

The international politics of peak oil and energy policy

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The impact of oil scarcity in relation to the global economy and power balance: peak oil and energy policy

The abrupt rises in oil prices in recent years coupled with worry about the long-term viability of a fossil-based economy have prompted some writers to foretell the coming of a 'new dark age' of Malthusian proportions (Kunstler, 2005). Very little appears to abate the current and soaring demand for oil, even as world oil production reaches its peak. The raw statistics speak for themselves: 3tr barrels of extractable liquid oil are 'proven' to be available to the world. The term 'proven' suggests that there is a 90% chance of it being economically feasible to recover. Factoring in an increase in oil consumption rates of about 1-2% every year, estimates suggest that there are about 70 years worth of oil left before Planet Earth runs out (Campbell and Laherrere, 1998). Such calculations are far from transparent and "there is plenty of room for over-optimism, wishful thinking and outright lying – a 50% 'probable' reserve easily turns into a proven one on paper" (Elhefnawy, 2008, 38). Estimates stay static and or display suspicious change. For example, as many as 300 of the estimated 700bn barrels reported by OPEC countries may be suspect (Campbell and Laherrere, 1998). Undiscovered supplies may counterbalance such shortfalls, but what is most certain, is that deep *uncertainty* is central to any discussion on rates of oil production.

There is no assurance that any newly discovered supplies will be economically viable and lag times between discovery and production need to be remembered. It takes about 10 years before production at a new site is at an economic scale (Deffeyes, 2001). The rate at which new supplies are found and exploited started falling in the 1960s, and overall consumption has outpaced the rate at which oil has been discovered since the 1980s, so that today discoveries replace only 25% of what is consumed each year (Magueri, 2004). Many observers see that there has been too little investment on the part of the energy companies in finding new supplies or increasing production since the 1980s – allowing spare capacity to slip from 15% of the market in 1986 to just 2-3% in 2005 (*ibid.*, 10). This has been attributed to low oil prices in this period, which has further been interpreted as confidence in the future.

The glut of the 1990s and the current high profits experienced by energy companies further exacerbates the lack of investment, in extraction technologies and oil discovery. However, even if the current scarcity of oil is temporary, oil companies will not automatically and gently turn up output when supplies tighten – the question which is addressed next, by the 'peak oil' argument.

Peak oil theory suggests that oil production and extraction, whether of a particular oil field, or the entire world, follows a bell-shaped curve – following an exponential rise, peak, then terminal decline (Hubbard, 1956). Production rates start and return to zero gradually as field-pressure falls once approximately half the oil has been extracted from a particular field. Whilst this theory is criticised for being over-simplistic, it correctly anticipated the US oil production peak in the early 1970s. The world's oil production is today focused in mature, ageing fields where extraction is increasingly expensive (Campbell and Laherrere, 1998, 80). In Saudi Arabia, sea water is mechanically injected into oil fields to "induce artificial lift" (Simmons, 2005, 136) and maintain pressure. As the world's oil fields reach their peak, become bereft of reserves and fewer in number themselves, production will become too expensive, and is predicted by this model to reach a global peak sometime between 2010 and 2020 (Dillion, 2005, 3). In reaction, the

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world must adjust and exploit 'unconventional' sources of liquid oil such as coal and natural gas. It is estimated that the world has a reserve of 6tn barrels of 'heavy' oil, already being mined in Canada and Venezuela (Korner, 2004). Trillions more may be extracted from coal and natural gas. It is believed by some that one tonne of coal is capable of yielding four barrels (Miller, 1936). In reality, converting such 'heavy' oil stores into liquid is energy intensive – requiring fossil fuels which are themselves scarce, expensive and environmentally harmful.

In terms of converting coal, current methods are a relatively inefficient use of the coal's energy content. Natural gas and coal are estimated to last for 65 and 180 years respectively, at current levels of usage (Energy Information Administration, 2006). Another strain on these resources of energy is the increased and increasing rate of coal-based electrical production and power plant-building, especially in the US and China. Many geologists expect production to peak, perhaps as early as the 2030s in the case of coal, so that the supply will become considerably more difficult to recover at a given price or level of technological sophistication (Vaux). Even if these estimates are taken at face value (and they may well be too conservative or too optimistic), "linear projections are just as deceptive with gas and coal as they are with oil" (Elhefnawy, 2008, 41). Another limitation of these unconventional oil supplies is that none have been exploited on a scale remotely comparable to that of liquid oil.

