Chapter 4 Critique of the liquid fuel vulnerability assessment of ACIL Tasman

ACIL Tasman's report is on the Energy White Paper site:

http://www.ret.gov.au/energy/Documents/Energy%20Security/Liquid%20Fuels%20Vulnerability%20Assessment.pdf

and summarizes:

"ACIL Tasman concludes that while there will be a peak in production of crude oil at some time, internationally accepted information from authoritative sources suggests that this peak is still some decades away and will occur beyond 2020. It is not anticipated to be a significant factor that will affect Australia's liquid fuels vulnerability prior to 2020." (p xi)

(1) It is unfortunate that this report was published in November 2008, the very month in which "authoritative sources", e.g. the International Energy Agency (IEA) released its World Energy Outlook 2008 which was announced half year earlier that it would contain a detailed global oil field analysis with decline rates.

This is an excerpt from an interview with the IEA chief economist Fatih Birol, in April 2008:

Schneider: In the WEO 2007 it is mentioned that the rapid decline of oil production will be between 3.7 and 4.2 percent per year. Is that right?

Birol: Exactly

Schneider: This decline is even steeper than the one predicted by the Energy Watch Group!

Birol: "I can already tell you that in our "World Energy Outlook 2008" which will be published in November we will deal in depth with the prospects of the oil and gas production. We will take a look at the 350 most important oil and gas fields and explore how much production rates are sinking and what that means."
http://oildepletiondebate.blogspot.com/2008/04/what-follows-is-english-translation.html

The original of this interview in German can be found here:
http://www.oecd.org/document/36/0,3343,de_34968570_35008940_40585636_1_1_1_1,00.html

An energy consultant continuously up-to-date with energy developments should have postponed the release of a fuel vulnerability assessment until after a thorough assessment of the WEO 2008.

Instead, ACIL Tasman used in table 8 the now outdated IEA WEO 2006 (page 93)

"Projections based on the IEA's world energy outlook suggest that world oil demand will increase from 84.7 million barrels in 2006 to around 104 million barrels per day by 2020 and to 116.3 million barrels by 2030" (xii)

ACIL Tasman should also have been aware that the IEA projections were on a downward trend between 2000 and 2006 as shown in this table:

Changes in IEA WEO world oil supply projections					
WEO version	Page in report	Projections for 2015 in mb/d	Projections for 2020 in mb/d	Projections for 2030 in mb/d	Remarks
2000	77	na	114.7	na	
2002	96	na	104.0	120.0	Lower demand expected than in 2000
2004	106	na	106.7	121.3	
2006	93	99.3	*(107.8)*	116.3	2020 interpolated
2008	108	94.4	*(100.4)*	106.4	Lower supply

More importantly, the WEO 2008 found that 79% of proven reserves produced 70.2 mb/d of crude oil in 2007 in existing fields, declining at 4% pa. Even under the most optimistic assumptions crude oil production, the most important feedstock for refineries, will practically stay flat until 2030. This is a totally different outlook than presented in 2006:

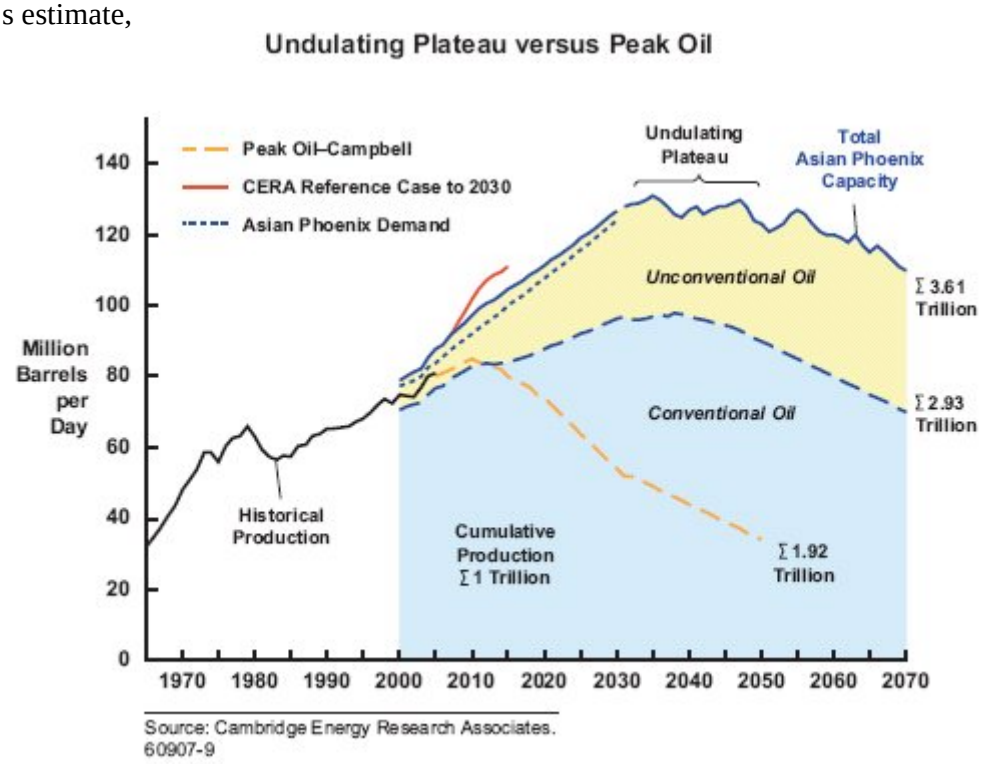
Changes in IEA WEO world crude oil supply projections					
WEO version	Page in report	Projections for 2015 in mb/d	Projections for 2020 in mb/d	Projections for 2030 in mb/d	Remarks
2006	93	80.3	*(84.7)*	89.1	2020 interpolated
2008	251	73	*(74.1)*	75.2	Crude practically flat

