



WSJ Article - Oil Officials See Limit Looming on Production

Posted by [Gail the Actuary](#) on November 19, 2007 - 8:00pm

Topic: [Supply/Production](#)

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Today, the Wall Street Journal (WSJ) had a Page 1 [article](#) about limits to world oil production. The article begins:

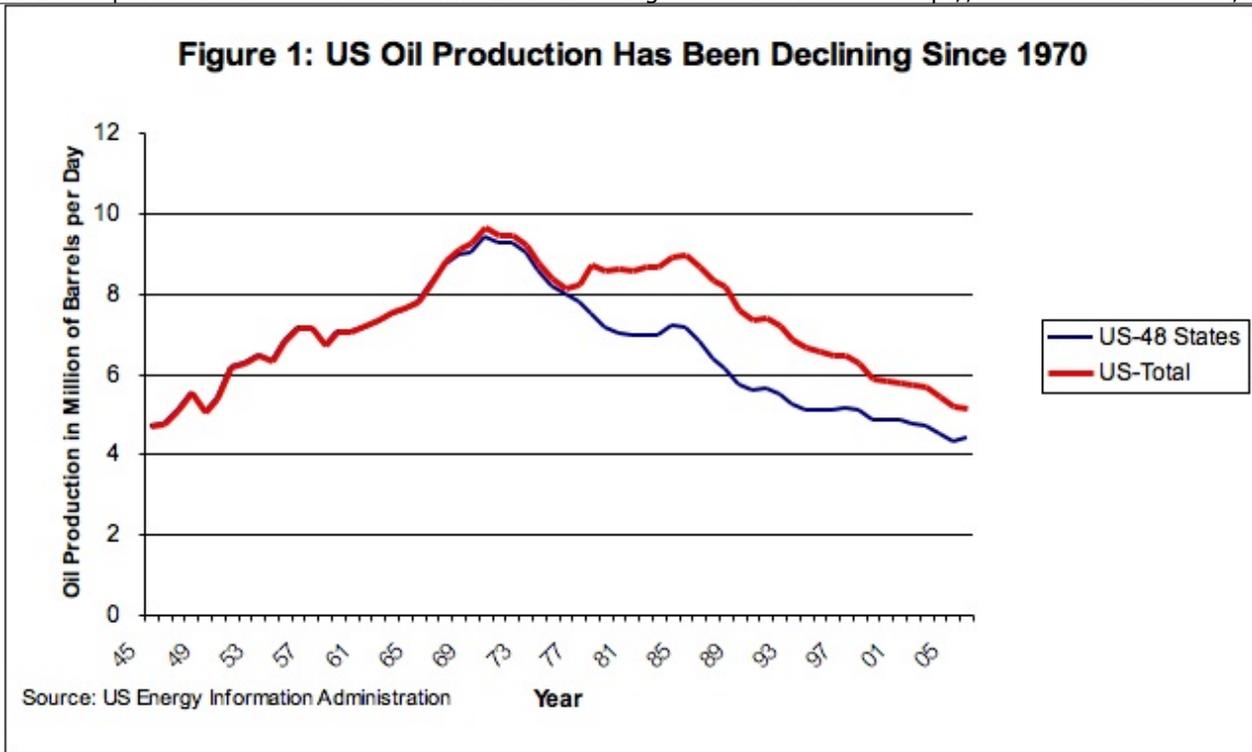
A growing number of oil-industry chieftains are endorsing an idea long deemed fringe: The world is approaching a practical limit to the number of barrels of crude oil that can be pumped every day.

Some predict that, despite the world's fast-growing thirst for oil, producers could hit that ceiling as soon as 2012. This rough limit -- which two senior industry officials recently pegged at about 100 million barrels a day -- is well short of global demand projections over the next few decades. Current production is about 85 million barrels a day.

The WSJ sees a number of above-ground issues as being the reason for this looming plateau (below the fold...)

