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The Beginning of the End for Oil?

Peak Oil: A Demand-side Phenomenon?

Introduction

A misplaced consensus?

Across the energy industry, there appears to be a strong consensus that the economic crisis of 2008/9 will cause only a short-term slowdown in rising energy consumption and prices; and that after the storm has passed the world will resume its path of increasing energy use, with oil retaining its predominant position in the energy mix, and with prices resuming their inexorable climb to ever-higher levels. This consensus takes support, for example, from the recent International Energy Outlook issued (mid-2008) by the US Department of Energy's Energy Information Administration, which projects total world consumption of marketed energy will increase by 50% between 2005 and 2030; similar data has been supplied by the Paris-based International Energy Agency (IEA), and other sources.

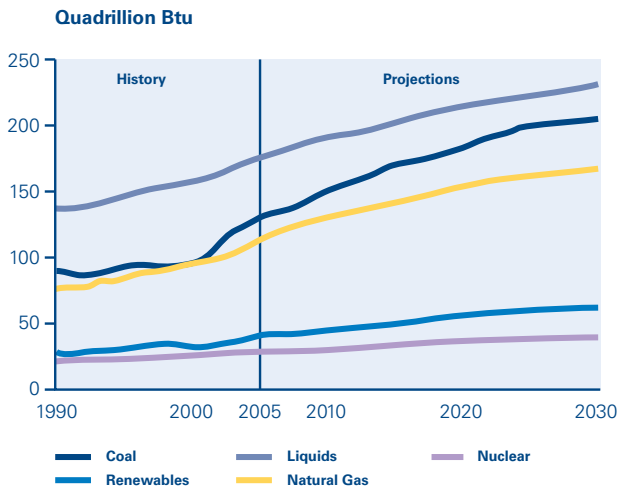
However, in November 2008 the IEA, in its annual World Energy Outlook, made a significant revision to its forecast of oil consumption. In its Reference Scenario, which amongst other things assumes no change in government policies, forecast oil demand in 2030 was 10 million barrels a day lower than in its previous analysis. Moreover, the IEA's Executive Director, Nobuo Tanaka, essentially disowned this same Reference Scenario, asserting that: "Current trends in energy supply and consumption are patently unsustainable – environmentally, economically and socially." To which he could have added "and geopolitically".

While there is no doubt that renewed growth in the world economy, whenever that kicks in, will generate an increasing need for energy, we believe that the consensus about oil's continuing dominance may be misplaced. We can envisage an alternative future track, where oil loses its share in the energy mix more quickly than the consensus expects.

What is giving substance to this alternative scenario? The convergence of three powerful policy drivers; price volatility, security of supply, and climate change, the implications of which are explored in this paper. The mutually reinforcing impact of these three drivers, and their persuasiveness to those shaping the policy frameworks in all the major consuming markets of the world, including, very importantly, China, could, in our view, act as a catalyst for new policies that set us down the road to quite a different future. In this alternative future, the three converging drivers we have identified all point to the desirability of accelerating the transition to a new, post-hydrocarbons, energy era. And, perhaps counter-intuitively, it may be oil, given its particular demand characteristics, that is most at risk in this context.

Such an alternative scenario has, of course, profound implications for all businesses engaged in the energy industry, be they oil, gas, coal or power companies. This paper outlines those implications.

Figure 1. World Marketed Energy Use by Fuel Type, 1990-2030



Source: Energy Information Administration (EIA).

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Temporary Blip or Tipping Point?

In the last year or so, oil prices have reached record highs – and also been their lowest for four years. The fall in oil prices has, unsurprisingly, been attributed to weaker demand, a function of the slowing down of the global economy. The consensus expectation is that oil supply tightness will reemerge when the world economy starts to recover, and that prices will accordingly start to rise again.

However, there is an alternative plausible reading of the situation. We do anticipate recovery of demand and prices in the nearer term, though there must be a large question mark as to when this will begin. Thereafter, however, we may be closer than most people currently believe to a 'tipping point' which would see long-term downward pressure on the demand for oil and oil products. In this scenario, seen as the antithesis to the "peak oil" argument, we could see oil demand peaking before oil supply does.

This alternative view derives from the three powerful, and completely aligned, policy drivers influencing decision making in all the major oil consuming areas. These drivers are:

- the political undesirability of extreme price volatility
- security of supply
- climate change

Individually, each constitutes a major issue. But it is their strong alignment in terms of the required policy responses that multiplies their power to bring about major change. These drivers are converging at a time when the USA (consuming almost one-quarter of the world's oil) has a new president focused on creating an American green energy economy to free the country from the 'tyranny' of foreign oil. The evidence of Barack Obama's early days in office indicates he will not be slow to act where he feels action is needed.