More details, in particular the conditions for this latest projections, can be found in the peak oil chapter.

Here is a collection of quotes from ACIL Tasman's report, together with comments:

(2) Quote: "Cambridge Energy Research Associates (CERA) has concluded that peak oil for conventional crude oil will not occur before 2030 (Cambridge Energy Research Associates, 2006)" (p 24)

CERA's estimate,



http://www.theoildrum.com/uploads/44/cera_figure_2.jpg

which far exceeds what even the most optimistic scenario of the IEA assumes, is discussed in this article:

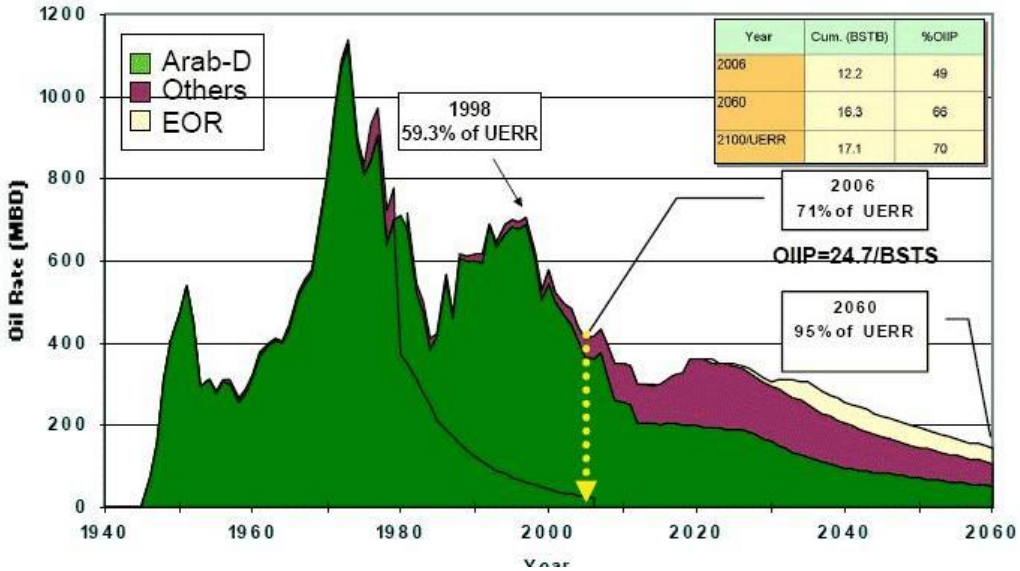
Does the Peak Oil "Myth" Just Fall Down? -- Our Response to CERA
"….For now, it is sufficient to note that CERA's analysis is lacking. The world's oil supply will not continue to grow to meet ever-rising global demand, and worse, the consequences could irrevocably damage global economies. Such an outcome would have harmful effects on people's lives. So, this debate is not "academic" — much depends on a correct analysis of the future oil supply."
http://www.theoildrum.com/story/2006/11/15/83857/186

(3) Quote: "Drawing on both conventional and unconventional proven crude oil reserves, energy company BP has concluded that there is the equivalent of more than 40 years of oil reserves at current production levels." (p 24)

But this does not mean that oil production will continue at current levels for 40 years and then suddenly drop to zero.

