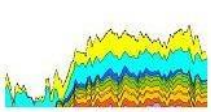


Submission by Matt Mushalik

This submission refers to documentation on this website:

About the author

I am a retired civil engineer and regional/town planner and now a leading peak oil researcher in Sydney. My first public critique was in 2004 on John Howard's energy white paper. I have designed incremental crude oil graphs which are known all over the world and which have been included in a slide show to the Pentagon by the late Matt Simmons, a Houston based investment banker in the oil and gas industry. I am running my own website with an average of 2-3 articles a month. I have done many slide shows in Universities and for Councils. I personally handed over PO papers to Premier Iemma and Rees, Prime Minister Rudd, Ministers Ferguson, Albanese and Turnbull, among many others.

My track record of submissions on tollways is excellent. In 2006 I advised the Brisbane City Council not to build the North South Bypass (now Clem 7) tunnel. My advice was ignored, the tunnel collapsed financially and the matter is now before a court. The same happened with Brisbane's Airportlink.

I have no doubt that the same destiny is waiting for WestConnex, if it is ever started. It will be a candidate for my "I-told-you-so" menu

Summary

This submission is an update of my earlier submission which is on my website

12/11/2013 Sydney's Westconnex road tunnel proposal based on too many untested assumptions http://crudeoilpeak.info/sydneys-westconnex-road-tunnel-proposal-based-on-too-many-untested-assumptions

In Volume1, the word "oil" is contained in "soil", "spoil", "toilet" and "oils, grease" (under water quality). Nothing better can characterise the energy illiteracy and complacency among consultants, bureaucrats and politicians.

Oil crisis likely before 2020

Without US shale oil, the world would be in a deep oil crisis and the question of new toll-roads and tunnels would not have arisen. The International Energy Agency recently published a report which implies that the 2nd – and last- US peak will start in 2016. At the same time, the Russian Finance Ministry has warned that oil production will start to decline also in 2016. 3rdly, a religious war has started on top of Middle East oil fields. It would be naïve to think that this will not impact on oil exports from the region.

Comments on Appendix D

(1) Where are AADT and AWDT tables?

No AADT or AWDT numbers are given. It is doubtful whether this document is bankable. Definitely it is not transparent for the reader of the document. Vehicle kms is a very abstract metric. Recent traffic projections for toll-ways have been controversial and some are before courts. It is to be feared that VKTs will complicate such court cases in future. The NorthConnex documentation contains ADT and AWDT tables. This Westconnex EIS is sub-standard in this regard

Traffic growth assumptions

Quote: *The WRTM model was developed and calibrated to current observed travel behaviour, then validated against 2012 Sydney-wide travel behaviour. It was then adjusted to reflect driver behaviour on toll roads observed in the Value of Travel Time Surveys (VTTS). Future demand was forecast by applying the model with* ***future year traffic growth assumptions*** *from the STM*

Comment: We do not know what the future travel behaviour will be when petrol and diesel prices go up again and/or the AUD goes back to pre-mining boom levels of around 70 US cents per AUD. It is an untested assumption that the future will be like the past. It will in all likelihood be different. There no such thing as a linear world in which the authors of this chapter seem to live.

15/12/2013 Lucky country dodged $2 a litre bullet - for now
http://crudeoilpeak.info/lucky-country-dodged-2-a-litre-bullet-for-now

What the model calculates is hypothetical demand. Whether this demand can be met in terms of reasonably priced fuels is a question which must be answered for a project costing billions of dollars.

Quote:

"Modelling by the Bureau of Freight Statistics estimates that the average number of weekday freight trips in the Sydney Metropolitan Area would increase by almost 40 per cent between 2011 and 2031." P 8-7

Comment: This BTS modelling is peak oil and global warming ignorant. It is the same flawed methodology also used for the NorthConnex project. By 2031 oil production will have dropped, economic activity slowed down, yet accumulated CO2 in the atmosphere playing havoc with our climate. The societal task in the future will be to extract CO2 from the atmosphere not plan for growing traffic.

(2) No reference to oil prices

Not even the word “oil” can be found although oil prices will be the determining factor for future traffic volumes. This alone invalidates the whole documentation. The consultants who prepared the flawed traffic projections will be fully responsible for the financial damage arising from this omission. There are several court cases in progress on embellished traffic assessments. See the chapter “The real story of peak oil”

(3) Population growth

Quote: “It includes the expected additional traffic that will result from population growth out to 2021 and therefore presents a conservative scenario for predicting traffic impact at the completion of the M4 Widening in 2017. Over the next 20 years, average weekday trips in Sydney will grow in line with the population by around 30 per cent, while freight trips in Sydney will grow with gross state product by around 70 per cent.”
” p xii

Comment: There is no oil-geological link between population and oil production. In fact, the more people there are, the longer the petrol lines at the filling station when peak oil becomes a physical problem. The same applies to other resources like water, housing etc.. Population growth, which is now mainly driven by net overseas migration will become a big problem.

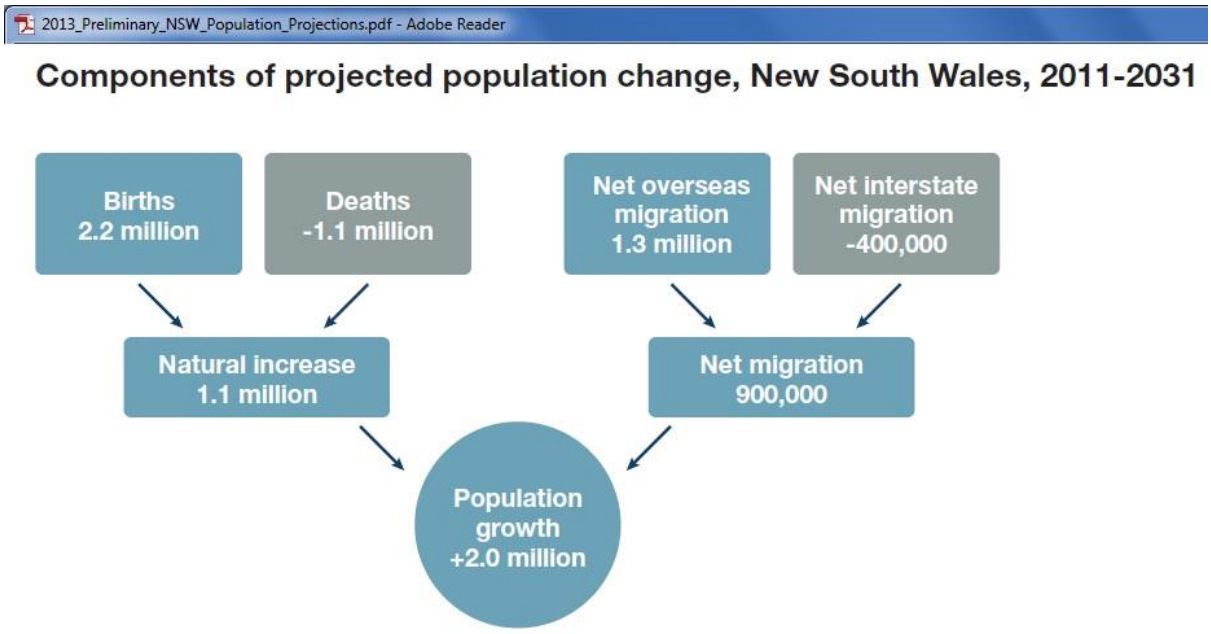


Fig 1: 65% of population growth is from an artificially high NOM

Read (needs updating but the methodology will not change)
9/4/2010 Australian Population Scenarios in the context of oil decline and global warming
http://crudeoilpeak.info/australian-population-scenarios-in-the-context-of-oil-decline-and-global-warming

I predict that as soon as shortages arrive at filling stations, motorists will understand that each new arrival is a competitor. Political support for immigration will collapse.

Dick Smith proposes to reduce immigration in steps http://dicksmithpopulation.com/ so that the economy can adapt. If this is not done and it happens when circumstances force us, the change may be abrupt.

(4) Economic growth

Quote: ***"Support Sydney's long-term economic growth through improved motorway access and connections linking Sydney's international gateways, Western Sydney and key places of business across the city"***. P3

Comment: growth in the economy comes from cheap oil, not motorways and as the era of cheap oil is gone, future growth will come from fundamentally increased efficiency in the use of oil in the economy. Toll-ways are NOT infrastructure which can achieve that efficiency increase. Only electric rail can do that. Car-pooling will help through this transition. .We have now imported cars running on imported fuel and on toll-ways financed from imported capital. All these imports reduce local purchasing power. They are not good for the economy.