In addition, perhaps less obviously but very compellingly, it must be recognised that these issues apply as much to China (where the administration may be less constrained in its ability to implement long-term thinking and policy) as they do to the USA and Europe.

China, for example, has certainly identified increasing energy import dependency (primarily on the Middle East for oil and potentially on Russia for gas) as a major threat to the long-term sustainability of its economic growth and development. And while the commitment to climate change per se may appear less clear, the fact remains that its alignment with the other policy drivers, at a time when environmental awareness is growing in the country, serves to reinforce the same policy imperatives. There is no doubt that, on the basis of this analysis, it has already begun actively to promote a new energy future, with considerable resources being devoted to new technologies in this domain (and it is not too far-fetched to suggest that China may be the source of significant breakthroughs).

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In the meantime, it is taking concrete action to build a bridge to this new energy future. For example, its decision to acquire hydrocarbon resources in Africa and elsewhere in the international arena has been seen by many as highlighting China's increasing long-term dependency on oil, but can be more accurately interpreted as part of a coherent policy to mitigate such risks in the medium-term before moving beyond them in the longer-term.

Similar reluctance to rely on imports is evident in Europe. The European Commission's proposed Energy Security and Solidarity Action Plan (announced 13 November 2008) includes reducing dependence on imports, through investment and diversification.

The options open to policy makers in terms of addressing these three, mutually reinforcing, drivers fall, essentially, into three classes:

- Promoting energy efficiency – in industry, in society, and in government itself.
- Encouraging technology advances – automotive, alternative/ renewable energy, carbon dioxide capture and storage (CCS).
- Increasing the share of nuclear energy in the overall mix (in the broader context of promoting a greater general diversity in energy supply).

A number of policy levers are available to pursue these options. One, and arguably the single most important one, is the introduction of a coherent and consistent international carbon regime. Progress on this has been slow; but, without it, international businesses struggle to establish and implement effective global strategies for emissions management that will benefit all their stakeholders.

A second lever takes the form of legal and regulatory frameworks aimed at providing the right incentivisation structures so that, for example, renewable energies can grow to commercial scale more quickly, demonstration projects focused on CCS can be brought forward, and infrastructure supporting alternative vehicle use can be expanded.

Appropriate fiscal/subsidy regimes provide a third lever for policy makers. One example would be the introduction of shorter-term measures to ensure that, despite the current weakness in commodity markets, end-user energy prices remain at a level that still encourages the development of alternatives.

Depending on how these and other levers are applied, the world could – over the next 5 to 10 years – move away from the current consensus oil-centric 'business as usual' scenario to quite a different trajectory, and towards a radically different energy mix.

Changing Composition of Oil Demand

But why the suggestion that oil demand in particular is so exposed to these shifts? The answer stems from the structure of that demand and its vulnerability to technology change. It is the transportation sector that dominates oil demand – consuming over 50% of the oil produced worldwide today (a figure forecast to rise to nearer 60% by 2030) – and it has been the long-standing lack of alternatives to oil in this sector that has underpinned its dominance and left the supply side in the driving seat, so to speak. But now the signs of change are everywhere to be seen, with technology innovation in the automotive sector rapidly gaining momentum.

Such signs of change are clear, for example, in the recent refusal of Congress to lend $34 bn to the big US car makers – General Motors, Chrysler and Ford – facing economic difficulties unless they commit to greening up their businesses. News reports highlighted how, in exchange for any loans, the Detroit-based firms would have to improve the fuel efficiency of their vehicles, invest in the development of new automotive technology, and look into how they might use their excess capacity to build bus and rail cars for public transport.

With major and sustainable fuel efficiency improvements (both incremental and those which derive from technology change) in prospect in coming years, the impact on oil demand will be significant.

A common riposte to such an argument is that, while this is certainly true for the OECD countries where the automotive sectors are mature, any benefits in terms of reduced oil demand will be massively outweighed by the numbers of new cars that will provide mobility to millions for the first time in the BRIC countries, with China to the fore, in the coming decades. Already, for example, official statistics show that between 1990 and 2005, the number of motorists in India tripled and the number in China rose tenfold; this is seen as only the tip of the iceberg.

Meanwhile, it has not been lost on many observers that having more fuel efficient cars but in greater numbers does less for the environment than is needed. Even more important, however, in policy terms, are the implications of growing import dependency in those countries where vehicle populations are set to rise so significantly. It is not stretching credulity to suggest that the Chinese authorities, as they look forward to the prospective growth of their national vehicle fleet into the hundreds of millions, would prefer these vehicles to be powered by something other than the internal combustion engine, with its associated reliance on imported oil.

