Preparing for "Peak Oil": Towards a Preliminary Agenda

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In summary, the problem of the peaking of conventional world oil production is unlike any yet faced by modern industrial society. The challenges and uncertainties need to be much better understood. Technologies exist to mitigate the problem. Timely, aggressive risk management will be essential.

This quotation is from the executive summary of a major report issued in February 2005 on the peaking of world oil production. That in itself is unremarkable, but the document – which has come to be known as "The Hirsch Report" – was sponsored by the United States Department of Energy (DOE). There are all the usual disclaimers about the policy of the United States Government. Nevertheless, as early as 2003, DOE clearly decided that a sound technical analysis of the issues raised by the approach of "Peak Oil" was a job which would be worth the investment of time and money.

As a "summary of the summary", these few sentences can serve as a wake-up call for New Zealand. They state very crisply the policy challenge which the world is facing in the first half of this century (or, as many would argue, in its first quarter...). They also remind us that in a situation of uncertainty, protracted debate about when the event might actually occur may not be particularly helpful. Instead, we can use the discipline of risk assessment to learn more about where uncertainty lies.

For the policy community on both sides of the Tasman, the task which is now becoming urgent is the formulation of a transitional strategy. For this country, and for Australia, such a strategy should respond to the call by the authors of the Hirsch Report for "aggressive risk management". The following notes suggest some areas which might serve as a starting point. They may also stimulate thinking about the wider agenda which would need to be covered in any agreed strategy.

Terminology: The term "Peak Oil" has been in use by industry experts for some fifty years. It is understood in the technical literature as describing *the point at which global potential to extract additional supplies of oil levels off and becomes permanently outpaced by the growth in world demand*. The profile of historic peaking has been documented in fine detail for individual oilfields and for the total resources of particular countries. The application of the concept to the overall world supply has however raised a range of issues, including the high unreliability of the statistical base.

Only in the last year or so has the term moved outside industry, academic and NGO circles, into more general journalistic and popular usage. In the process, it has rapidly become confused with the notion of a "peaking" in oil prices. This leaves an implication that after "Peak Oil" prices could return to a more normal level, which is a fallacy. Although fluctuations will continue, the irreversible trend will be (and possibly is already) towards higher prices. For this reason, many have argued that the term "Post-Cheap Oil" should be used to describe the period we are about to enter.

Global Repercussions: Some of the fundamental implications have already become apparent, particularly since the 2003 invasion of Iraq (which many commentators described as an "Oil War"). Large importers, such as the United States and Japan, will face major escalation of costs and will also be vulnerable to interruptions in supply (either for economic or political motives). Rapidly-growing economies, especially China and India, may find their expansion suddenly checked unless they too can negotiate arrangements which guarantee security of supply. Against this scenario, the "Oil Shocks" of the 1970s will appear in retrospect as a minor perturbation.

The Economic Illusion: Laws of supply and demand would suggest that as the price goes up, there will be a

supply response and that markets will simply stabilise at a higher level. Already, governments around the world are facing pressure, particularly from transport lobbies, to reduce the (generally) high level of taxation on oil-based fuels (and to subsidize "extenders" such as ethanol) so that commercial operations can avoid having to pass increased fuel costs on to other sectors of the economy. (The airlines' fuel surcharge seems to act as a parallel device, intended to make the impact of higher fuel prices transparent, and therefore more acceptable, to the consumer).

The Geological Reality: Since hydrocarbon deposits below the earth's surface are by any real-world definition non-renewable, it follows that "Peak Oil" actually presages a tapering off in the flow of oil supplies. *This decline is for all practical purposes irreversible.* (This is not to say that oil will "run out", but that volumes will drop to what will become a relative "trickle"). Higher prices will not trigger a surge in new supplies, neither will they encourage the adoption of new technology to discover and develop previously unknown or inaccessible deposits. All that will have happened before the Peak Oil event.

The Petrochemical Prop: Analysts have pointed out that it is not just oil, gas and liquid fuels which are implicated. We have only to think of plastics to realize that an impressive variety of oil-derived compounds is now in common use worldwide. These materials have over the past century made a huge contribution to economic development. Even with extensive recycling, many essential components of industrialization will increase in price and some may become unobtainable. Work on substitution will therefore not be limited to alternative fuels. All countries will find it necessary to invest in research and development on new products which are of particular importance to them.

