Australia Needs Liquid Fuel Security

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The Australian Government recently released an Energy White Paper. The most important thing it had to say was that the Australian Government was reneging on its commitment to hold 90 days of stocks of oil, as it is required to do under the International Energy Agency agreement. Honouring that treaty would cost more than $300 million per annum at the current oil price. A far more insightful document was a short article in The Financial Times published shortly after the White Paper. “In 2000, when there were eight refineries in Australia, only five per cent of fuel was imported – equivalent to less than 100,000 b/d (barrels per day). Fuel imports rose to nearly a quarter of total demand by 2010, or 320,000 b/d, as consumption increased and one refinery closed.” Royal Dutch Shell and Caltex have announced the closure of two ageing refineries near Sydney, at one stroke reducing by almost a third the country’s refining capacity. This will push Australia’s imports of petrol, diesel, jet fuel and fuel oil to 640,000 b/d by 2015 – about two-thirds of total demand. Australian energy security is at risk.

Martin Ferguson, Minister for Resources and Energy, has said that the refinery closures “will not jeopardise Australia’s energy security”. That is plain wrong. Australian energy security is at extreme risk. For the Minister to say so, however, would mean that the Government would have to do something about it. As it turns out, to solve the problem of Australia’s extreme risk in energy security, the Government does not have to physically do anything or spend funds. All it has to do is to repeal the carbon tax and allow others to do what is required. Were Australian Governments always so indifferent to liquid fuel security? Not at all. When the Bass Strait oilfields were found in the 1960s, they could not be economically developed in competition with the low price of Middle Eastern crude at the time. The solution was to impose a surcharge on the price of petrol for a number of years until the international oil price rose to above that required for commerciality.

Before the discovery of oil in Bass Strait, the Federal Government used to subsidise oil exploration. That was two generations ago. What kind of painful experiences did that generation of Australians go through that they were quite happy to subsidise oil producers and oil explorers at a time when oil was cheap and plentiful? Does Australia want to repeat those painful experiences?

Australia’s political leaders have not always been living in a fool’s paradise on the subject of liquid fuel security. In 2005, Kim Beazley, while then leader of the federal Labor Opposition asked, in an address to the Australian Institute of Company Directors, ‘As Australians queue for petrol at around $4.00, $5.00 potentially up to $10.00 a litre further down the track, the questions will be: how had our governments not seen the writing on the wall?’ Just as the oil price in Australia was once so low that oil production required a subsidy, the oil price is now high enough that a solution to Australia’s liquid fuel security problem is in plain sight and within grasp.

The solution is the development of a coal-to-liquids industry. Coal-to-liquids (CTL) requires an oil price of $70 per barrel to be economic. The oil price paid in this part of
the world is Tapis which, at December 2012, is $113 per barrel – well in excess of that required for CTL to be viable. The CTL process does not need high quality export coal. Rocks will burn in pure oxygen down to 10 per cent carbon. There is a lot of low-grade coal in Australia that is stranded due to its high ash content or high water content. The CTL process yields 2.2 barrels per tonne of coal for high-grade coal down to 0.6 barrels per tonne of brown coal. The mother lode of brown coal in Australia is the Latrobe Valley. Each billion tonnes of brown coal will yield 600 million barrels of liquid fuels. At that rate, Australia needs to consume about seven billion tonnes of coal to equal the oil that the Bass Strait oilfields have yielded. On the basis that the Latrobe Valley resource is 112 billion tonnes, that would make 67 billion barrels of liquid fuels to keep Australia’s farms and factories running. That is the natural fate of that resource.

South Africa was a pioneer of CTL in the post-World War Two era. The company that did that, Sasol, has now forsaken CTL to pursue a Gas-to-Liquids (GTL) plant in the US on the expectation that US gas prices will remain low from shale gas drilling. That is a big mistake. The international LNG market started tightening when the oil price started rising in 2004 and, by 2008, the LNG market in Asia was trading at the oil price in energy equivalent terms. On top of that, natural gas can be used directly in vehicles as compressed natural gas (CNG). So the GTL process takes an energy source that can be used directly as an automotive fuel and is priced at the oil price on the international market to make a denser fuel at much the same price but loses 33 per cent of the energy content in doing that. Natural gas has a far better home as LNG feedstock (only 6 per cent energy loss) than as GTL feedstock. GTL is a red herring for Australia.

