



The Sustainable Energy Forum Inc
PO Box 11-152
Wellington
New Zealand
Phone 04 586 2003
Fax 04 586 2004
info@sef.org.nz
<http://www.sef.org.nz>

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Backgrounder to support Submission to the Finance and Expenditure Committee on the Budget Policy Statement 2005 (BPS 2005) and associated December Economic and Fiscal Update 2004 (DEFU 2004)

Introduction to SEF

This backgrounder is from The Sustainable Energy Forum Inc (SEF), to accompany our appearance before the Finance and Expenditure Committee to speak to our submission.

The objective of The Sustainable Energy Forum Inc. is to facilitate the transition to sustainable energy. The Forum has about 130 individual and corporate members, including business people, academics and interested individuals.

In accordance with SEF's submission policy, we declare that this backgrounder has been prepared and reviewed by members of the SEF Management Committee. Due to time constraints, it has not been circulated to all SEF members for approval.

New Zealand's dependence on oil for transport

The Government's discussion paper *Sustainable Energy: Creating a Sustainable Energy System for New Zealand* (October 2004, p. 40) states, "Alternatives to oil for transport energy use exist, but are little used in New Zealand. We are, in effect, totally reliant on oil for transport energy." Therefore, a sharp and prolonged rise in the price of oil would have very severe effects on all sectors of the New Zealand economy.

Our present dependence on oil can be addressed both by substituting alternatives on the supply side, and by reducing demand. It is beyond the scope of this backgrounder to go into the pros and cons of the various alternative fuels which exist or which are under development, and one of the recommendations of our submission is that the Government investigate all renewable alternative fuels and their applicability to New Zealand's requirements. Many of the alternatives require infrastructure changes which would in turn require significant investment, so it is important that detailed investigations start now.

Demand reduction is also crucial, and we have again recommended that the Government investigate strategies to reduce the demand for transport fuels.

If oil were to continue to rise steadily in price, and if supply were to continue to meet demand, a comparatively smooth transition away from fossil fuels and towards renewable alternatives could be anticipated. But this is not what the Peak Oil scenario predicts. When oil production passes its peak, the oil price will rise sharply and erratically, and demand will outstrip supply — meaning that countries may not be able to import all the oil they want. That would place New Zealand, as a country which depends heavily on imported oil and is situated at the end of a long and vulnerable supply line, at particular risk.

The coming peak in global oil production

In the 1950s, Dr M. King Hubbert formulated the following laws for the depletion of any finite resource:

Production starts at zero.

Production then rises to a peak which can never be surpassed.

Once the peak has been passed, production declines until the resource is depleted.

The point of maximum production (known as the Hubbert Peak) was observed to approximately coincide with the midpoint of depletion of the resource under consideration: in other words, when the Hubbert Peak is reached for the world's oil, about half the oil that ever existed will have been used.

Dr Hubbert used his methodology to correctly predict the peak in the United States' oil production, which occurred in 1970. The Association for the Study of Peak Oil, formed by experienced petroleum geologists (<http://www.peakoil.net/>), has since refined and extended Dr King's methodology, and used it to produce oil production curves for individual countries, and for the world as a whole. Their latest summary of the global situation is included as the final page in this backgrounder. It shows global oil production peaking in 2007. (Taken from ASPO's February 2005 Newsletter, available at <http://www.peakoil.net/Newsletter/NL50/newsletter50.doc>, p. 2, cited 14/2/05.)

If global oil production were to peak in 2007, this would not mean the end of oil, but it would mean the end of cheap oil. In its February 2005 newsletter, ASPO estimates that the decline in production after the peak will be less than 3% per year. However, taken in conjunction with rising demand, this will rapidly create a major gap between demand and production, with profound economic and geopolitical implications. Furthermore, world oil demand is rising rapidly, fuelled by growth in the economies of China and India. The International Energy Agency has estimated world oil demand at approximately 84 million barrels per day in 2005, which compares with approximately 76 million barrels per day in 2000, and just under 80 million barrels per day in 2003. At the same time, oil companies such as Shell are revising their reserve estimates downwards.

"Unconventional" sources of oil are included in ASPO's predictions, but are more expensive to exploit, and require much more energy to acquire and/or refine into petrol, diesel and other products, than conventional oil. These unconventional sources

do little to change the overall picture. The cost of producing oil from coal may set an upper limit on the oil price.