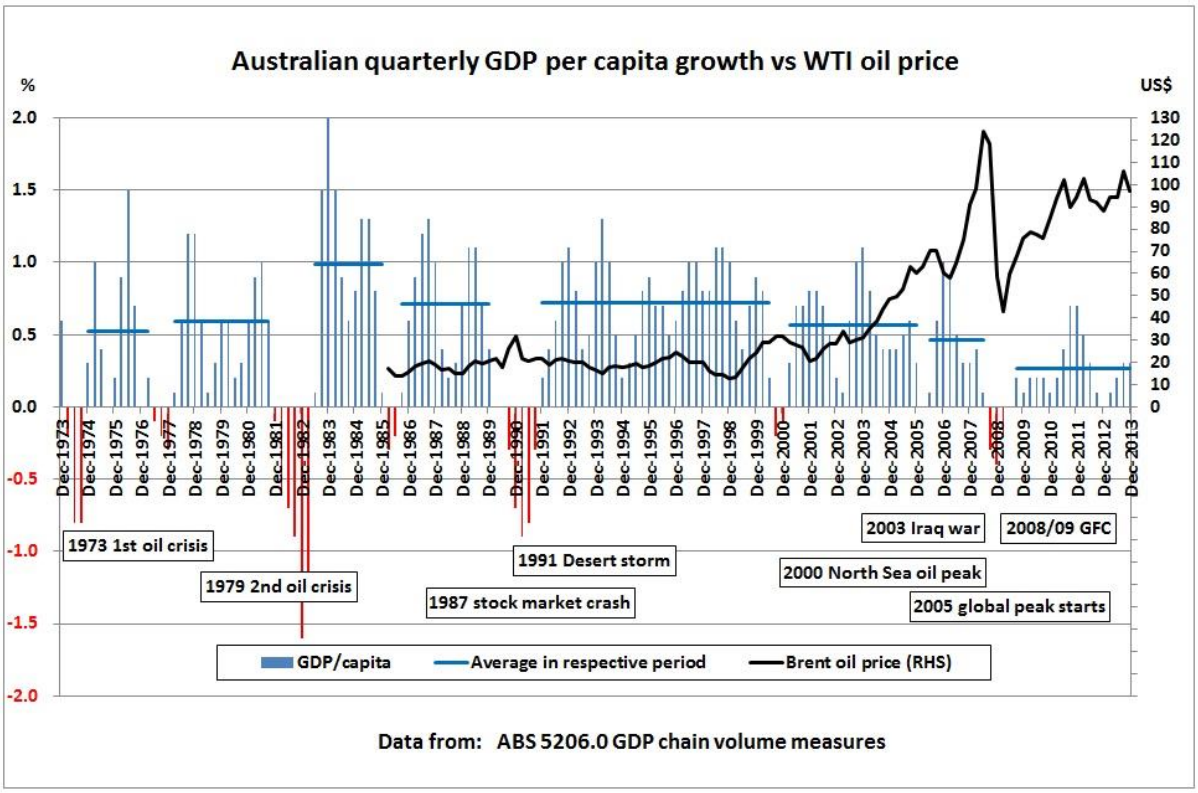


Fig 2 GDP per capita growth rate is slowing down as oil prices went up

More details are in this article:

9/6/2014 Australian GDP per capita growth slowed while oil prices went up (part 2 of budget 2014 series)
http://crudeoilpeak.info/australian-gdp-per-capita-growth-slowed-while-oil-prices-went-up-part-2

(5)Traffic to/from airport

Quote: "***The Sydney Airport Master Plan 2033 (SAMP) (Sydney Airport Corporation Limited 2014) states that passenger throughput at the airport is predicted to double to 60 million passengers by 2031; the Joint Study on Aviation Capacity for the Sydney Region (Australian and NSW Governments 2012) predicts 67 million passengers by 2035, effectively doubling the airport related traffic volumes on the arterial and motorway networks over the next 20 years"*** p 7

Comment: We don't even know whether Qantas or Virgin will survive the next years and the next oil price spike cum credit crunch.

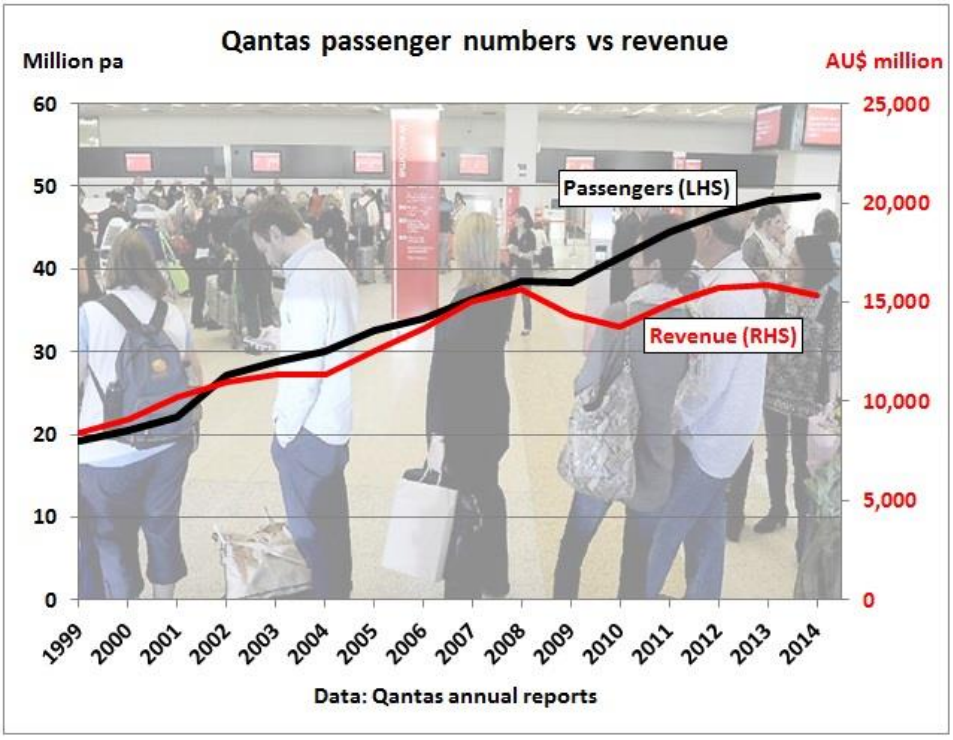


Fig 3 A gap is opening between passenger numbers and revenue

Growing passenger numbers doesn't mean that money can be made. This is because fuel costs are too high. Therefore, this business cannot last long. More details are here:

8/9/2014 Qantas growing passenger numbers don't increase revenue
http://crudeoilpeak.info/?p=6393

12/2/2014
Despite growth in passenger numbers Virgin Australia can't make money since 2009
http://crudeoilpeak.info/despite-passenger-growth-virgin-australia-cant-make-money-since-2009

Check also on the passenger traffic at Sydney airport

26/9/2013
2/3 of Asian flights to/from Sydney have not grown since 2008 (part3)
http://crudeoilpeak.info/two-thirds-of-asian-flight-to-from-sydney-have-not-grown-since-2008-part-3

22/9/2013
Half of Sydney's direct international flights dropped by 5% since July 2008 (part2)
http://crudeoilpeak.info/half-of-sydneys-direct-international-flights-dropped-by-5-since-july-2008-part-2

(6) Business as usual traffic growth

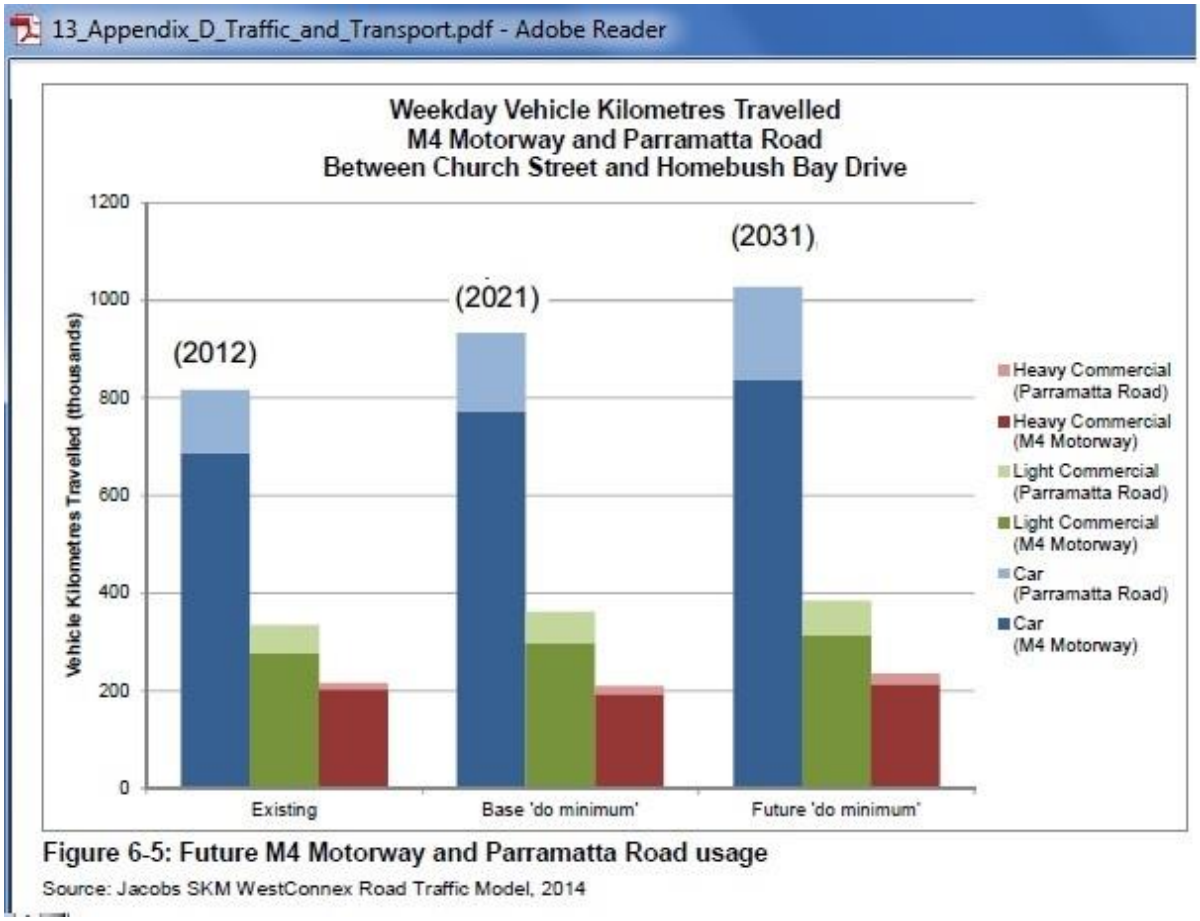


Fig 4 Business as usual traffic growth at around 1% pa

Where are the oil and energy calculations which would prove that there are sufficient energy supplies for this perpetual growth model? And what would be the CO2 absorption capacity when burning fossil fuels used in such an economy? Check this out:

15/6/2014 World's untested assumption on 6 mb/d of Iraqi oil by 2020
http://crudeoilpeak.info/worlds-untested-assumption-on-6-mbd-iraqi-oil-by-2020

(7) Subsidies

Both State and Federal governments have indicated they want to contribute $$$ bn to the WestConnex project. This subsidy alone shows that the project on its own is not commercially viable. It is also completely against the current budget objectives of the Federal government. Toll-way operators pay little tax, e.g Transurban

Transurban pays just $3 million tax, despite collecting $1 billion in tolls

5/8/2014

http://www.smh.com.au/business/transurban-pays-just-3-million-tax-despite-collecting-1-billion-in-tolls-20140805-100le8.html

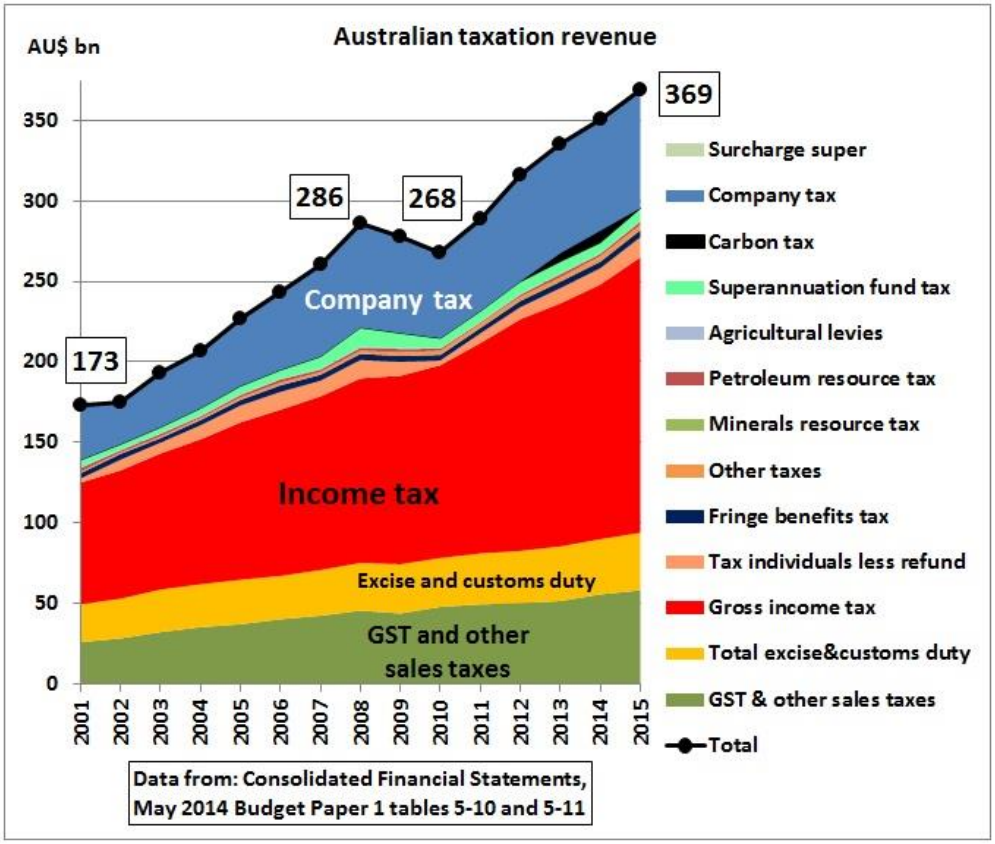


Fig 5: Federal taxation revenue took a hit in 2008

More details can be found in this article:
28/5/2014 Australian budget hit by global financial crisis and high oil prices (part 1)
http://crudeoilpeak.info/australian-budget-hit-by-gfc-and-high-oil-prices-part-1

(8) Debt

FY14_Full-year_results_presentation.pdf - Adobe Reader

GROUP DRAWN DEBT AT 30 JUNE 2014

transurban

TRANSURBAN CORPORATE DEBT	AUD ($ MILLION)	USD ($ MILLION)
Working capital lines[1]	–	233
Term bank debt	500	93
US Private Placements	1,336	162
Domestic AUD bonds	800	–
EMTN (C$ and Euro Notes)	632	305
Total	3,268	793

NON RECOURSE (AUD $ MILLION)	ASSET DEBT	OWNERSHIP	PROPORTIONAL
Lane Cove Tunnel	260	100%	260
Cross City Tunnel	277	100%	277
M1 – Eastern Distributor	525	75.1%	394
Hills M2 – Hills Motorway	740	100%	740
M5 Interlinks Roads[2]	666	50%	333
Westlink M7	1,260	50%	630
Total	3,728		2,634

NON RECOURSE (US $ MILLION)	ASSET DEBT	OWNERSHIP	PROPORTIONAL
495 Express Lanes – Senior	225	94.0%	211
495 Express Lanes – TIFIA	686	94.0%	645
95 Express Lanes – Senior	242	77.5%	188
95 Express Lanes – TIFIA[3]	198	77.5%	153
Total	1,351		1,197

1. A$725M facilities. A$421M available after deducting $56.8M letters of credit issued and after converting US$ at the spot exchange rate ($0.9420 at 30 June 2014). Separate letters of credit are issued to the value of A$56.4M in relation to corporate, CityLink, 495 Express Lanes and 95 Express Lanes.
2. A$69M in available undrawn asset debt, including letter of credit and standby facilities (US$35M proportional).
3. US$104M undrawn TIFIA facility.(US$81M proportional).