(4) Quote: "For example, Abqaiq, Saudi Aramco's most mature field, has been in production for 60 years and continues to produce 400,000 barrels per day – and it will probably be producing about 200,000 barrels a day many years down the road." (p 29)

This is mentioned in the report as a good example of reserve growth. While the sentence is correct, it would have been more enlightening for the reader to show the actual production profile, possibly typical for the whole Saudi oil production:



Ironically, this graph is from a February 2007 presentation to CERA by Saudi Aramco's Nansen G. Saleri
http://www.cera.com/aspx/cda/filedisplay/filedisplay.ashx?PK=29004

CERA's chairman Dr. Yergin is quoted several times in ACIL Tasman's report and has considerably shaped its complacent outlook.

(5) Quote: "The USGS study in 2000 also provides independent confirmation that Saudi Arabian/Saudi Aramco claims regarding the level of their crude oil reserves are credible." *(p 34)*

Laherrere published this critique in 2000:

Is USGS 2000 Assessment Reliable?
" …. These indications suggest that there are serious flaws in the study. It is a matter of grave concern because the world is now approaching the peak of conventional oil production. It is important therefore that the claims of the USGS be subject to close scrutiny, lest they be given an undeserved credibility in the formulation of government policy. Demand and price are influenced by the belief in the availability of future oil and gas."
http://www.oilcrisis.com/laherrere/usgs2000/

In 2002:

Do the last 6 years of production confirm the USGS forecast for the period 1996 -2025 **?**

"The 2000 USGS study gives unrealistically precise estimates, with 4 or more significant digits. Its definition of reserves is weak and it fails to properly identify the various the categories of oil and gas

The USGS study is particularly flawed outside the US showing the wrong cumulative production for gas and an erroneous notion of reserve growth.
The extrapolation of the past with the first six years of the study period from 1996-2025 does not confirm the USGS forecasts, even when excluding the reserve growth, which raises serious doubts about the methodology of this study."
http://www.hubbertpeak.com/laherrere/ConfUSGS_27_08.pdf

(5) Quote: "In the event that a peak world oil production should occur sooner than is generally predicted, that is in several decades time, then it will most likely result in a dramatic increase in crude oil prices as supply is unable to keep pace with increasing demand." (p 34)

Well, exactly that has happened in 2008. It has brought the airline and car industry into big problems.

(6) "A dramatic and ongoing real increase in the price of crude oil will result in adaptation that will likely manifest itself through four main avenues:

- ***It should trigger an increase in the technical efficiency of processes using and reliant on liquid fuels" (p 35)***

The adaptation can only occur if the oil price increases are modest (NOT dramatic) but nevertheless continuous and mono-directional. But this not the reality in the oil market. We have highly volatile oil prices where price signals don't always work in the same direction. The idea that oil prices will move upwards in a way that this does not damage the economy and leads automatically to technical efficiency improvements large enough to offset higher oil prices is wishful thinking.

- ***It should provide an incentive to a shift to alternative energy sources. (p35)***

Provided these alternative energy sources are cheaper, easier to handle, don't have huge start-up costs and will not encounter other limitations.

- ***During the transition process involved in the pursuit of increased technical efficiency and the shift towards alternative energy sources, it should lead to a moderation or short-term contraction in the rate of economic growth.***

What we have actually seen is very little transition between 2005 – 2008 and a dramatic contraction because peak oil and the debt problem converged.

- ***It should encourage a transition to a less oil intensive economy.***

It is the VERY PEAK OIL DENIAL MODE presented in the vulnerability report that will not bring about a transition. This is because peak oil happened too fast and decision makers still have not understood the problem.

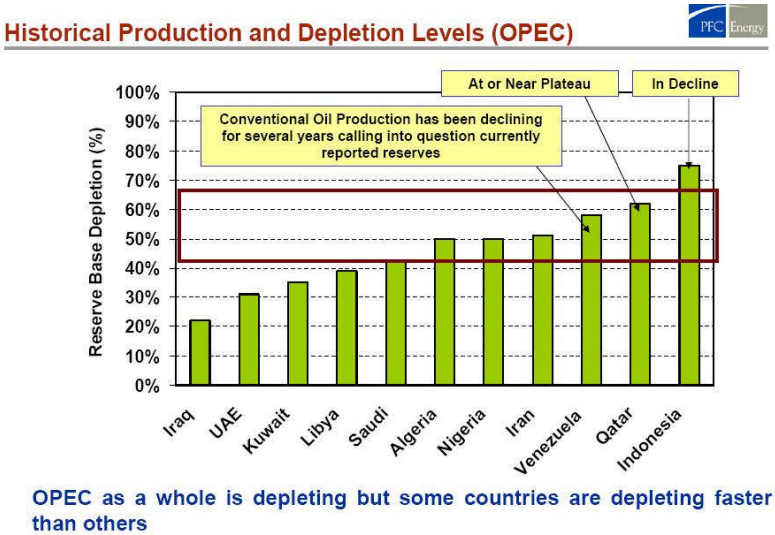
(7) Quote: "The first world oil crisis began in October 1973, when Members of the Organisation of Arab Petroleum Exporting Countries (OAPEC consisting of Arab members of OPEC along with Egypt and Syria) took concerted action to reduce their oil production." (p 44)

