**Submission to the Senate Select Committee on Fuel and Energy**

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# The Oil Supply – Demand Outlook and the Case for an Australian Coal to Liquids Industry

Submitted by:

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# 1. Oil Supply/Demand Outlook

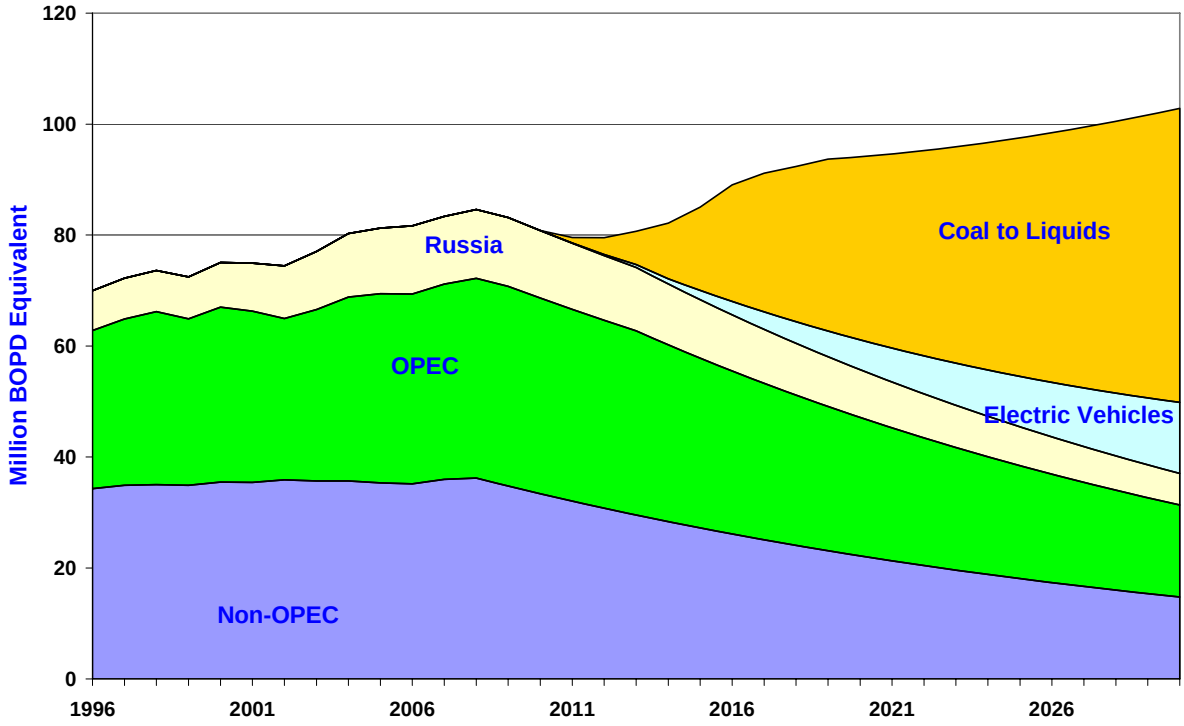


***Figure 1:*** **Projected World Supply and Demand for Oil and Equivalents to 2030**

Based on data on data from Oil and Gas Journal, this figure shows the near term tightening in the oil market due:

1. A 4% per annum decline in Non-OPEC production from 2008.
2. A 2% per annum decline in OPEC production from 2010 and then 4% per annum from 2014.
3. A 2% per annum decline in Russian oil production from 2010 and then 4% per annum from 2014.

The World faces a continuing contraction in liquid fuel supply until significant coal to liquids capacity ramps up from early next decade.

Electric vehicles based on lithium batteries are expected to take significant market share from primarily liquid-fuelled vehicles from 2010. The ramp up of electric vehicle share could be much more significant than as portrayed in this graph. The primary energy sources for the electric vehicle share will be coal, nuclear and solar-thermal.

Coal to liquids is the only technology that can stave off a severe contraction in economic activity due to the decline in world oil production.

The contraction in Non-OPEC supply is due to an number of major producing oilfields around the world experiencing unanticipated steep declines in production, for example the Cantarelle Field in Mexico.