We can therefore suggest that more fundamental changes than fuel efficiency may well be on the way, in terms of both technology and mobility behaviours, and that we may see China taking a leading role in this respect. Policy changes may also engender a shift to more use of public transport, through a judicious combination of incentives, fiscal and regulatory moves (e.g. London's congestion charge).

To summarise, it is possible to envisage a scenario where the trends and policies discussed above start to develop real momentum, a scenario in which people rapidly shift to alternative, non-oil-dependent modes of transport, industry's share of oil consumption continues to fall as it has done for 30 years or more, and agricultural, commercial and public service energy users are offered subsidies and other incentives to move to alternative (e.g. renewable) sources of energy. In such circumstances, it is not unreasonable to suggest that demand for oil could peak much earlier than most currently anticipate, before going into a long-term decline trend thereafter. This is of course just one scenario, but it is one to which we attach increasing plausibility.

Future Prospects for Other Fossil Fuels

In the short-to medium-term, it is likely that the three convergent policy drivers will have less impact on the demand for natural gas, whose growth prospects, at least in this timescale, therefore appear more assured. Four factors underpin this likelihood: the scale of projected rises in energy demand, even after factoring in the impact of the economic downturn; gas's position as the cleanest of the fossil fuels; the speed with which gas-fired power stations can be built relative to other power options (e.g. nuclear); and the cost equation.

However, as a longer-term option, gas suffers from its own issues of security of supply, as the events in Eurasia at the beginning of 2009 demonstrated yet again. On top of geopolitical uncertainties, it is well known that most of the 'easy' gas has now been extracted, and the costs and complexities of exploration and production continue to rise. And diversity of gas supply is less broad than regions like Europe, with declining indigenous resources, may feel comfortable with.

Europe may focus on putting in place a coherent policy framework across the EU to enhance inter-connectivity and to promote diversity of supply through projects such as the Nabucco pipeline. Or it may choose to make the appropriate policy and long-term investment decisions now to move away from hydrocarbons altogether. In practice, some combination of the two can be expected, and recent events may provide a boost to the European Commission in implementing policies that it has been advocating for some time, but has found difficulty in securing support for amongst the Member States.

Similar choices face policy makers in other regions as well. And a move to reduce hydrocarbon dependency clearly brings coal into the spotlight. Coal's major advantages – relatively low and predictable costs and large indigenous supplies in high energy demand regions (e.g. the USA and China) – make it a compelling solution to growing concerns over price volatility and security of supply, our first two policy drivers.

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However, the fact that coal is also the fossil fuel that emits the most carbon dioxide suggests that its future is closely tied to success or otherwise in developing the technology of CCS. One can paint two very divergent pictures as regards to the future for coal. On the one hand, if policy makers fail to construct consistent, coherent regulatory and fiscal frameworks to encourage CCS demonstration and commercialisation projects, the future for coal would seem bleak in light of our climate change policy driver. If CCS can be made to work, however, coal could be a major beneficiary of the trends that we identify.

Conclusion: The Implications of a Changing Value Chain

The regulatory frameworks and incentivisation structures to encourage the necessary investment for a greener energy future are still in the early stages in Europe and virtually non-existent in the USA. However, the three policy drivers that we have highlighted are very real and very immediate, and liable to prove compelling to policy-makers in the major consuming regions (with President Obama already preaching a very different gospel to that of his predecessor…).

In the transformational scenario that we have sketched, the policy pressures of increasing price volatility, decreasing supply security, and the growing impact of the climate change agenda raise important strategic issues for every player in the energy business. Oil and gas companies, for example, may need to give renewed thought to the longer-term sustainability of their business models, and consider accelerating the move to spread themselves into other parts of the energy value chain. This may include considering the implications of a world in which electricity is increasingly the vector for delivering useful energy to the consumer, with all that that entails in terms of the need for multiple new sources of clean power and of the infrastructure to deliver it.

There is a distinct possibility of a radical shift in the energy path the world is following. The real question, in fact, is not so much if this is going to happen as when. With the real possibility that oil demand may peak much sooner than many people think, it would seem prudent, at the least, for companies across the energy sector to start building a revised concept of long term oil demand into their vision of where they want or expect to be in 20 years' time.

An Uncertain Future

The consensus is that oil will resume its long-term growth trend when the world emerges from the current recession. However, there is a distinct possibility of a radical shift in the energy path the world is following and an uncertain future for oil demand.

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