The report fails to mention that the 1st oil crisis was the consequence of the US oil peak in 1970 and that Saudi Arabia encountered first watering problems in their oil fields. The Yom Kippur war was the trigger for the crisis.

Also on page 44, the report quotes Sadad al-Husseini, a former executive of Saudi Aramco but does not mention that he, one of the few experts with OPEC insider know-how, showed a slide to an Oil & Money conference of Energy Intelligence
http://www.energyintel.com/om/index.asp
in London, October 2007, in which he crossed out a massive 300 Gb from oil reserves and re-classified them as much harder-to-get resources. These are the famous OPEC paper barrels. ACIL Tasman's report consistently omits vital information which sheds light on our oil supply situation.

(8) Quote: "In 2003 the US led Coalition invasion of Iraq led to the second Gulf War" (p 45)

The report fails to identify the 2003 Iraq war as a peak oil war. Iraq was the only country in the Middle East which had under-produced oil and had therefore still oil-geologically easy pre-peak oil. The objective was to use Iraqi's increased oil production to push the global peak a couple of years into the future.



OPEC as a whole is depleting but some countries are depleting faster than others

http://www.csis.org/media/csis/events/040908_pfcpresentation.pdf

The above graph (slide 36) shows depletion levels in various OPEC countries, as presented by PFC Energy to the Centre for Strategic and International Studies, right in the heart of

Washington, in September 2004. The boxed area shows the range of depletion levels where peaking occurs (production plateau between 42% and 67%). Iraq stood at only 22% depleted while Saudi Arabia was at 42% right at the peaking threshold.

(9) Quote: "The second world oil crisis occurred in the aftermath of the 1979 Iranian Revolution when oil production and exports from Iran dramatically collapsed from November 1978 to April 1979." (p 45)

In fact, Iranian oil production peaked at 6 mb/d already in 1974 and dropped to 5.3 mb/d in 1978. Peaking of oil production in countries always has an impact not only on that country but also on global oil flows. When peaking happens together with other events like political or socio economic changes, they tend to be mutually reinforce each other in a way that oil production declines more than oil-geologically expected.

(10) Quote: "Some have speculated that competition between nations in pursuit of overseas oil reserves are becoming a new source of geopolitical tensions that could provide the trigger for possible supply disruptions in the future." (p 47)

The report relies mainly on the opinion of Dr.Yergin from CERA, who is well known to be a peak oil denialist. as described in numerous articles here
http://www.theoildrum.com/tag/daniel_yergin

It would have been the very task of this vulnerability report to assess these geo-political tensions, list the possible scenarios, which impact they would have on oil imports to Australia and which short-, medium- and long term strategies would have to be developed to mitigate such impacts.

In particular, we have to expect:

- another oil or oil proxy war in the Middle East
- social unrest in countries where oil reserves have been overstated
- freezing up of global oil markets when the oil reserve issue becomes apparent
- barter deals e.g. food for oil, when fungible oil markets break up

These events will happen, they are not a matter of speculation. The uncertainty lies in the timing, sequence and circumstances under which they will occur.

(11) Quote: "However, a more immediate concern is whether there will be sufficient production capacity for oil in the world in the period beyond 2012 to satisfy demand." (p 68)

It is surprising then that in the summary conclusion no problem was seen before 2020.

(12) Quote: "ABARE has higher forecasts of Australian production for crude oil and condensate than Geoscience Australia. ABARE includes forecasts of Australia's undiscovered oil resources based partly on the estimates developed for Australia by the USGS in 2000 (USGS World Energy Assessment Team, 2000)" (p 77)

It is not a prudent approach to take USGS resources and integrate them into production table 18. This is because high oil prices in 2008 have shown that there are limits to what an economy can tolerate. It is therefore an untested assumption that all resources many of which are challenging to get at, will be turned into proven reserves.