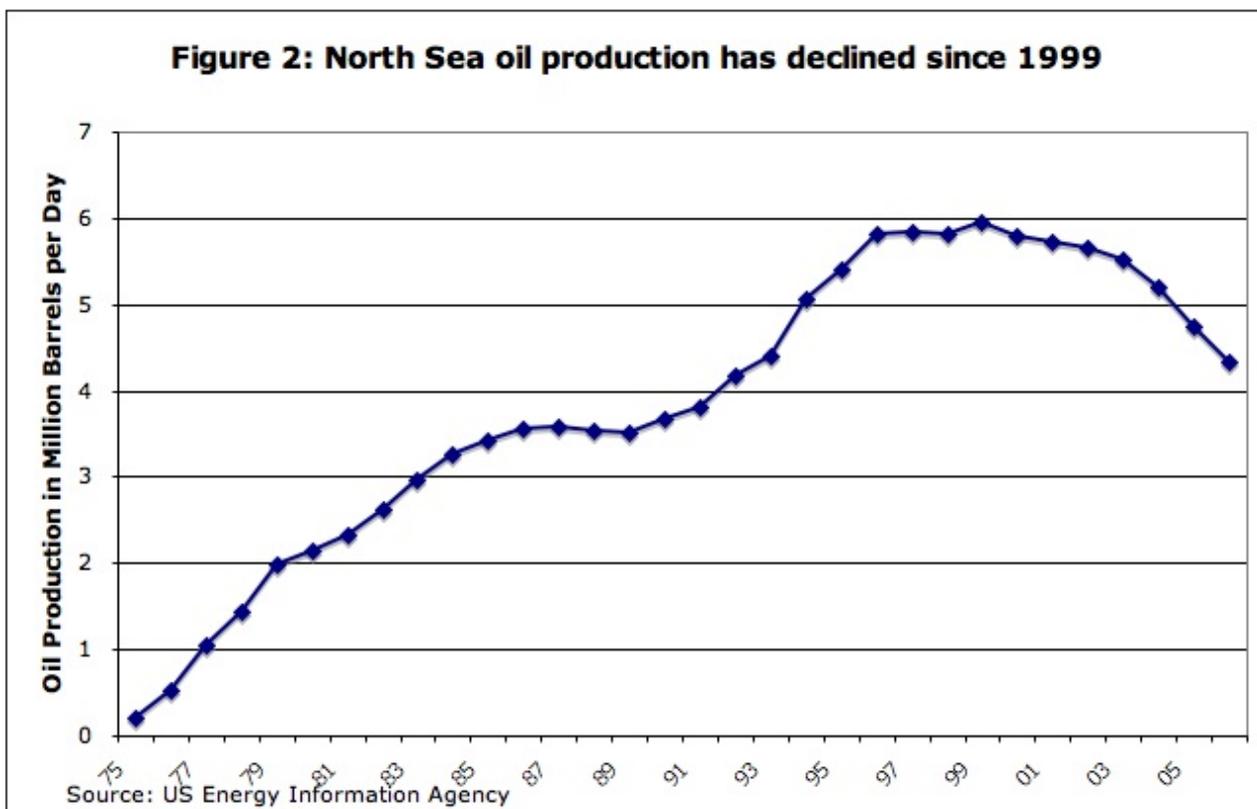
1. Lack of investment during the time was oil priced low, leading to less exploration and less production now.
2. Resource nationalism curbing investment too.
3. Untapped resources in all the wrong places (conflict zone, inhospitable climate, environmental concerns)
4. Talented workers are retiring; not enough trained workers to replace them.

All of these issues are important, but they do not address the underlying issue -- we start with a finite amount of oil, and this is gradually being depleted. As it gets depleted, it becomes more and more difficult to extract economically, so production tends to decline. For example, this is a graph of US oil production.



US oil production reached its high point in 1970, and has fallen since then, despite the discovery of additional oil in Alaska and the Gulf of Mexico, and many technological advances. This decline was forecast in 1956 by M. King Hubbert.

We are also seeing declines in other fields that have been produced for extended periods, such as the North Sea.



The Wall Street Journal article says:

Traditional peak-oil theorists, many of whom are industry outsiders or retired geologists, have argued that global oil production will soon peak and enter an irreversible decline because nearly half the available oil in the world has been pumped. They've been proved wrong so often that their theory has become debased.

This is non-sense. One by one, each field that has been pumped extensively has gone into irreversible decline. The production of the majority of countries of the world is now in irreversible decline. It is becoming increasingly clear that in the not-too-distant future, world production will begin to decline. The coming decline of oil production has been predicted by many. The estimated date has varied, but the general time frame has been around 2000 to 2020.