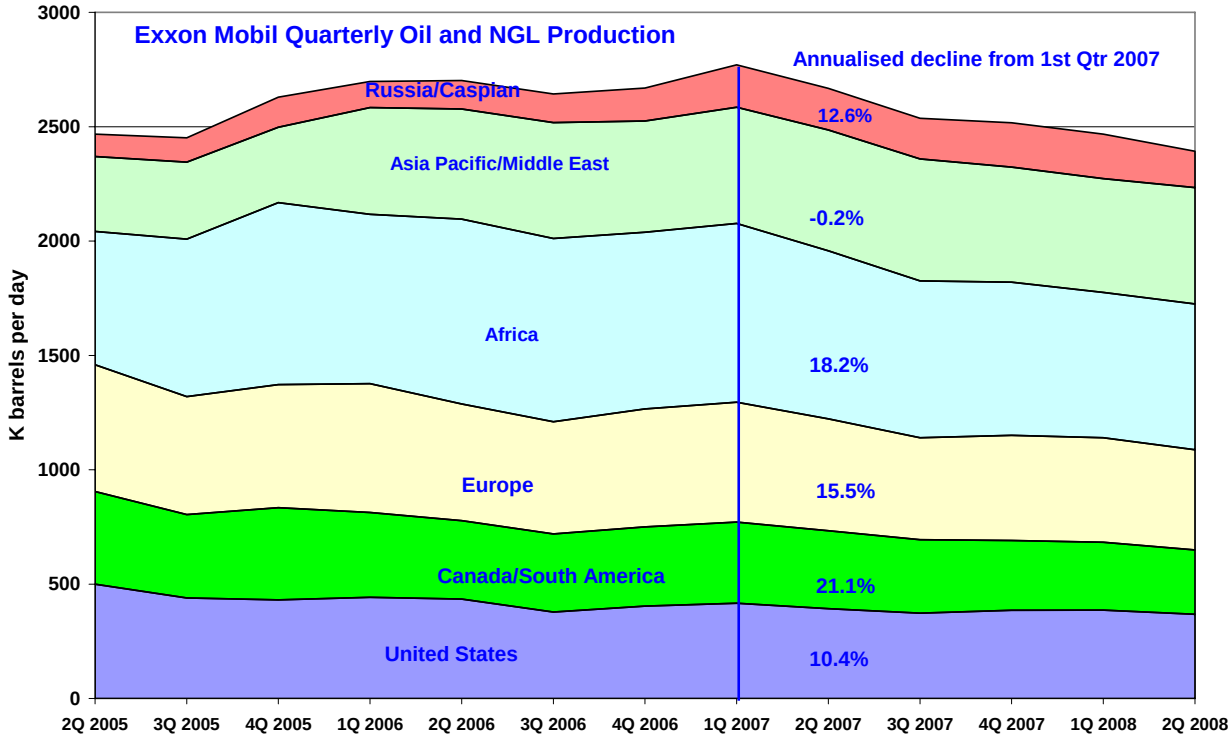


***Figure 2:*** **Exxon Mobil Quarterly Oil and Natural Gas Liquids Production 2nd Qtr 2005 to 2nd Qtr 2008-08-13**

The decline in Non-OPEC production is exemplified by Exxon Mobil, the oil production of which is now shrinking at 10% per annum. It is remarkable that the oil majors, and in fact almost all oil companies, have not been able to increase their production in response to the oil price rise of the last three years.