This is a detailed assessment of reserves and resources of the USGS study.
http://www.pc.gov.au/__data/assets/pdf_file/0004/45643/sub075attachment1.pdf

It is more appropriate to use P90 estimates from Geoscience Australia as presented in submission 127 to the Senate Inquiries on oil supplies:

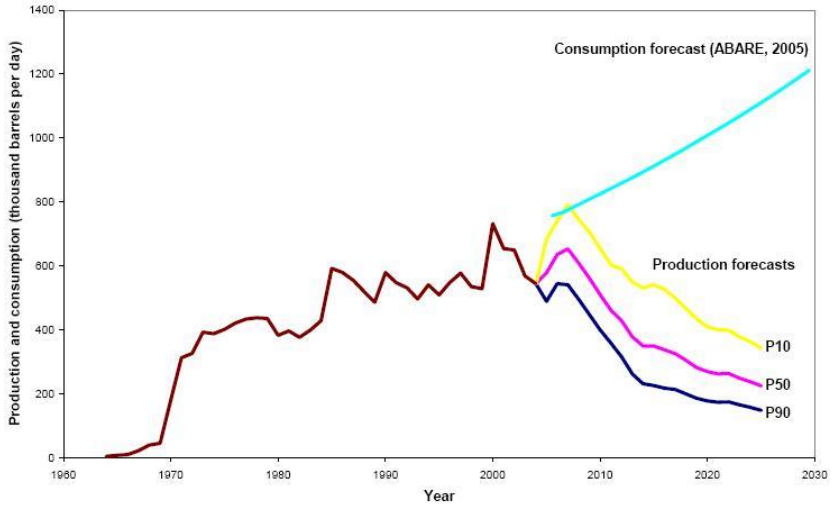
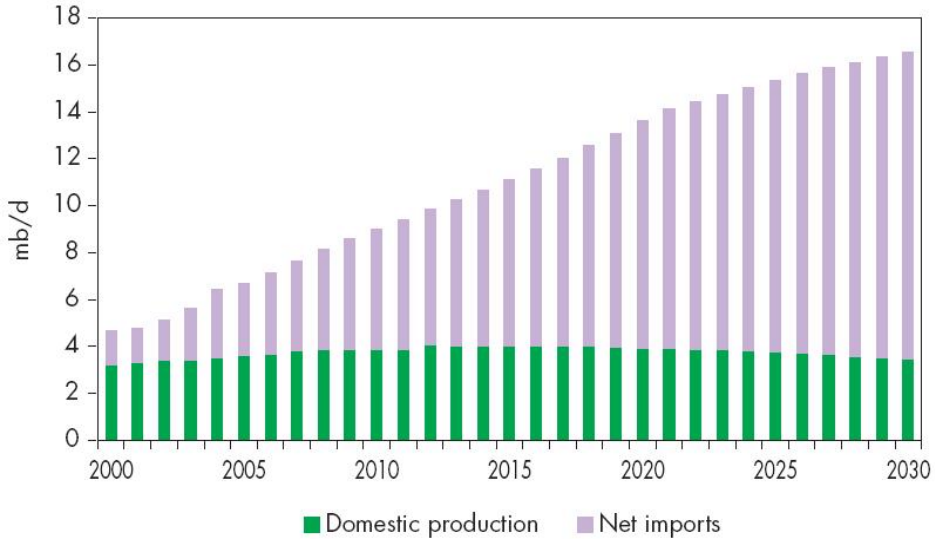


Figure 6: Forecast Australian consumption of petroleum products (excluding LPG) and forecast of Australian crude oil plus condensate production rate at various probability levels

http://www.aph.gov.au/Senate/committee/rrat_ctte/completed_inquiries/2004-07/oil_supply/submissions/sub127.pdf

13) Quote: "Dr Yergin has dismissed concerns regarding increasing geopolitical tensions arising from competition between nations to secure overseas oil reserves: Despite all the attention being paid to China's efforts to secure international petroleum reserves, for example, the entire amount that China currently produces per day outside of its own borders is equivalent to just a fraction of the daily production of one of the supermajor oil companies. (p 48)"

Figure 10.6: **China's Oil Balance in the Reference Scenario**



http://www.iea.org/textbase/nppdf/free/2007/weo_2007.pdf

This graph on China's oil balance in the WEO 2007 speaks for itself about future oil supply conflicts. It is incomprehensible how a vulnerability report can take advice from Dr. Yergin.