feared a few years ago, and the plateau may continue (certainly not to 2030 though!). In an engineering sense, we may be able to adapt at the pace required, but whether we can adapt our economies and credit money system in particular is a different question.

Looking ahead, the only thing I can say with any confidence is that the years and even decades to come are likely to be characterised by much greater volatility than we are accustomed to. It could be a very bumpy ride.



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