Where to start? There are isolated aspects of public policy where the need to consider the implications of Peak Oil has already become apparent. How should investment in roading capacity be weighed against improvements in public transport? If all fossil fuels, including coal, are going to become significantly more expensive, what are the implications for future investment in electricity generation? And distribution? Are the twentieth-century templates for urban (and particularly suburban) design and servicing at all relevant to the situation which will develop in the twenty-first century? These examples are certainly serving to raise awareness and to stimulate new thinking. They could well extend incrementally to cover all major sectors of the economy in a relatively short space of time, including tourism (where patterns will surely change), land-use (where measures of energy inputs and outputs will become crucially important), and so on. But even if well co-ordinated, such a collective effort would not necessarily deliver an adequate strategy.

Transition is a Core Concept: The strategic principle for New Zealand, as for all other countries, must be to link the end of cheap oil with a transition to a new mix of new, and mainly renewable, sources of energy. For this transition to succeed, one can prescribe also a quantum shift in energy efficiency – again, new technologies are constantly emerging which will accelerate such a shift, but effective policy instruments are still lacking. Ideally, the transition could be designed around the need to define where in future the country's comparative advantage will lie, relative to our major trading partners. Because of the growing integration of the two economies, it would be prudent to develop the transitional strategy in close co-ordination with Australia, and to pool resources in the many areas, such as forestry, where both countries will be affected in a similar way.

When to start? If the focus is on the inevitable transition, it becomes clear that preparation is more important than prediction. Enough evidence is to hand for us to understand that transition will be time-consuming and also costly, so the time to start is now. Leading analysts in the United States have pointed to the lengthy time horizon for the replacement of capital stock, and to the need to identify early opportunities for mitigation - all of which suggests that the scenario technique (as referred to above) should be a useful tool. It would certainly get some transitional options on the table in short order and assist future governments to enlist stakeholder support in what must be a community-wide effort.

In conclusion, we might ask; where does the duty to initiate lie? Most would agree that this is a task for Government. It alone has the authority and the resources to trigger effort on the scale that is needed. New Zealand has been able to bring together its response to external threats on previous occasions, such as Britain's entry into Europe and the loss of our protected status in the "Old Country" (which required a major diversification of export markets within less than a decade). Invariably, at

these times, political leaders find they must be unambiguous about the urgency of the task and seek out a consensus in Parliament to that effect. They must also keep the public fully informed. The sequence for such a political "kick-off" might be as follows;

- Identification of strategic objectives – through publication of a white or "green" paper, followed by the option of Parliamentary process (via Select Committee) or an independent sequence of enquiry and consultation (full-time Task Force or similar);
- Creation and resourcing of mechanisms to construct and model scenarios in support of the enquiry. These groups would need to be retained *over the medium term* to pursue any programme of research identified during the initial enquiry;
- Engagement of all levels of government (local, regional, central and possibly trans-Tasman) to identify actions and allocate responsibility for performance of each task;
- Electronic networks to support all of the above processes and to enlist the ongoing involvement of all stakeholders, community groups, media and so on.

As stated above, prediction of this phenomenon cannot – and need not – be precise; "Peak Oil" by its nature is a "rear-mirror occurrence" – we will only know when it has happened after the event. Even the above sketch of what is a highly complex phenomenon serves to bring out the size of the task confronting policymakers. Sophisticated modelling may serve to refine the range of scenarios, and assess levels of probability, but none will earn universal endorsement. As with climate change, governments will need therefore to switch to risk management mode and concentrate on precautionary policies – covering social, environmental and institutional responses as well as strategic approaches to economic adjustment. It will be a big job.

These notes have been sub-titled "Towards a preliminary agenda"... There is however no way in which this process can be initiated with a pre-determined agenda, action plan or similar matrix. The enquiry itself will bring many hidden issues to light, and may also refine a framework within which the transitional strategy itself can be formulated and implemented. There could be no greater test of our self-image as an innovative society. The openness and accessibility of the process to all groups will ultimately deliver its success.

In the final analysis, action on Peak Oil is not pre-eminently a technical agenda nor is it primarily a political agenda. It is both of these, as well as being environmental, social and economic - to the extent that it is an all-of-society - and ultimately a global - agenda.

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Further reading

The Hirsch Report (91pp) can be downloaded in pdf. format from www.hilltoplancers.org/stories/hirsch0502.pdf and a large number of commentaries are available from the website of the US Department of Energy at www.USDOE.net. One of these is from the Association for the Study of Peak Oil and Gas, which has for many years been the principal focus for study of the phenomenon – its website is constantly updated at www.peakoil.com

Recent press articles – see for example "The Guardian Weekly" (Vol.172 No.19, April 29 - May 5 2005) have highlighted the proceedings of a major Conference held in Edinburgh on 25 April 2005. The title of the event was "Peak Oil UK: Entering the Age of Oil Depletion" and included presentations from leading experts in the field. These are accessible at: www.odacinfo.org PeakOilUKConferenceProceedings.htm and offer collectively the best introduction to the topic.