55

Fig 6:Transurban debt is around $A 8 bn

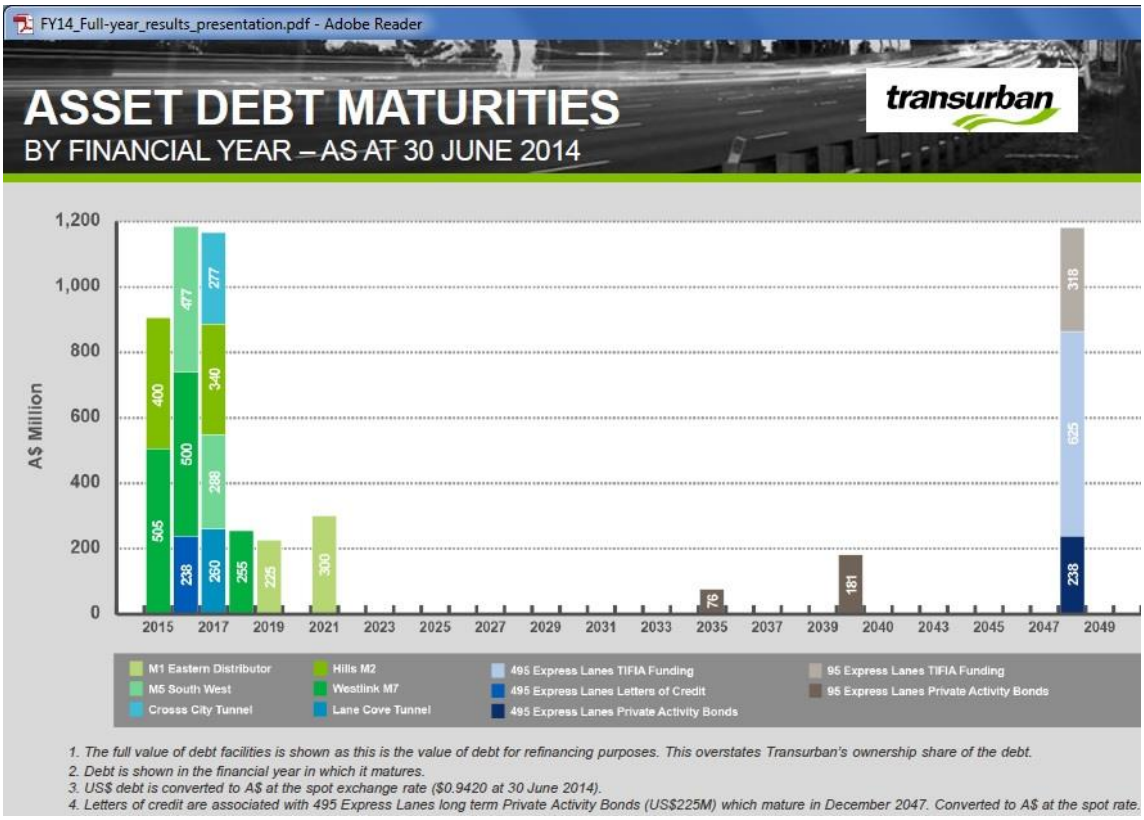


Fig 7: Transurban's asset debt maturities are mainly due before 2020

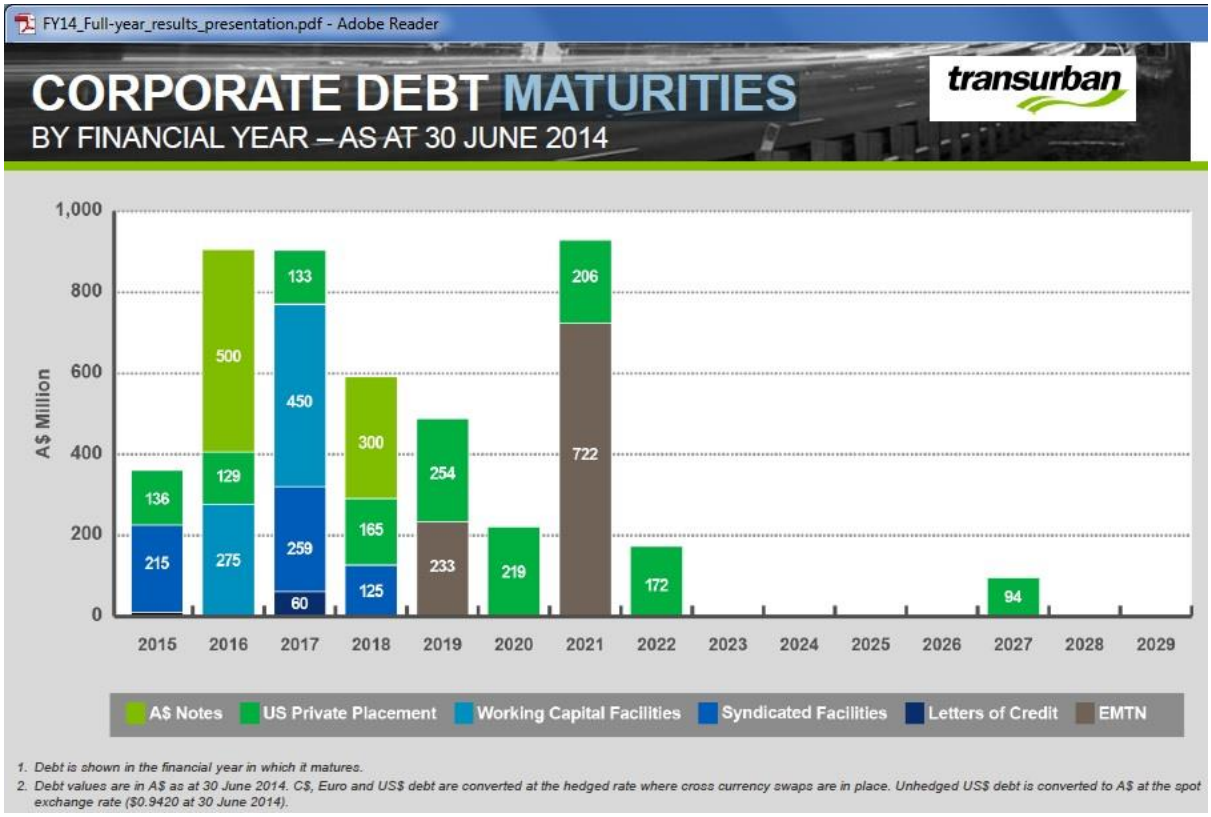


Fig 8 Transurban's Corporate debt maturities

We see that Transurban is continuously under pressure to roll over debt. One day that will become a big problem. Will the government impose a condition that asset debt in relation to toll-ways will be paid back within the traffic forecast period?

(9) The real story of peak oil

9.1 Peaking as process

Peak oil is to be seen as a process rather than an event in the year of maximum production. Global crude oil started to peak in 2005 as can be seen on the following graph. We have peaking in fields, provinces, countries, regions and finally in the world. We are now at a stage were peak oil spreads from one country to the next, like a cancer. I warned Howard in 2006, that problems will already start BEFORE the global peak.

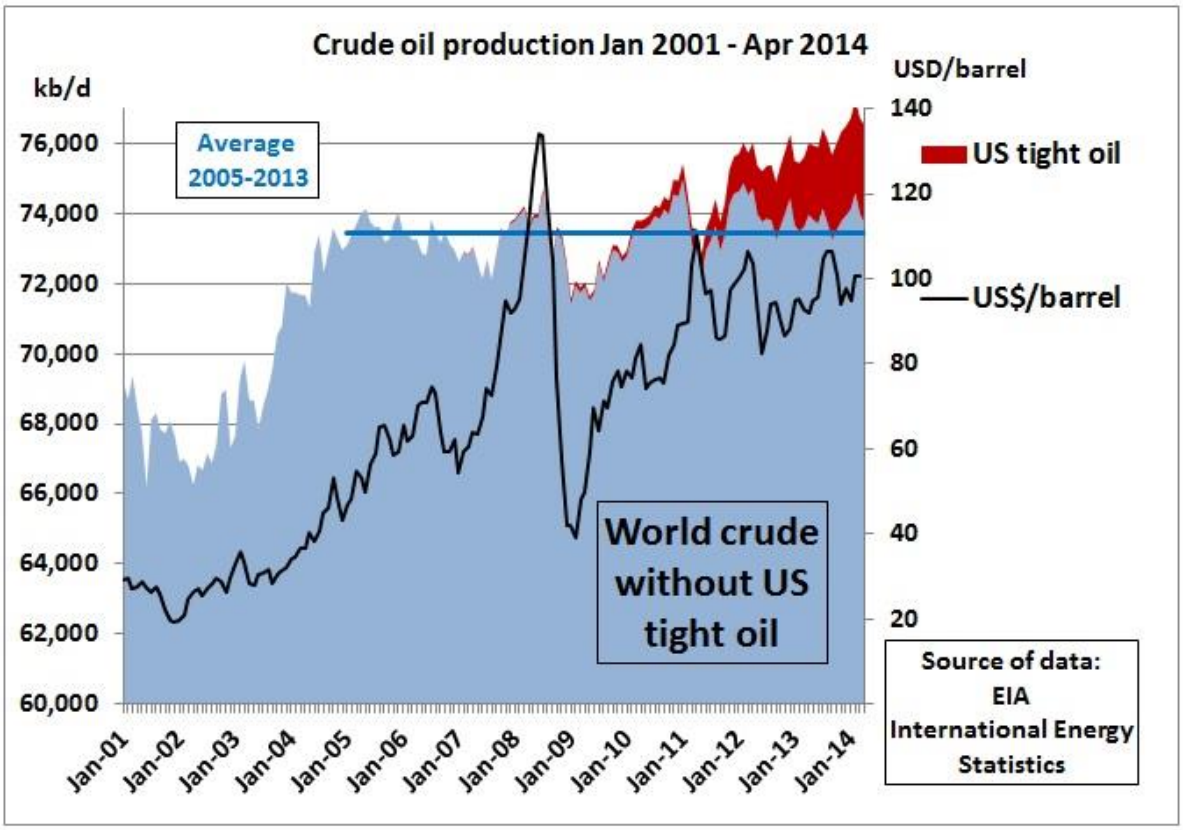


Fig 9: US shale oil sits on top of a bumpy production plateau in the rest of the world