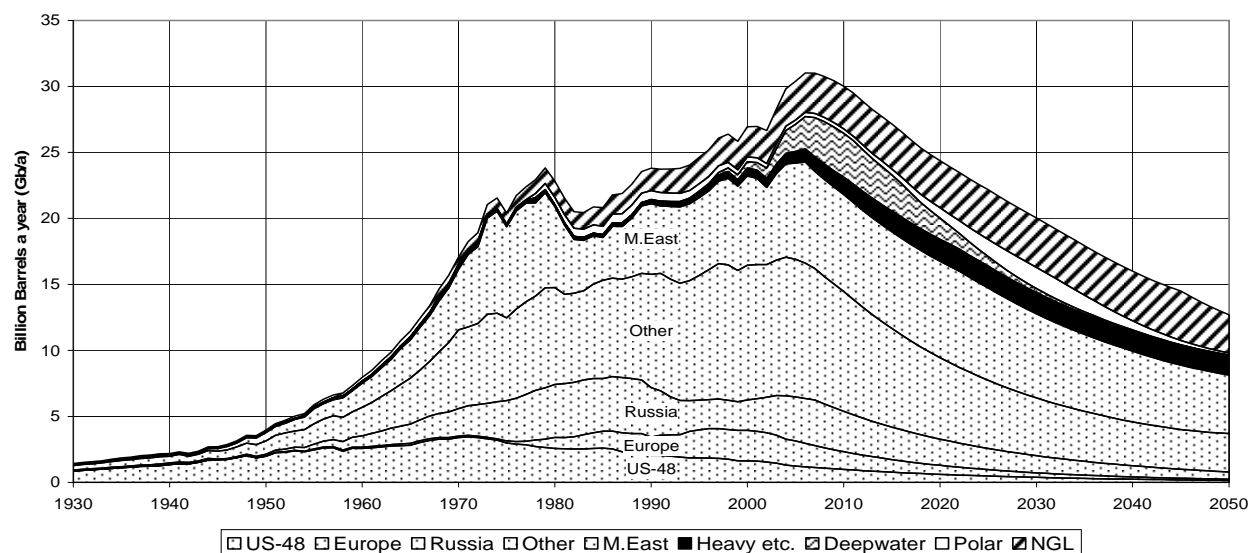
SEF is not claiming that ASPO's prediction is necessarily correct. As with any prediction, both the method used and the data on which the prediction is based should be subject to scrutiny; and any prediction of this nature is vulnerable to unforeseeable events. However, even should ASPO's prediction prove faulty, the peak in oil production is inevitable, and whenever it arrives, its impact will be worse on countries and economies which have not taken steps to prepare for it. As the Deutsche Bank says in its December 2004 research report *Energy Prospects after the Petroleum Age* (available from <http://www.dbresearch.com/>),

... from an economic point of view, the really interesting date is not the time at which the use of reserves comes to an end, but the time of maximum production. When output starts to decline from this peak, with demand remaining constant or even continuing to rise, strong reactions in prices and economic upheaval are possible.... The possibility of realigning the energy mix without radical economic disturbance would be all the more likely, the sooner politicians, industry and private consumers respond to the signs of the times on the market for hydrocarbons. (pp. 9-10)

SEF invites the members of the Finance and Expenditure Committee to play their part in ensuring that New Zealand takes these "signs of the times" seriously, and is not caught unprepared when the inevitable peak in world oil production occurs.

The General Depletion Picture

OIL AND GAS LIQUIDS 2004 Scenario



ESTIMATED PRODUCTION TO 2100								End 2004			
Amount				Gb	Annual Rate - Regular Oil				Gb	Peak	
Regular Oil					Mb/d	2005	2010	2020	2050	Total	Date
Past	Future		Total	US-48	3.4	2.7	1.7	0.4	200	1972	
Known Fields		New		Europe	5.2	3.6	1.8	0.3	75	2000	
945	760	145	1850	Russia	9.1	8	5.4	1.5	220	1987	
	905			ME Gulf	20	20	20	12	680	1974	
All Liquids				Other	28	25	17	8	675	2004	
1040	1360		2400	World	66	59	46	22	1850	2006	
2004 Base Scenario				Annual Rate - Other							
M.East producing at capacity (anomalous reporting corrected) <i>Regular Oil</i> excludes oil from coal, shale, bitumen, heavy, deepwater, polar & gasfield NGL				Heavy etc.	2.4	4	5	4	160	2021	
				Deepwater	4.8	7	6	0	70	2014	
				Polar	0.9	1	2	0	52	2030	
				Gas Liquid	8.0	9	10	8	275	2027	
				Rounding			0	2	-7		
Revised	26/01/2005			ALL	82	80	70	35	2400	2007	