Estimated supplies of unconventional oil, by 2025 (11mn/b/d), are unlikely to even cover a tenth of forecasted consumption (100-125mn/b/d). A declining rate in oil discovery, hyperbole around estimated reserves, and peaking production in mature oil fields will only constrict supplies, and any shortfall will be far-from compensated by any access to unconventional oil. The long-term severity and timing of an oil scarcity crisis is open to debate, but what is sure, at the international geopolitical level, and in terms of security, oil scarcity will have profound implications for the global economy and power balance that cannot be ignored.

What, then, can we say concerning the future of policy in this area? The fact is the production of oil is still significantly cheaper than other alternative energy sources. It has been reported that though energy sources such as solar, wind and geothermal are being rapidly developed and adopted, their use is only about 2% of the total. Coal for energy generation can be used as a strategic source for diversification purposes. In recent years coal, as an energy source, has cultivated a dirty image due to the levels of carbon emissions emitted; yet equally, carbon capture storage (CCS) technologies have been developed precisely to reduce the quantity of CO₂ that results from this process of energy generation. However, CCS as both an energy and environmental alternative has elicited controversy: shortcomings include energy wastage, set-up and maintenance costs, and the lengthy period of time required to establish effective CCS technologies.

CCS has already proved workable in Algeria, Norway and Canada, while the United Kingdom is working towards establishing a viable system through the UK Carbon Capture and Storage Consortium (UKCCSC). The benefits of CCS according to the UKCCSC are multiple, including extending the life of the UK North Sea oil industry by up to twenty years, juxtaposing the present day fossil fuel economy and future hydrogen economy, and furthering the continued use of British coal reserves. Nevertheless, CCS raises serious energy security issues for many oil dependent countries. It is also true that proven oil reserves are larger in Middle Eastern countries.[1] Ultimately, whilst funding is poured into developing alternative forms of energy, many states will walk a tight-rope to balance their diplomatic relations with economic considerations and technological constraints in the years to come.

CONCLUSION:

Geopolitical tensions have raged on, largely instigated by governments' attempts to reduce threats to energy securities. The unequal distribution of the natural resource oil, which has such a huge impact on the global economy, causes power imbalances. In the quest for reliable energy supply governments must diversify their energy sources, ensure the use of energy is efficient to save cost and most importantly be more flexible in their long term planning strategies.

Alternative energy such as nuclear, solar, wind and hydro-power could be developed to be used extensively. For the use of nuclear power, safety issues, waste disposal and political issues must be a primary consideration, to better understand this source of energy and its challenges. Nevertheless, a significant impediment resides in the pecuniary

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deficiency afflicting the field: this year alone new investment in clean energy plunged by 26-39 percent, down from \$155 billion to almost \$95 billion, according to New Energy Finance. Although it has been speculated that investment in clean energy will begin to increase from 2010 onwards, the downturn emphasizes the vulnerability of clean energy, being as it is beholden to the peaks and troughs of finance.

Furthermore, while the US administration has recently increased investment in new generation nuclear energy to reduce dependence on foreign imported oil, additional cost-benefit analyses must be undertaken to ensure a proactive stance. The power imbalance can only continue should producers remain in a strong, monopolistic position and consumers fail to significantly reduce oil dependence. Governments, industry and consumers must collaborate to find lasting solutions; governments on a global level must commit to a coordinated effort as – due to globalisation – economies increasingly become interdependent. Globalisation presents risks that need to be mitigated in order to reduce supply risk that in turn could have devastating consequences for economies. Ultimately, energy security is an issue which affects us all.

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[1] There are various definitions to such proven oil reserves, probable oil reserves and unproven oil reserves. The major distinction between all of these three definitions is the degree to which they can be exploited in a commercially viable manner. Middle Eastern oil production is certainly commercially viable at the present time.