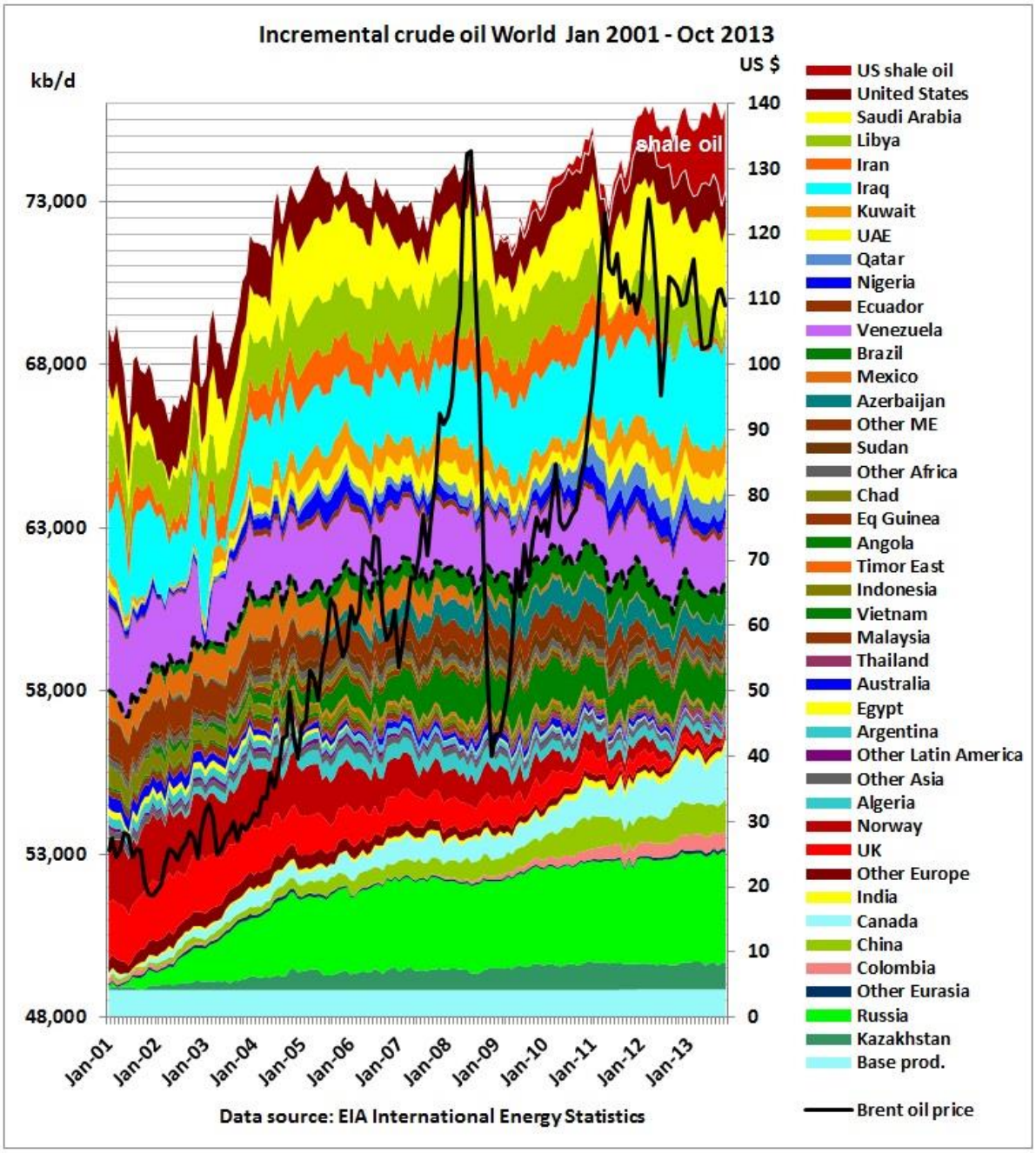


Fig 10: Incremental crude oil graph. Russia will soon peak

More details are here:

13/3/2014 World crude production 2013 without shale oil is back to 2005 levels
http://crudeoilpeak.info/world-crude-production-2013-without-shale-oil-is-back-to-2005-levels

9.2 Peak oil and financial crisis

The 1st phase of the financial crisis was triggered by the convergence of accumulating debt and an oil price spike in 2008. Crude oil production declined between 2005 and 2007, causing a recession in the US in late 2007 (supply shock). In 2008 there was a demand shock caused by China's Olympic Games.

It is important to understand the following 3 classical articles because the media are still not connecting the dots.

(1) Causes and Consequences of the Oil Shock of 2007–08
James D. Hamilton
Spring 2009
"Whereas historical oil price shocks were primarily caused by physical disruptions of supply, ***the price run-up of 2007-08 was caused by strong demand confronting stagnating world production****. Although the causes were different, the consequences for the economy appear to have been very similar to those observed in earlier episodes, with significant effects on overall consumption spending and purchases of domestic automobiles in particular. In the absence of those declines, it is unlikely that we would have characterized the period 2007:Q4 to 2008:Q3 as one of economic recession for the U.S. The experience of 2007-08 should thus be added to the list of recessions to which oil prices appear to have made a material contribution."*
http://muse.jhu.edu/journals/brookings_papers_on_economic_activity/v2009/2009.1.hamilton.html

See Fig 2 above and the author's article on the Oildrum blog in October 2007
http://www.theoildrum.com/node/3052

(2) The Global Financial Crisis:
Causes and Consequences
Nov 2009
Warwick J McKibbin and Andrew Stoeckel
"Rising demands from China (and, to some extent, India), plus a booming world economy saw commodity prices rise across oil, minerals and food from late 2004 to late 2007. The shock to the global economy from this ***commodity price boom was as big as the first oil shock in the 1970s"***
http://melbourneinstitute.com/downloads/conferences/mcKibbin_stoeckel_session_5.pdf

(3) Financial Crisis of 2007–2010

Winston W. Chang
Department of Economics
SUNY at Buffalo, NY 14260
September 24, 2010, Revised: June 30, 2011
"Following the collapse of the housing bubble the global commodity market entered its own bubble. From early 2007 to mid-2008 oil prices skyrocketed from $50 to $140 a barrel then plunged to $30 by the end of 2008. The bubble has been attributed to the flight of capital from the housing market, pure speculation, ***increasing concern over the limited supply of natural resources*** *and increased demand from growing, resource-hungry economies in Asia. With more money flowing to oil producing nations, economic growth in the rest of the world suffered under the increased cost burden."*
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1738486

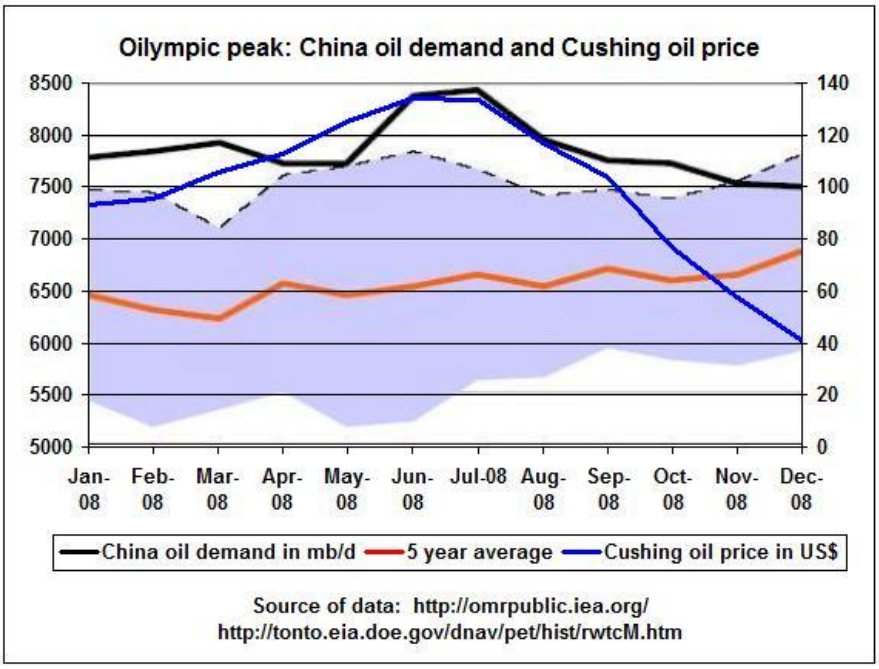


Fig 11: China's oil demand ahead of the Olympic Games

Demand shock in mid 2008: China went on the oil market with an additional 800 kb/d in preparation for the Olympic Games. The supply was forthcoming at a record price, mainly from Saudi Arabia which increased production from 9.2 mb/d in Jan 2008 to 9.7 mb/d in July 2008, just short of a theoretical maximum capacity of 10.9 mb/d. The new AFK field project was not fully operational at that time and Saudi production immediately dropped by 1.2 mb/d once demand eased, to avoid overproducing fields. In fact, Matthew Simmons' 2005 warning in his book "Twilight in the desert, the coming Saudi oil shock and the world economy" had materialized in 2008. Saudi Arabia's inability to produce oil quickly enough hit a financial system with a pre-condition of accumulated debt.