There is a synthetic fuels plant that is pertinent to Australian needs. This is the Great Plains Synfuels plant in North Dakota. It was conceived under the Carter Administration as a response to the second oil shock of 1980. As with most Carter initiatives, the intention was good but the execution was flawed due to a poor understanding of the real world. At the time, it was thought that the US had a shortage of natural gas, so the Great Plains plant was set up to make synthetic natural gas instead of diesel and jet fuel. That perceived shortage was simply due to bad Federal legislation on the price of interstate trade in natural gas. Nobody explored for gas because it was unprofitable to produce. The shortage was artificial. As soon as the Natural Gas Act of 1938 was repealed, gas production returned. For the last 28 years, that plant has been burning 18,000 tonnes per day of brown coal, which could make 20,000 barrels per day of liquid fuels. How many such plants does Australia need to replace its current level of imports? The answer is 25 for starters. More than that and Australia can export as well. Australia will have a higher standard of living and be safer.

What are the Chinese doing about CTL? They are going gangbusters. As at mid-2011, there were eight active CTL projects in China – three operational and five under construction or planning. The total production capacity of these efforts to date is 600,000 barrels per day, which is much the same as Australia needs to install in the near term. The Chinese can be very practical people. Only 70 per cent of Chinese wind farms are connected to the power grid. The wind farms were paid for by the Europeans under carbon offset programmes, but nearly a third of them were not worthwhile connecting to the grid, so the Chinese did not bother.
At the current Tapis oil price of $118 per barrel (February 2013), Australian refined product imports at 640,000 barrels per day would cost about $84 million dollars per day. That is $30 billion dollars per annum that would be taken out of the Australian economy, shrinking it and making all Australians poorer. Instead of that bleak future, CTL plants could be built in every Australian state to create a very diverse and secure supply base. Diesel, petrol and jet fuel could be made in plants close to the markets they will serve, reducing transport costs.

There are no laws specifically stopping the building of CTL plants in Australia. Screening economic analysis suggests that CTL plants would enjoy a very high rate of return on capital. So why are they not being built? The impediment is Australia’s carbon tax. No new coal-fired power stations have been built on the east coast of Australia for years as a consequence of the anticipation of that tax. There has been discussion about forcing the closure of existing brown coal-fired power stations in the Latrobe Valley. The same Government that brought in the carbon tax is quite happily allowing and encouraging the export of Australian coal. Currently that is at the rate of 400 million tonnes per annum, which through CTL plants would make 2.4 million barrels per day of diesel and jet fuel. Just converting what Australia currently exports in the raw state would give Australia energy security for generations to come.

If the carbon tax is holding back Australia from a wealthier and far more secure future, and the carbon tax itself was instituted to combat global warming, how is global warming going? First, let’s examine observational evidence. The world is no warmer than it was 15 years ago despite eight per cent more carbon dioxide in the atmosphere. According to global warming theory, that extra eight per cent should have caused some warming. It has not. The observational period is long enough to say that this result has invalidated the theory of global warming. Depending upon how the science is done, carbon dioxide contributes to the warming of the planet, but at the current level of 392 parts per million (ppm), the effect is minuscule and is lost in the noise of the climate system. That does accord with what has happened to the world’s climate for the last 15 years. The world did warm in the second half of the 20th Century up to 15 years ago. That begs the question: what did warm the world if it was not carbon dioxide? The answer is rather obvious – the Sun. The Sun does vary in its activity and in the second half of the 20th Century, it was more active than at any time in the previous 8,000 years.

All in all, it seems that a discredited climate theory is holding Australia back from a wealthier and far more secure future. All Australia has to do to achieve that wealthier and far more secure future is to discard that discredited theory of global warming. Necessity will ensure that that will be done in any case. The global warming theory had a similar effect on the values and utility of land at near sea level in NSW. The residents on and around Lake Macquarie were particularly affected. In response, they elected a mayor in Newcastle who campaigned against global warming theory and its effect on property values. The NSW State Government took note of that and instructed the NSW Chief Scientist to issue a report stating that sea level rise was not an issue of concern. That is the first instance of global warming theory in retreat in Australia. The same principle – that global warming theory is doing too much damage to be allowed to stand – should be applied on a national scale. Australia’s CTL industry, which will be the saviour of the nation, will then flourish.