

Notes for ESCP Roundtable, London, 17th Feb. 2014.

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My views on the topics covered in the January 2014 special issue of *Energy Policy* are as follows:

1. Acknowledgements

Michal Jefferson & Vlasios Voudouris are to be congratulated for this special issue: it contains key papers by excellent authors on an important topic, and must have been a lot of work to assemble. (They are to be congratulated also for a proposed special issue for 2015 that will cover the poorly understood question of how energy cost affects economic activity.)

2. Understanding Peak Oil

It is my hope that this present special issue, coupled with the Roundtable, will mark a turning-point in the understanding of oil depletion, such that over time all oil analysts will come to automatically factor into their thinking the concept of 'mid-point' peaking of conventional oil production in a region. This concept is crucial to understanding current and future oil prices.

By 'mid-point' peaking I do not mean that production of conventional oil in a region peaks at exactly half of someone's estimate of the region's likely total amount of conventional oil (its 'conventional URR'). But analysts must take on board the binding physical and economic constraints that generally force the production of conventional oil in a region to decline once only about half or less of the oil in that region has been produced.

The binding physical constraints are: (a). the distribution of individual field sizes; and (b). the decline in production from these fields, either due to pressure loss, or from increasing drive fluid bypass.

The main economic constraint is the very high extra cost to significantly increase flow rates from a region that is in decline. Operators in such regions are usually better off in net present value terms - even at relatively high oil prices - to live with existing decline rates, than to invest heavily in an attempt to produce the remaining oil significantly faster. UK production post-1999 provides a good example of this.

As long and correctly forecast, 'mid-point' peaks of conventional oil production have now occurred in many regions around the world. It is these peaks, coupled with the actual amounts of conventional oil discovered to-date (rather than theoretical estimates of how much there *might* be), and also with recognised 'above-ground' constraints, that has led to the current situation: a restricted global oil supply caused by proximity to the peak of global conventional oil production.

The proximity to this peak has led to oil at \$100/bbl. This is because it is now the marginal barrels - no longer of conventional oil - that are setting the price of the extra oil the world has been demanding, above that available from conventional.

3. Articles in the Special Issue

Now I turn to the articles in the special issue.

By a rough reckoning, five of the papers in this special issue that deal with global oil supply, or oil price, seem not to fully understand the impact of the conventional oil peak described above (or at least, make no reference to this when mentioning oil at \$100/bbl).

Apologies if I have this classification wrong – and I may well have. The papers I think are in this category are: Helm, Mitchell & Mitchell, Stern, Khatib, and Aguilera.

By contrast, about ten of the papers dealing with global oil supply or price do appear familiar with the impact of peak conventional oil. These are: Ayres & Voudouris, Alquist & Guénette, Bentham, Chapman, McGlade & Ekins, Jakobsson *et al.*, Voudouris *et al.*, Hall *et al.*, Lambert *et al.*, and Trainer.

If I have the above classifications incorrect, please let me know.

Incidentally, in this context, a new journal, *The Oil Age*, is under consideration. The aim of this will be to cover topics associated with ‘peak oil’ in its widest sense. A proposed early issue will carry reviews by Jean Laherrère and myself of some of the above papers, so this may be of interest.

4. The significance of ‘2P’ Industry data

On the vital question of how much conventional oil has actually been discovered to-date, I have some printouts that shed light on this. These are of industry ‘2P’ data from Jean Laherrère, Colin Campbell, IHS Energy, Rystad Energy (from their ‘UCubeFree’ application), and Globalshift Ltd.

Note that IHS data cannot be reproduced. The other 2P data can be distributed with proper acknowledgment of source.

5. Future of Oil modelling

With global conventional oil supply now limited, the question then becomes: How much can the non-conventionals give?

It is probable that no-one is modelling this adequately. This needs data not only on the quantity available of the non-conventionals, their costs, and investments required, but also on their EROEI, rate-of-change limits, impacts on overall levels of economic activity, climate-change caps, etc. As far as I know, no-one is doing this sort of comprehensive modelling, and we are therefore all in the dark on the future of global oil supply.

Overall, however, in my view the case for ‘business-as-usual’ oil supply, even with increasing production from non-conventionals, is not likely to be supportable, and the world will have to continue to make major adaptations in its demand for oil.

Comments on the above document are welcome.