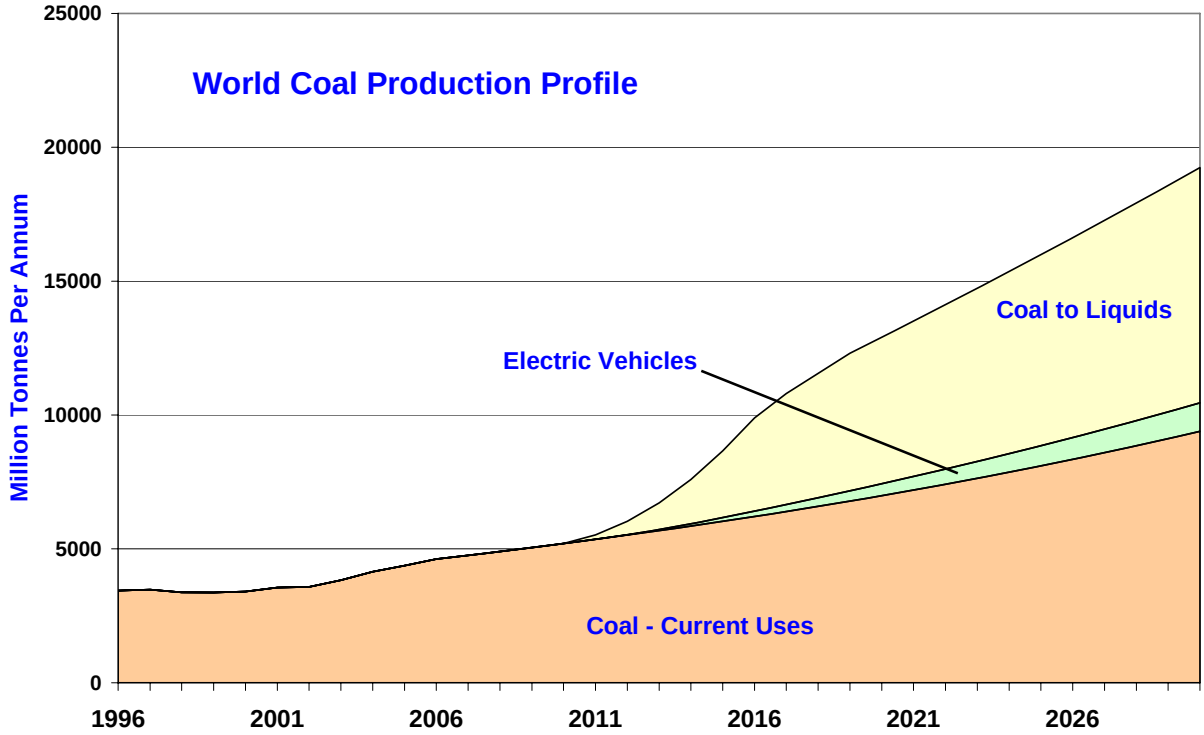


***Figure 3:*** **World Coal Production Profile to 2030**

This figure is based upon:

1. Coal production growing at 3% per annum for existing uses.
2. Coal-based power stations supplying half the demand for electric vehicles.
3. Coal to liquids projects ramping up to supply the shortfall in oil production for 3% per annum economic growth.

Coal to liquids is expect to double world coal demand. This can largely be met by using low grade coals which are unsuitable for the traded market.

## 2. The Economics of Coal to Liquids

The price of oil has now risen to well above the price at which coal to liquids (CTL) projects provide a good economic return. The breakeven price for CTL projects is about $50 per barrel. Modelling of a 50,000 bopd plant has the following results:

| | |
|---|---|
| Capital Cost: | $4,200 million |
| NPV at 10% discount rate: | $8,850 million |
| IRR: | 25% |

CTL has operating costs and capital costs per barrel similar to current deepwater oil and LNG projects around the world:

| Country | Project | Project Type | Startup | Capex $ billion | Recoverable m bbls | Capex/ boe |
|---|---|---|---|---|---|---|
| Canada | Fort Hills Project | Tar sands | 2011 | $30.2 | 4,700 | $6.40 |
| Angola | Pazflor | Deepwater oil | 2011 | $9.4 | 750 | $12.50 |
| Norway | Snohvit Area | Deepwater LNG | 2007 | $9.1 | 1,302 | $7.00 |
| Nigeria | OPL 222 | Deepwater Oil | 2011 | $5.4 | 620 | $8.70 |
| US | Wyoming CTL | 50,000 bopd CTL | 2013 | $4.20 | 665 | $6.32 |

CTL is not a relatively high capital cost process.

CTL plants date from 1926 in Germany. During the Second World War, the Germans were producing 250,000 bopd from CTL plants. South Africa became a large producer from CTL during the Apartheid era.

As a consequence of the second oil shock of 1980, a synfuels plant was built in North Dakota in 1984 to produce methane gas from lignite, at an equivalent rate of 40,000 bopd. This plant demonstrates that CTL from low grade coal does work. Thus the brown coals of the Latrobe Valley in Victoria would be suitable as a CTL feedstock, possibly also the lignites of the southern Western Australia coast.

The prospect of carbon taxes is holding back the development of the CTL industry, with severely negative effects for Australian economic security and sovereignty.

The current Australian oil imports of 150,000 bopd could be, and should be, offset by the building of three 50,000 bopd CTL plants, each consuming 25,000 tonnes of coal per day.

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