9.3 Global supply system

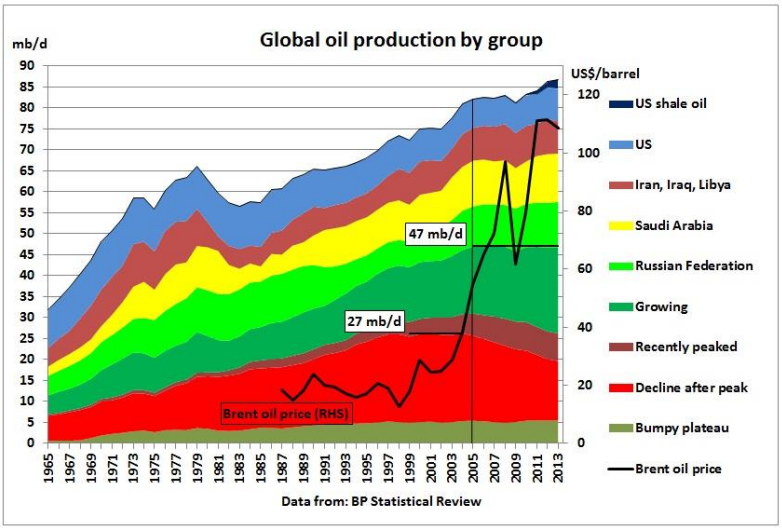


Fig 12: Oil production stacked by group and Brent oil price

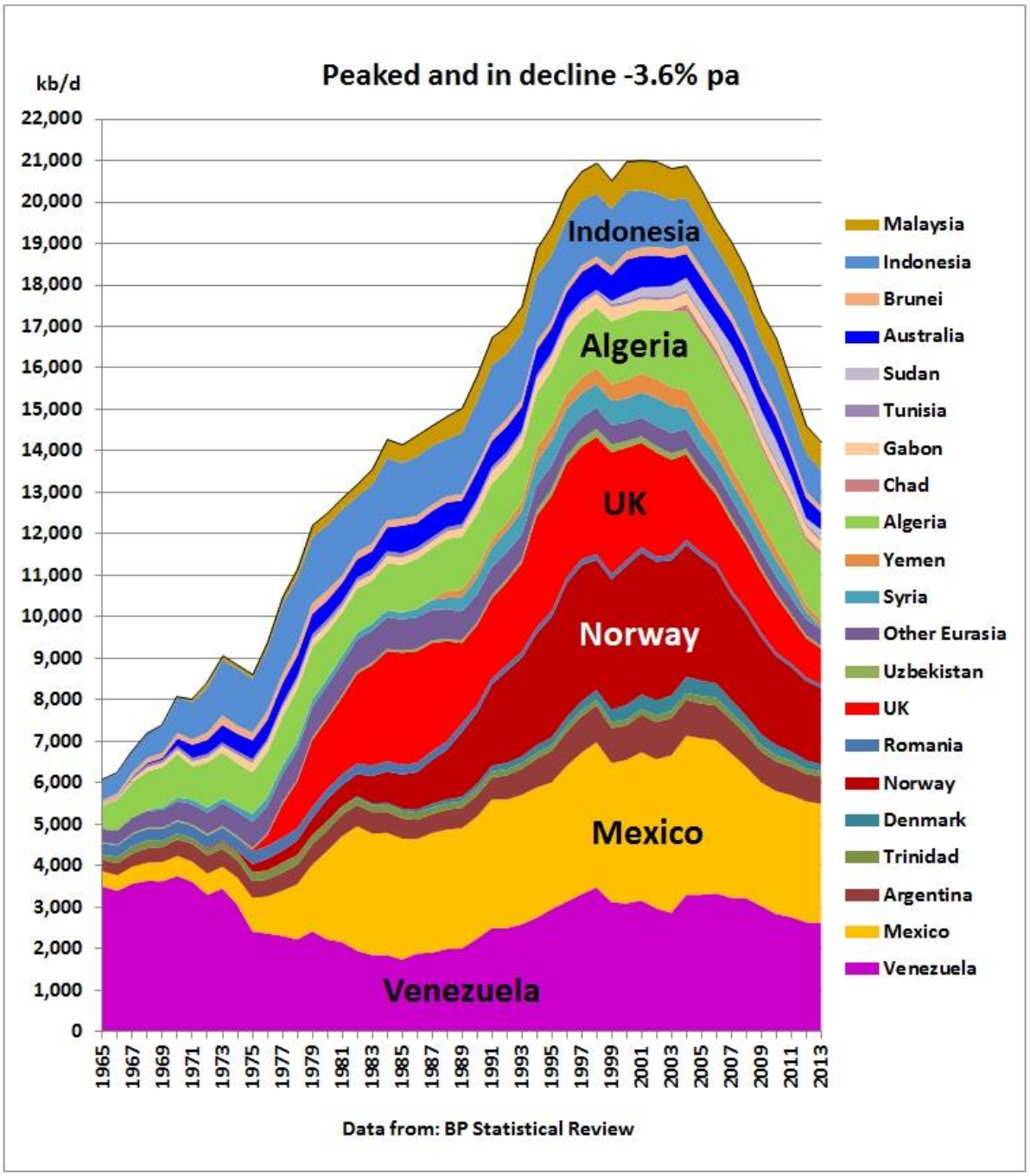


Fig 13 No quote marks around peak oil for this group of countries, including Australia. Debate is over.

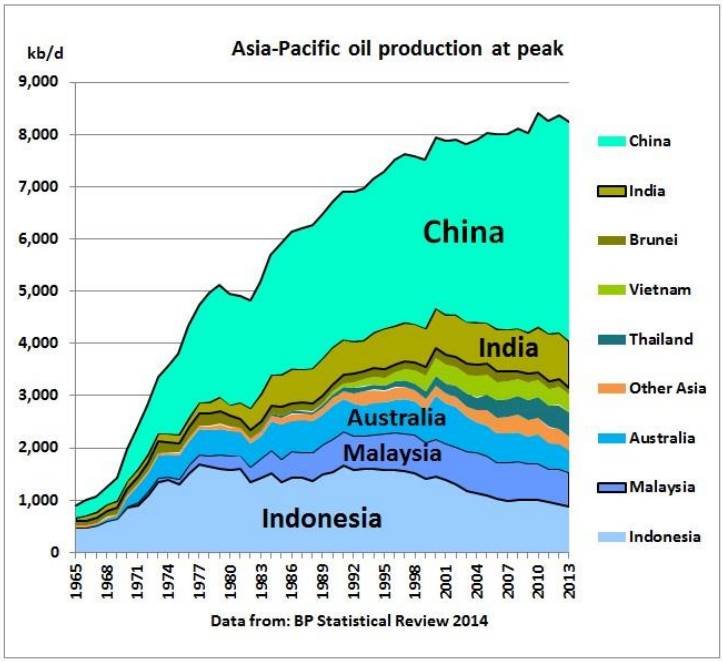


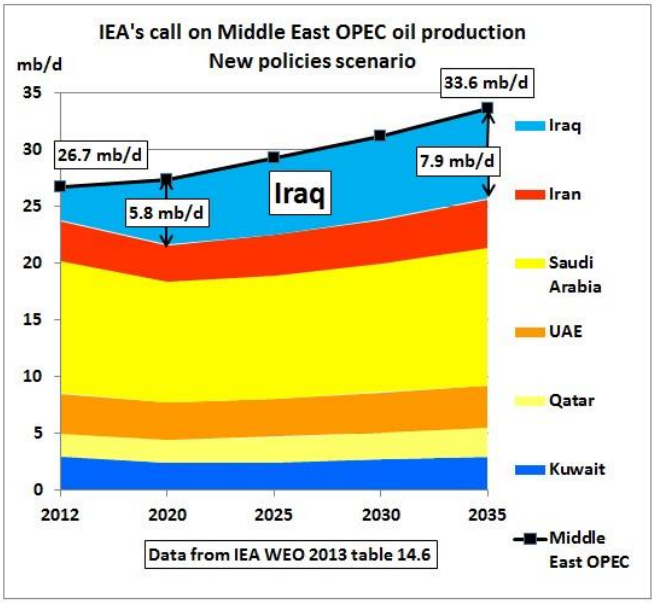
Fig 14: Asian century will last only as long as oil can be imported from the Middle East

More details in this article:

25/6/2014 Analysis BP Statistical Review 2014: Oil prices started to skyrocket when 1/4 of global supplies went into irreversible decline
http://crudeoilpeak.info/oil-prices-started-to-skyrocket-when-one-quarter-of-global-supplies-went-into-irreversible-decline

9.4 How many mb/d of Iraqi oil by 2020?

The WestConnex proponent must prove Iraq will produce 6 mb/d by 2020 because the IEA has included this in their calculations (WEO Nov 2013)



<<< Fig 15: Middle East oil

More details are here

15/6/2014 World's untested assumption on 6 mb/d of Iraqi oil by 2020
http://crudeoilpeak.info/worlds-untested-assumption-on-6-mbd-iraqi-oil-by-2020

9.5 OPEC's paper barrels

There is also the problem of OPEC's paper barrels. http://crudeoilpeak.info/opec-paper-barrels

Read this:

Saudi Aramco CEO: Oil industry 'needs timely investments'

26/8/2014

Speaking at the Offshore Northern Seas Conference in Stavanger, Norway, on Monday, Khalid A. Al-Falih said: "We must put our money where our mouth is, by making prudent and timely investments; balancing long-term objectives and short-term interests; and meeting the energy needs of the future while providing attractive investment options and delivering value to shareholders.

"At Saudi Aramco, as we solidify our upstream leadership while also diversifying our business portfolio, our investments will exceed $40 billion a year during the next decade. Although our investments will span the value chain, the bulk will be in upstream, **and increasingly from offshore**, with the aim of maintaining our maximum sustained oil production capacity at 12 million bpd, while also doubling our gas production.

http://www.arabnews.com/economy/news/620836

Saudi Arabia's official **proven reserves** are 260 Gb. This means they should know where that oil is exactly. But obviously they don't. Maybe they mean offshore like Manifa? Colin Campbell, that Irish peak oil guru advised 10 years ago that Saudi's reserves are their original reserves, not remaining reserves, so cumulative production would have to be deducted. This time bomb will explode one day, possibly at an inconvenient time.

