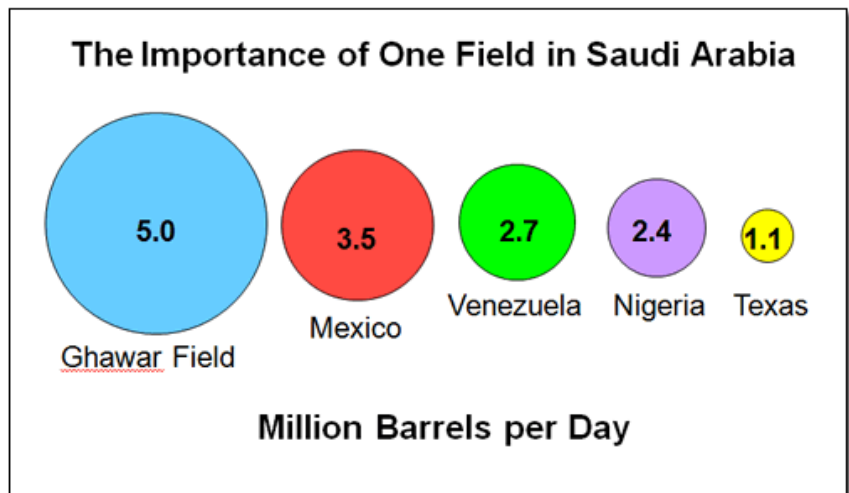


Our Vulnerability to Peak Oil

"In terms of non-OPEC, ... in three, four years' time the production of conventional oil will come to a plateau, and start to decline. (OPEC) will come around 2020 to a plateau as well, which is, of course, not good news from a global-oil-supply point of view."

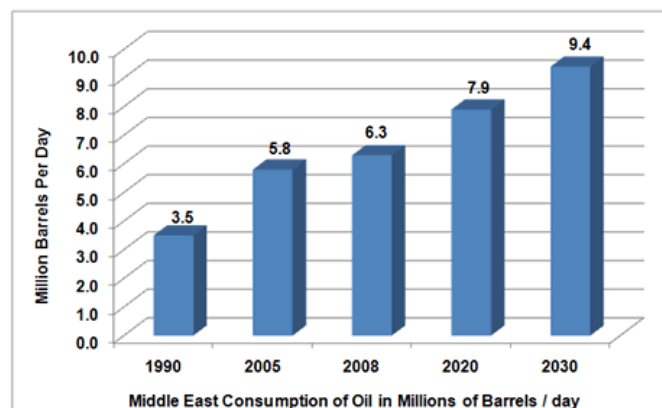
Fatih Birol, Chief Economist, IEA, 12/08 [1]

The announcement last week that Indonesia is becoming a net importer of oil received little attention despite its implications for world supply. [2] After a 40 percent decline in oil production in just five years, Indonesia is now turning to coal to produce liquid fuels. One by one, the historic exporters of oil are falling by the wayside, resulting in an increasing concentration of conventional production in a handful of nations. Nowhere is the problem more apparent than in our staggering reliance on Ghawar-- the cornerstone



field of OPEC production.

Less to Export: The Middle East will account for 16% of incremental global demand for oil from 2007 – 2030



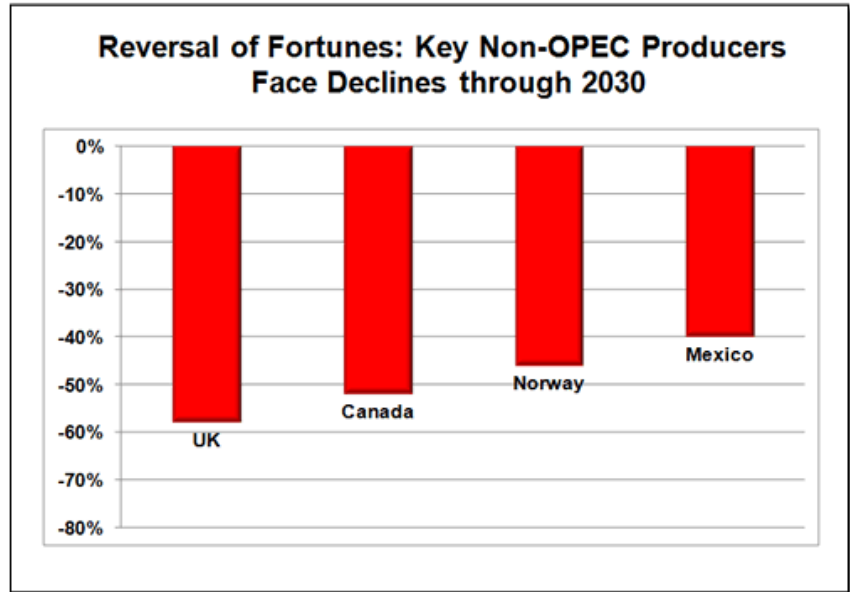
The Ghawar field was discovered in 1948 and has supplied over six percent of the world's oil since Eisenhower was President. But the field is getting old and the water cut is increasing. Last month, Saudi Arabia announced it was moving to "enhanced oil recovery" to ensure sustained production. [3] While the announcement was couched in optimistic terms, the geological realities of Hubbert's Curve are undeniable-- no field lasts forever.

(Continued on reverse)

(Continued from front)

And, as OPEC production becomes increasingly suspect, the ever rising consumption that comes with the twin drivers of population increase and economic growth also is operating to limit exports throughout the Middle East. In other words, not only will the key OPEC countries struggle to maintain oil production, but they also will be using more oil themselves.

While this drama is taking place in the Middle East, the non-OPEC nations face their own dilemmas of where liquid fuel will come from. Some of the stalwarts of non-OPEC conventional production have clearly reached their peak and are on the decline. The United States should be especially concerned because in 2005 at least 33 percent of our imported oil came from the four nations listed in the accompanying graph.



Thus, steady and reliable suppliers are on the wane. To underline our vulnerability, through 2030, upwards of 20 percent of new conventional oil supply will be in Russia. [4]

The extent of our dependence on oil imports is well known but a hard numbers refresher in the steady erosion of U.S. energy security is always useful: In 1968 we produced 9 million barrels a day. By 1988 that had dropped to 8 Mb/d and by 2008 to less than 5 Mb/d. At the same time, our consumption of oil steadily increased so, while in 1968 we imported less than 6 Mb/d, by 1988 it was about 7.5 Mb/d. By 2008, oil imports had dramatically escalated to almost 13 Mb/d. Hence, we climb further and further out on the limb.

References:

- [1] UK Guardian, 12/15/2009
- [2] Gasification News, 12/3/2009
- [3] "Saudi Arabia plans enhanced oil recovery project in Ghawar," Bloomberg News, 11/23/2009
- [4] All data drawn from EIA website: <http://www.eia.doe.gov/>

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