One aspect of peak oil theory that is being refined is the method of prediction. One of the earliest techniques predicted that oil production would begin to decline when half of the available oil had been extracted. Methodology has been expanded, so other forecasting techniques are now also used. (It is doubtful that this was ever the only technique used.) Some reasons for not relying on this technique:

- There are many types of oil resources, including free flowing traditional oil and the very difficult to develop oil sands and oil shale. If a 50% factor is applied, it must be applied to each type separately. Thus, adding oil sands reserves which are very slow to be developed does virtually nothing to push forward the peak oil date.
- New technology can change the pattern of production. Sometimes, new extraction techniques can "hold up" production until perhaps 60% of the ultimate resource extracted has been removed, so that the decline begins later, and is steeper.
- Many of the frequently quoted reserve amounts appear to be seriously overstated. OPEC numbers appear to be too high, as indicated by [this analysis](#). Even US Geological Study reserves have been questioned as being too high, in analyses such as [this one](#). Reserve estimates are not audited, and different organizations have different standards for setting their reserves.

Because of these issues, those involved with the study of the peak oil use a variety of techniques to project the peak in future production, rather than simply applying a 50% factor to estimated ultimate production. For example, many analysts are now looking at planned new production, together with expected decline rates on existing fields, to make their forecasts. For an example, see this recent [presentation](#) by Chris Skrebowski.

All of the techniques seem to be converging to show a likely decline in production in the next few years, or even starting about 2005. Oil production data suggests that world oil production has been flat to slightly declining for the last two years, so it is possible the decline has already begun.