9.6 Peak oil in dictatorships

When oil peaks in dictatorships, dictators are running out of money to keep their population happy. The 1st Iranian peak in the mid 70s under the Shah triggered the Iranian revolution and the 2nd oil crisis in 1979. http://crudeoilpeak.info/iran-peak

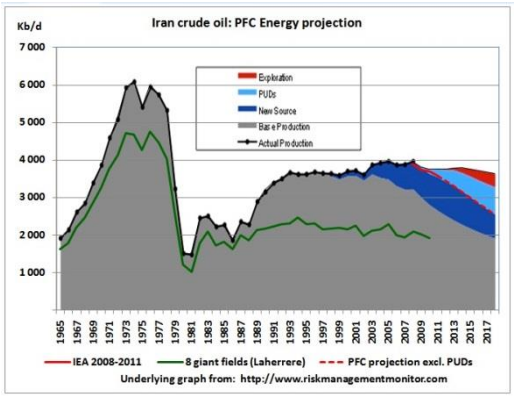


Fig 16: 1st Iranian peak in the mid 1970s

Latest example is Syria and desertification from global warming plays a role, too

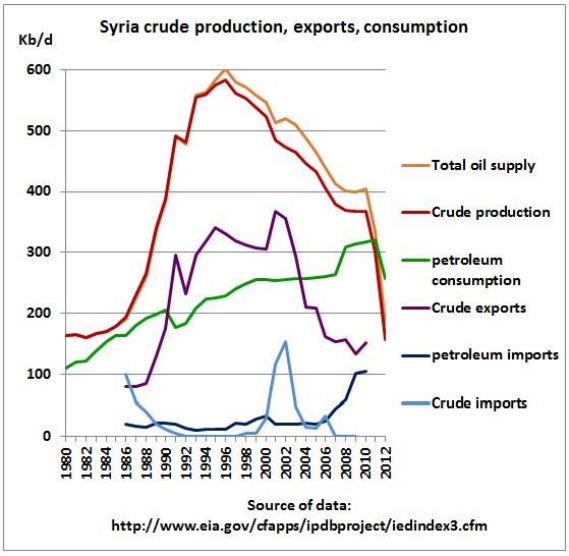


Fig 17: http://crudeoilpeak.info/syria

Peak oil, climate change and pipeline geopolitics driving Syria conflict
http://www.theguardian.com/environment/earth-insight/2013/may/13/1

Egypt (transit of 3.5 mb/d Suez canal and Sumed pipeline)

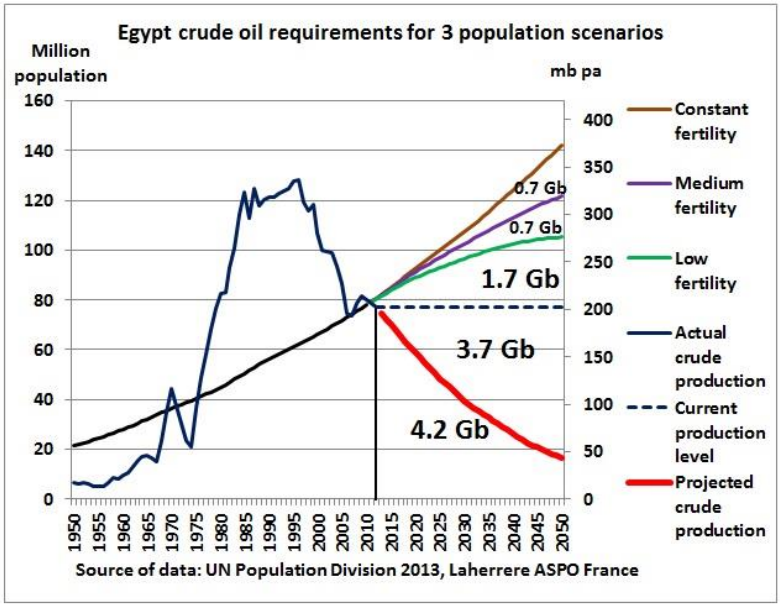


Fig 18: Egypt's oil import requirements

6/7/2013 Egypt's future crude oil import requirements for 3 population scenarios
http://crudeoilpeak.info/egypts-future-crude-oil-import-requirements-for-3-population-scenarios

4/7/2013 2/3 of Egypt's oil is gone 20 years after its peak
http://crudeoilpeak.info/23-of-egypt%e2%80%99s-oil-is-gone-20-years-after-its-peak

What's the impact on Asia? It is in the interest of all GCC countries (and the world) to support Egypt with discounted oil (so that it does not become a failed State like Sudan, Libya and Yemen). It already happens:

Saudi Arabia to gift $3 billion worth of fuel to Egypt government
11/5/2014
http://english.al-akhbar.com/node/19726

Not only is the cost of that gift included in Saudi oil prices but that oil can't be exported to Asia.

So what will be Egypt's oil import requirement by 2029?

Still want to put quotes around peak oil? Still want to build road tunnels?

9.7 Closer to home

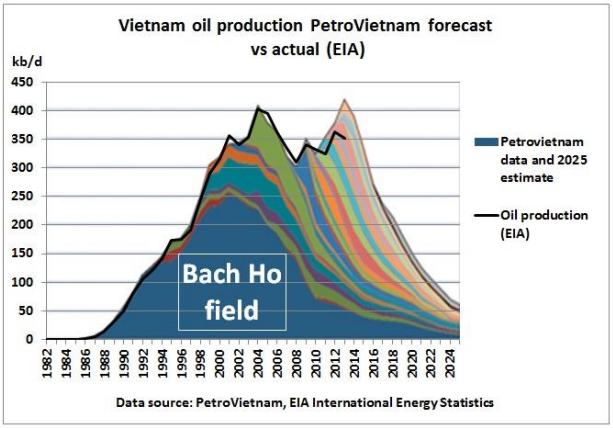


Fig 19 That explains the clashes with China. More to come

9.8 Why Australian refineries are closing

Oil industry doesn't tell the truth

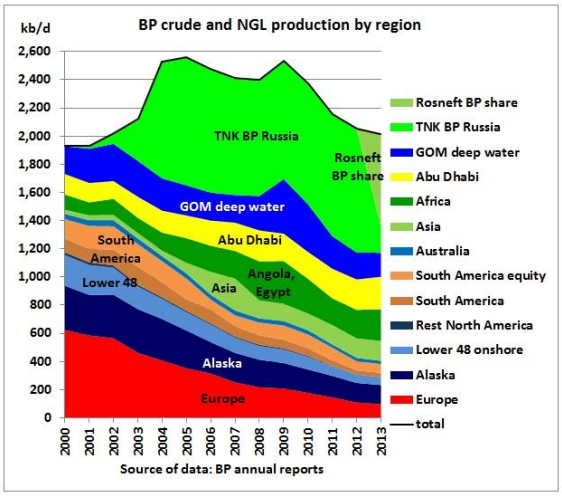


Fig 28 BP, peak oil here, too

9/4/2014 Why the closure of BP's Brisbane Bulwer refinery reduces Australia's energy security
http://crudeoilpeak.info/why-the-closure-of-bps-brisbane-bulwer-refinery-reduces-australias-energy-security

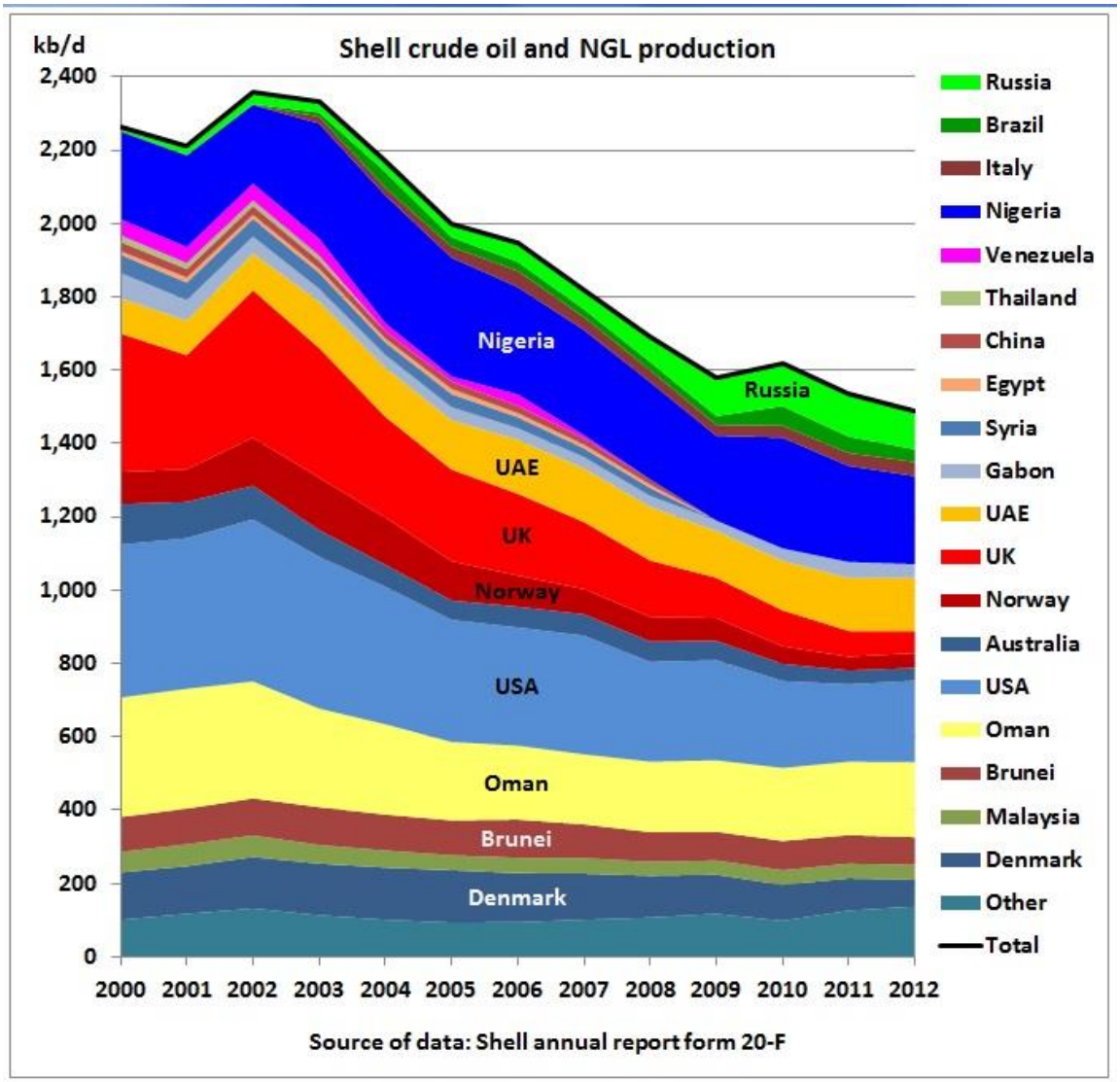


Fig 20: Shell production profile

23/2/2014 Geelong refinery sold as Shell's oil production continues to decline
http://crudeoilpeak.info/geelong-refinery-sold-as-shells-oil-production-continues-to-decline

