

## Letters from America—Perry Sioshansi

### Peak oil is real (on the demand side)

In 1956, a little-known geologist named Marion King Hubbert published a paper predicting that oil supplies were destined to reach a peak as the cheap and easy to tap reservoirs were depleted over time. He predicted that US oil production would peak somewhere between the late 1960s to early 1970s. Others, including oil financier Mathew Simmons, extrapolated the supply and demand data and predicted a similar fate for global oil supplies.

This led to a heated debate, which became known as the “peak oil theory”. The proponents argue that the supplies are essentially finite and sooner or later, prices are bound to rise, leading to lower demand if not the physical exhaustion of the resource, or running out of oil. The opponents of the theory argue that the rise in price of oil would in fact lead to better technology and more innovation, which in turn will lead to more discoveries, moderating prices and encouraging further demand growth—refuting peak oil theory.

Both arguments are plausible—which explains why peak oil theory has been around for a while. And the recent shale gas boom and discovery of unconventional oil in places like North Dakota supports those who say we are far from the peak oil. But new evidence suggests that the focus of the debate should be changing from supply to demand. If the global demand for oil is destined to slow down, as many now believe, then peak oil may become a reality not because we will run out of oil, but because we will not be needing as much of it as had been assumed. Especially if the price of oil remains high and/or rises, while the price of alternatives, such as natural gas or renewables, remains low or further declines.

This new version of peak oil theory, focused on demand, has gained momentum in the recent past with the publication of a report titled *Global Oil Demand Growth: The End is Nigh* by Citigroup in April 2013. Not surprisingly, it has led to a number of studies and articles questioning the wisdom of long-held views that the demand for oil will continue to grow into the future, only modestly affected by the current high prices and the relative abundance of alternative energy sources with lower and declining costs.

While no one can be sure of the ultimate outcome yet, the arguments in support of slowing demand for oil appear logical and entirely consistent with several major factors, all working against continued robust oil demand growth:

- first is that oil prices are, and have remained, high by historical standards. High prices are encouraging drivers towards smaller, more efficient cars and governments to reduce fuel subsidies while imposing mandatory fuel economy standards for new cars, trucks or whatever uses oil;
- second, much of the future oil exploration is likely to be in challenging environments—geologically and/or politically—which is unlikely to produce much oil at low prices;
- third, natural gas supplies appear abundant and at prices that compete head on with oil in most applications, certainly in North America;
- fourth, renewable energy technologies are not only abundant but have zero fuel costs, which are not indexed to price of oil and will not rise should natural gas prices spike; and
- finally, a new and abundant energy resource, energy efficiency, is gradually getting recognised as the cheapest option around, with few environmental side effects.

The oil business, of course, is dominated by National Oil Companies (NOCs) and the so-called super-majors, who are not nearly as super as they used to be. The producers prefer a continuation of the status quo, even if oil is not as easy or cheap to find and produce as in the old days. Not surprisingly, they forecast fairly robust demand projections, certainly not at historical rates, but at rates that suggests continued growth into the indefinite future.

The non-partisan Energy Information Administration (EIA), in its latest *Annual Energy Outlook 2013*, projects growing global demand for oil, consistent with the International Energy Agency. But the US is projected to become—believe it or not—a modest net exporter of oil, possibly by 2040.

But Citi’s new analysis suggests these projections may be missing the mark by ignoring or significantly under-estimating the five driving factors listed above. The combination of cheaper natural gas and steady improvements in fuel efficiency

“is enough to mean that oil demand growth may be topping out much sooner than the market expects”, according to Seth Kleinman, global head of energy strategy at Citigroup.

While the differences in projections may seem trivial to the layman, they are anything but trivial to people in the oil business, which is nearly everyone. Moreover, a lot is at stake not just for the oil majors, but the entire energy sector since oil often serves as a global benchmark or proxy for virtually all energy prices.

Citi presents three future scenarios:

- first is a business as usual case where global oil demand continues to grow at 1.2% a year through 2020 resulting in 98 mmbd by the end of the decade;
- the second scenario incorporates the impact of improved fuel efficiencies in cars and trucks over the same period; and
- the third includes the continued substitution of cheaper natural gas and renewable resources, although the latter is not specifically mentioned in Citi’s analysis, because it is focused on petroleum products, whereas the impact of renewables are mostly felt in the electric power sector.

The bottom line is that considering these factors, global oil consumption does not exceed 92mn b/d and flattens after mid-decade. “Taken together, the improvement in global fleet efficiency and the substitution of natural gas for oil could be enough to put in a plateau for global oil demand by the end of this decade”, Kleinman concludes.

As other commentators have observed, peak oil demand, like peak oil supply, is a theory that relies on a number of assumptions, some of which may or may not prevail and/or may not make as much of an impact as envisioned. Just as the peak oil supply theory has been challenged with the advancement of technologies—hydraulic fracturing, horizontal drilling and alike—that have made non-conventional oil and gas resources affordable, the peak oil demand theory may not prevail despite its appeal. For example, the substitution of natural gas for petroleum in transportation sector—a key assumption—may not be as swift or dramatic as Citi predicts. Large-scale conversion of trucks, trains and ships to natural gas requires extensive infrastructure and may take longer than projected.

Moreover, there are many who doubt the longer-term sustainability of the current US shale gas boom or its replication in other parts of the world. Wide-scale conversion to natural gas can only be sustained if the price differential is substantial and can be maintained over time. One theory is that as large number of cars, trucks, trains and ships begin to convert to natural gas, the supply glut disappears and prices rise, dampening the conversion. The counter argument, of course, is that rising natural gas prices will encourage more exploration, resulting in more discoveries of both conventional and unconventional gas.

Similarly, other key assumptions of Citi’s analysis may not materialise. For example, the prevailing petroleum subsidies may prove difficult to reduce or remove as has been demonstrated in countries that have attempted to phase them out. Or the growth of car ownership in the developing world can outstrip efficiency gains in fuel consumption. China, for example, has imposed 6.9 litres/100 km for new cars by 2015 and 5 litres/100 km by 2020. Such measures will reduce demand for petrol but may not be sufficient to reduce or flatten out overall demand for oil.

No matter what, however, Citi’s provocative narrative has given everyone a new and intriguing theory to think about. Should the demand for oil flatten or in fact decline globally, as it has in mature OECD economies, oil producers and the oil majors need to reboot. Nobody is projecting that the demand for oil will evaporate any time soon, but a flattening demand would intensify competition among major exporters, will diminish the political influence of countries like Saudi Arabia and Russia, and may make US less inclined to meddle in the geopolitics of oil in the Middle East—among other things.

**Perry Sioshansi is a specialist in electricity sector restructuring, and he has been actively involved in discussions in a number of developed, developing and transition economies. He is founder and president of Menlo Energy Economics and is the editor and publisher of *EEnergy Informer*, from which we have sourced this article, and which we commend.**