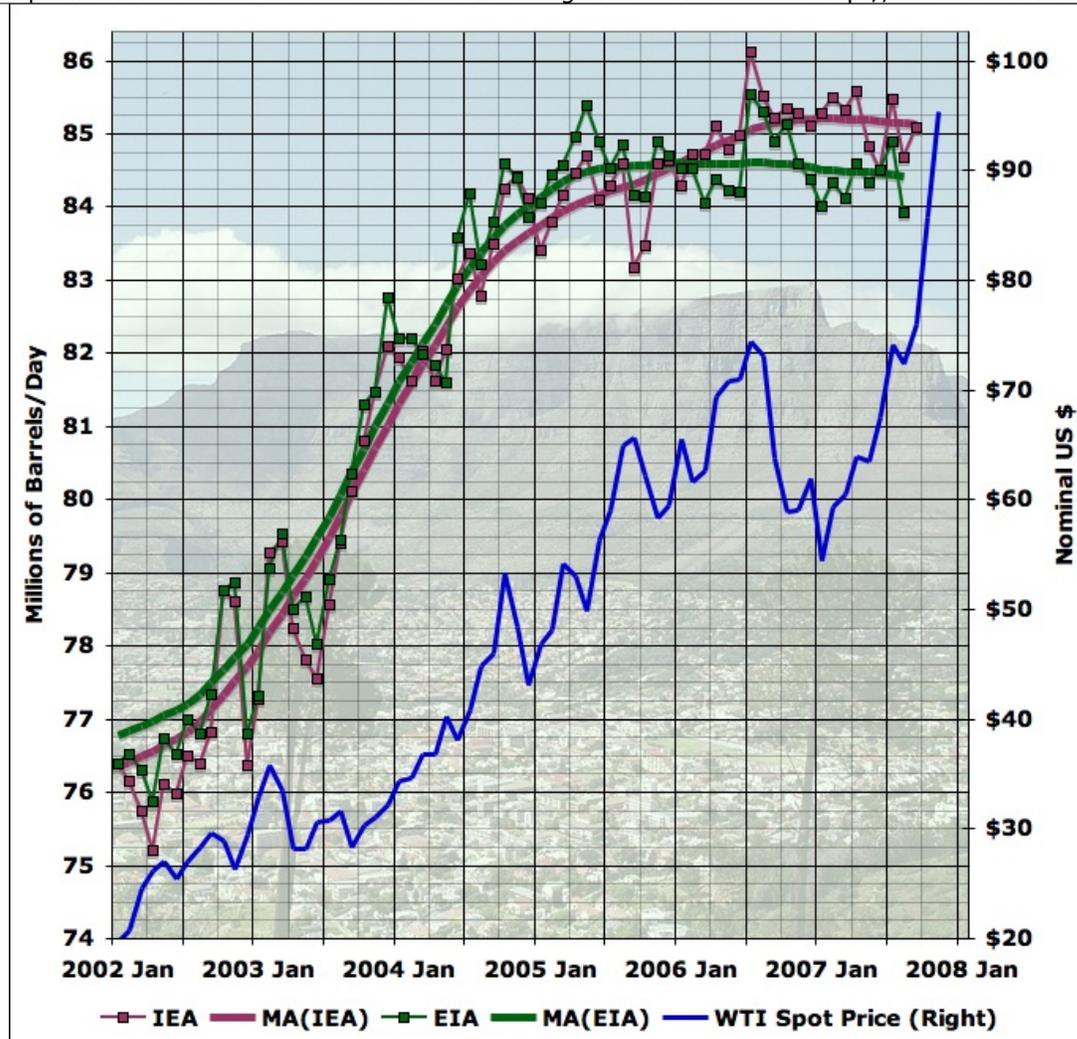


Figure 3. Average daily total liquid production, by month, from EIA (green) and IEA (plum), together with 13 month centered moving averages of each line, recursed once (LHS). WTI spot price (blue - RHS). Click to enlarge. Graphs are not zero-scaled. Source: [IEA Oil Market Reports](#), and [EIA International Petroleum Monthly Table 1.4](#). The IEA line is taken from Table 3 of the tables section at the back of the OMR in the last issue for which the number for that month is given. WTI spot price is from the [EIA](#) with November estimated from average of daily figures available so far. [Graph by Stuart Staniford](#).

The oil production forecasts that have been truly erroneous are those of the US Energy Information Administration (EIA), the International Energy Agency (IEA), and Cambridge Energy Research Associates (CERA). All of these organizations prepare estimates that are consistently biased high, as indicated by the analysis [EIA forecasts](#) by researchers at Penn State University, and by this analysis of [CERA forecasts](#) by Dr. Euan Mearns. One starts to wonder whether the forecasts of these organizations are based primarily on forecasts of future demand, together with a large measure of wishful thinking.

The WSJ article quotes Randy Udall:

Randy Udall, co-founder of the U.S. chapter of the Association for the Study of Peak Oil and Gas, has written that these unconventional oil supplies are like having \$100 million in the bank, but "being forbidden to withdraw more than \$100,000 per year. You are

rich, sort of."

This is a good way of understanding our current problem. There is a lot of oil in the ground, but it is complex oil to get out. It is expensive, and requires a lot of trained workers. We are rapidly reaching the point where we cannot pull as much oil out of the ground, because the "easy oil" is gone, and the remaining oil is in difficult locations and is hard to extract.

One of the issues with respect to extraction of oil is that we must use scarce resources in the extraction process - oil and other energy resources, water, and trained workers. Once we reach the limits on these, we cannot extract more oil. If we start spending more than one barrel of oil to obtain a barrel of oil, we have a clear problem. If we expect to use huge amounts of fresh water in areas that are subject to drought, water may also be a limiting factor. Additional manpower can be trained, but this takes time, and resources of other types. We are rapidly reaching the point where obtaining adequate resources for oil production is a limiting factor, so production must fall.

The impact of declining oil production in future years is likely to be very significant. Rear Admiral Hyman Rickover predicted many of the issues we are facing today in [his speech](#) from over 50 years ago. Mr. Rickover talks about the close tie of fossil fuel use with our standard of living. This is likely to be one of the big challenges in the years ahead.

For those who wish to learn more about energy and our future, The Oil Drum has many articles of interest. Some links to individual articles are shown at the top of the TOD page. Euan Mearns put together a [compilation](#) of worthwhile articles by various Oil Drum authors. This is a link to a [PDF compilation](#) of some introductory articles I have written. In the comments, some may want to share links to their favorite articles.

Edit 11/21/2007 This is a [link](#) to a graph someone posted in the comments below, showing CERA oil price estimates alongside the actual prices.



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