28/8/2013 Chevron's oil production, sales decline by 5%
http://crudeoilpeak.info/chevrons-oil-production-sales-decline-5

9.9 US 2nd peak

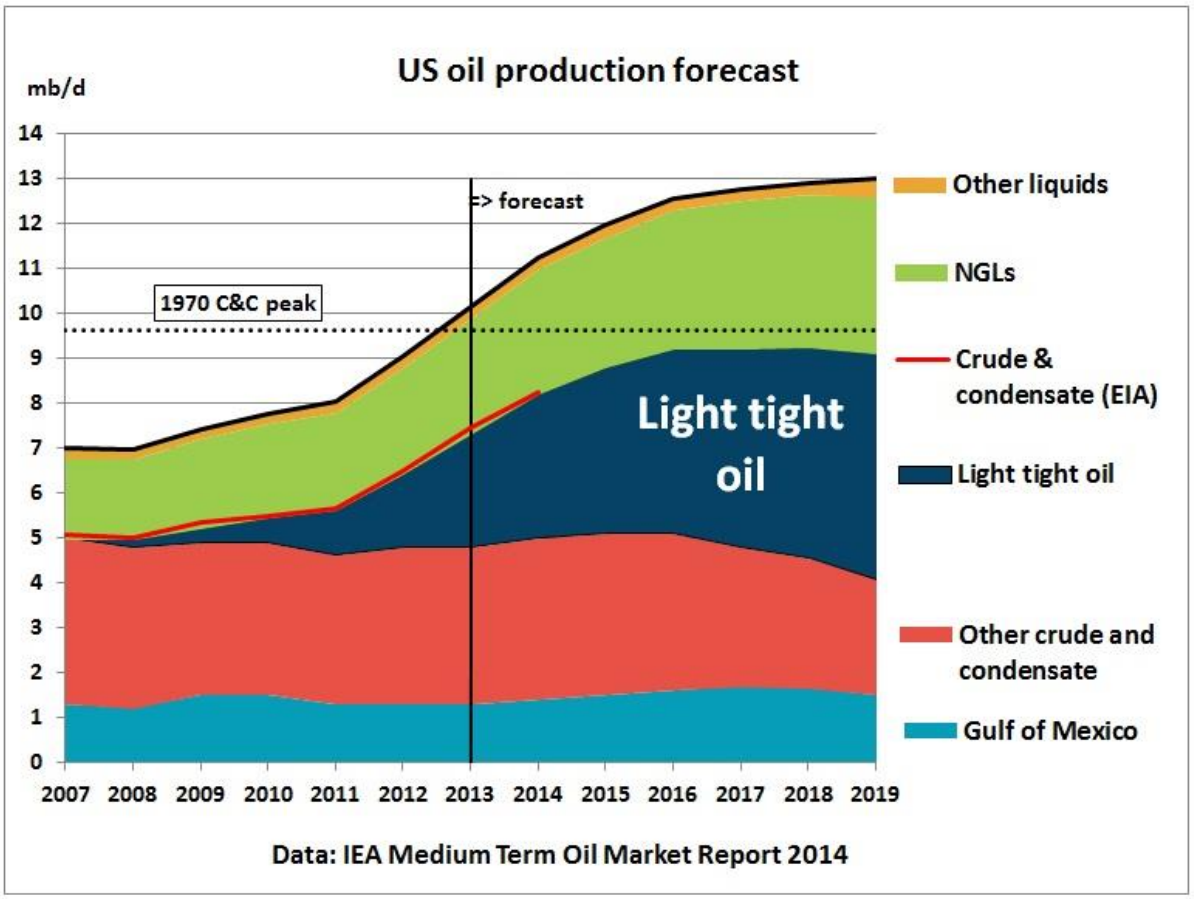


Fig 21: US 2nd crude peak starts in 2016

This shale oil (also called tight oil) is short lived – not an energy revolution - as decline rates in wells are very high. That is why US crude oil production will peak in the next years. The international energy agencies IEA and EIA know this although there are uncertainties about the exact timing. At the same time, Russia approaches peak production. And when looking at the disintegration of the Middle East it becomes obvious that there will be an oil crisis before 2020, just about when several toll-ways projects are planned to open to traffic.

Once the public learns about this, there will be a confidence crisis. That will impact on the credit worthiness of all oil dependent infrastructure.

9.10 Russia

MOSCOW, July 7 (UPI) --An anticipated drop in oil production by 2016 is expected to hurt the Russian economy, the Russian Finance Ministry said Monday.
http://www.upi.com/Business_News/Energy-Resources/2014/07/07/Russian-oil-production-expected-to-drop/4391404741593/#ixzz38Fy4lGgX

www.eriras.ru/files/2014/forecast_2040_en.pdf

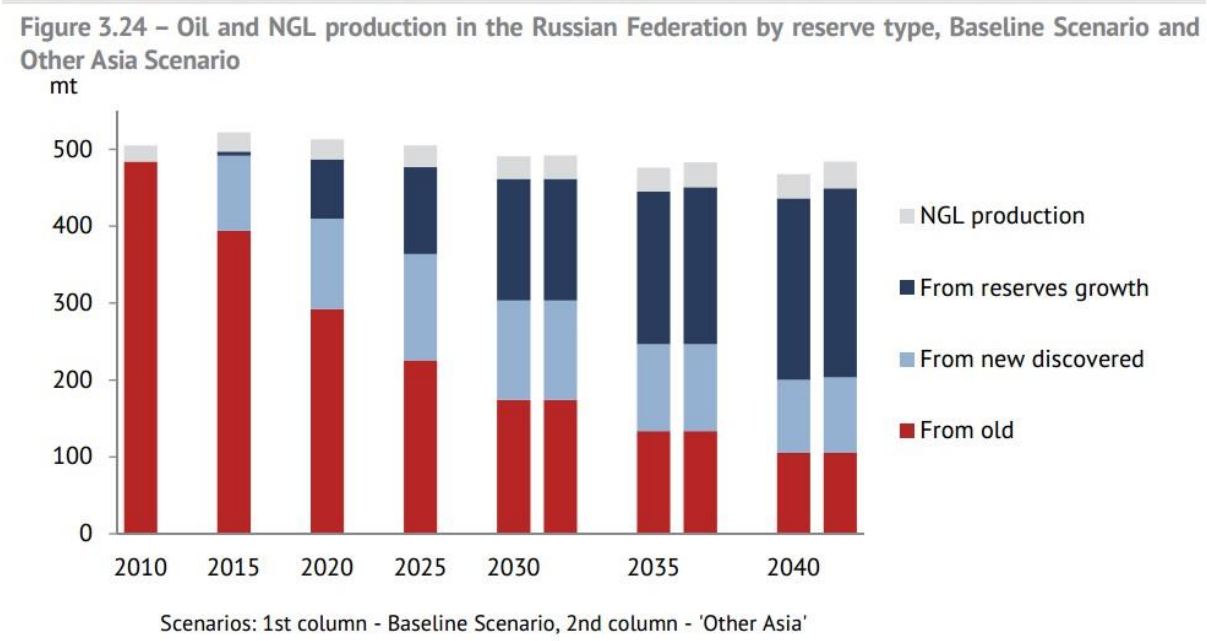


Fig 22 Sanctions will impact on green field developments

Putin is getting nervous but the West is sleeping and still wants to build new road tunnels.

What the Russian oil peak means geopolitically we can see in Ukraine.

29/7/2014 The Ukraine conflict, peak cheap gas and the MH17 tragedy
http://crudeoilpeak.info/the-ukraine-conflict-peak-cheap-gas-and-the-mh17-tragedy

(10) What should have been done in the EIS

What should have been done – **before starting work on the EIS** - was a proper energy resource analysis for the operation of vehicles using WestConnex **for the entire concession period.**This analysis would need to include peaking crude oil production, power supplies under global warming conditions and alternative fuels. For trucks, a diesel supply forecast - including an updated risk analysis - was necessary, especially as Australian refineries are closing (because oil production of IOCs is declining)

At least this peak oil analysis should have been included in the Appendix D on traffic forecasts because oil supplies and the cost of fuels will determine traffic volumes. If planners had done this it would have dawned on them how academic their traffic forecasts are.

Prepared by Matt Mushalik 12/9/2014