

## **The End of Cheap Oil: Structural or Cyclical Change in the Global Oil Market?**

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Some twenty five years ago, BP predicted the stagnation of global oil production in the 1980's and an actual production decline by the 1990's. A careful reading of the BP study shows that BP assumed 5.5% growth in oil demand outside of the Centrally Planned Economies (then USSR, Eastern Europe and China). Under those assumptions, global oil production (including the CPE's) would have added up to some 100 million b/d by 1990. Petroleum Finance Corporation, an energy consulting company in Washington, DC, completed a detailed analysis of future global oil production in 2004 and concluded that world oil production (including heavy oil and tar sands from Canada) would probably not exceed 100 million b/d.

The US government issued a report in 1980 which stated that ... "the predominant view among geologists is that the chances of discovering enough quickly exploitable oil to offset declines in the known fields are slim. If the Persian Gulf countries and some non-OPEC producers continue to limit production, as we expect, world production of oil probably will begin to decline in the mid 1980's..."

As a result of the high oil prices of the decade of the mid 1970's to the mid 1980's, oil demand collapsed in the OECD and the exclusion from much of the Middle East, forced the IOC's to focus on new discoveries in Alaska, the North Sea and later deep water off Africa and the Gulf of Mexico. Although oil reserve numbers in many oil producing countries are highly suspect, BP statistics show global oil reserves at 569 billion barrels in 1980 and 1148 billion in 2003, while some 550 billion barrels were produced throughout that period.

The development of Alaska, the North Sea, deepwater deposits off West Africa and in the Gulf of Mexico coupled with the experience of low average annual oil consumption growth in the 1990's led to perception in the oil industry that \$ 18-\$ 20/bbl was the long term equilibrium price of oil because at that price almost all of the world's oil was perceived to be exploitable. As late as the autumn of 2003, Wall Street oil analysts were very bearish about the five year oil price outlook. Oil market developments in 2004, spearheaded by huge growth in Chinese oil consumption in a year of above average oil demand growth elsewhere in the world, turned the previous consensus view around. When oil prices reached \$ 40 and later \$ 50 a barrel even the skeptics became aware that the entire oil supply chain, from the upstream to refining, was extremely tight. By late 2004 there was no usable oil production spare capacity left and deep conversion refining capacity was fully utilized. The forward cover of the NYMEX reflects the current industry view that oil prices are likely to remain high for years to come and an IMF study released in April of this year is even more bullish.

What has changed? On the demand side, the emergence of China (and later India) as a major industrial power, requiring ever larger volumes of oil to fuel its growing economy. On the supply side, the growing realization that non-OPEC oil production outside of the FSU has probably already peaked and that total non-OPEC oil production may peak in the early or middle of the next decade. The realization that from that time onward incremental demand will have to be met from OPEC sources and in particular Middle East OPEC sources, has once again focused global attention what producers can and will be able to produce in the future. Perhaps close to half of

OPEC's members may also be faced with reaching peak production capacity by the turn of the decade (some already have) and the data on reserves and production capacity in the public domain are very poor, leaving observers dependent on official sources. What is known is that most of the major oil producing fields in the Middle East are old and while many smaller fields are likely to be discovered in the years and decades ahead, the question remains when the major fields will reach peak capacity.

Aside from the technical issue of peak production, there are socio-economic and political considerations to be taken into account. Almost all oil producing countries in the Middle East are entirely dependent on oil revenue for government revenues and foreign exchange requirements. It would make sense for each one of those countries to plan on a very long (twenty to thirty years) production plateau based on conservative technical data. Conservative, because producing countries run the risk of over-estimating the duration of the technical production plateau. Oman, for example, almost had a policy of increase production only if a ten year plateau can be maintained at the higher production level. The production collapse of its prized Yibal light oil field, resulting in a 20-25 percent production decline over the past few years, was entirely unexpected.

On the political side, Iraq is a good example. Some Think Tanks in Washington DC argued prior to the Iraq invasion that the oil sector in Iraq should be privatized, leading a quick build up of capacity to 5-6 million b/d by the end of this decade. In reality, production capacity two years after the war started is considerable lower than it was prior to the war and the outlook for political stability, needed to create an environment for upstream investment to increase capacity, is very cloudy at best. Iraq is unlikely to achieve anywhere near the oil production capacity in this decade estimated by experts only a few years ago, further reducing the volume of Middle East potentially available to the global oil market.

The timing of oil peaking from both the purely technical and socio-economic/political point of view, is of crucial importance. Those analyzing technical oil peaking, have concluded that global oil peaking (depending on their definition of oil) will occur anywhere between a few years from now (pessimists) and two decades from now (optimists). Global production could peak long before the ultimate technical peak will be reached for reasons described above.

The timing of oil peaking (technical and other) is of great importance. If the pessimists were to prove correct, there is little the oil industry and policy makers will be able to do to mitigate the situation and the consequences for the global economy could be brutal for years to come. If the optimists prove correct, the world will have two decades to make the necessary investments in alternative sources of transportation fuel to enable a less disruptive transition away from complete reliance on conventional oil for the transportation sector.

The paper will discuss the future outlook of the global oil market in the contexts of a rapidly expanding Asian economy and the impact of the timing of oil peaking (dependent in part on the oil demand outlook) on the entire oil supply chain (from upstream to downstream); prospects for a smooth or disruptive transition to alternative sources of transportation fuels; and, the geopolitical consequences of oil peaking. The paper will conclude that the changes in the global oil market since 2004 are structural in nature and that we are unlikely to see a return to the oil price cycles of the 1985-2000 period unless the world were to enter into a major global recession. In contrast to the decade from the late 1970's to the mid 1980's, high oil prices are not likely to lead to a sharp contraction of oil demand (no near term substitution for transportation fuels) nor to a sharp increase in oil production. The author concurs with the view expressed in the 2004 upstream analysis by Petroleum Finance Corporation which concluded that world oil production may not increase much above 100 million b/d.