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ENERGY CRISIS: How to make Australia energy self-sufficient

by Professor Walter Starck

*Australia could be self-sufficient in energy in five years' time if the Federal Government enacted a few straightforward and affordable measures, writes scientist **Professor Walter Starck**.*

On April 20 this year, federal Treasurer Peter Costello announced that the Commonwealth of Australia would eliminate its net debt obligations the next day. Although this is good news, it is important to realise that this is federal government debt only, not national debt.

The national current account deficit is now about \$50 billion a year. The merchandise trade deficit is around \$23 billion annually and the services trade deficit adds about \$1.5 billion.

Passenger cars account for nearly \$12 billion of imports and petroleum about \$10 billion more. Imported seafood now comprises 70 per cent of consumption at a cost of \$1.8 billion. If necessary, we might do without foreign cars or imported seafood; but doing without imported fuel would impose real hardship.

Sometime this year, Australia's net foreign debt will exceed the \$500 billion level, or about 60 per cent of the nation's GDP. Foreign debt is now growing faster than the economy. As it increases, so too does risk, and this necessitates offering higher interest and/or a decline in value of the currency. Then too, an increase in interest rates may arise owing to external factors such as continued rises in US rates.

Borrowing from overseas

Unfortunately, much of Australia's debt has not gone into productive assets but into an inflated property market and consumer spending. Many large home mortgages risk becoming unaffordable, should interest rates go up by only a few percentage points. The property bubble is a fragile one and much of the money to finance it has been borrowed from overseas by the lending institutions. To expect that rates will never again go up significantly is to rely more on hope than on reason.

Australia currently imports about 30 per cent of the oil it consumes, and this is expected to rise to 50 per cent by 2010. Annual oil consumption is now over 300 million barrels. Some 41 per cent of this consumption is petrol; 12.5 per cent aviation fuel; and 40 per cent diesel, with the proportion of diesel increasing.

The South African company Sasol produces about 200,000 barrels per day of synthetic fuels from

coal using the Fisher-Tropsch process. This is about 28 per cent of that nation's consumption. Sasol has also developed an application of the F-T process to produce liquid fuels from natural gas.

F-T plants are currently planned for Indonesia, Africa, South America, China, the Middle East and the United States. F-T fuel reduces nitrogen oxide and has little to no particulate emissions (i.e., air-borne solid or liquid particles, such as soot or smoke) owing to its low sulphur and aromatic content. It also offers reductions in hydrocarbon and carbon monoxide emissions. Estimated cost of production is about one third less than from petroleum at \$70 per barrel.

Brazil last year produced four billion gallons of alcohol fuel, enough to replace 460 million barrels of oil. In Brazil, all gasoline contains at least 26 per cent ethanol, and motorists driving flexible-fuel cars can choose to use pure ethanol (E100), which is currently about half the price of the blend. Among the flexi-fuel cars available in Brazil are Commodores imported from Australia.

Recent developments in producing ethanol from the cellulosic material of plants as well as from the sugars hold strong promise for greatly increasing the yield of ethanol from a given amount of crop.

Underground Coal Gasification (UCG) is a technology whereby coal is burned in place underground to produce a gas that can be used for fuel or as a chemical feedstock. Various UCG research programs by CSIRO and others are underway and a pilot plant running a 67-megawatt gas turbine generator at Chinchilla, Queensland, has demonstrated the technical and economic feasibility of this technology. There also seems to be no obstacle to combining UCG with the Fisher-Tropsch process for a very environmentally-friendly form of converting coal to diesel and petrol.

Despite ongoing advances in oil exploration, new discoveries are falling behind consumption. At present, on a global basis, only about one new barrel is found for every four consumed. Increasing world demand is pulling against the limits of supply, and any relief that may develop in this regard is likely to be relatively short-lived. Shortfalls are more likely and they will push the price still higher. What with our abundant coal, natural gas and sugar cane, for Australia to become increasingly dependent on imported fuel would be exceedingly bad management.

Widespread use of renewable energy, and most especially its application to transport needs, is at best some decades away. Our cities, our food supply, and indeed our whole economy, depend upon liquid fuel. Its future availability and cost are fraught with very real uncertainties. Security of supply and affordability are matters of grave national importance.

With the application of proven technologies, our fuel needs for the foreseeable future could be secured in only a few years. Doing so should be a matter of national priority. If the Government cannot recognise this and get behind it, the Opposition should seize the opportunity and run with it. If it is properly presented, voters will appreciate its importance, even if some politicians can't.

Two obstacles

In actuality, government doesn't have to do much; just get out of the way. It could do this in two important ways:

- First, it could remove corporate taxes on earnings from these alternative fuels and perhaps provide healthy investment deductions for private investors as well. While this may sound radical, it really wouldn't be giving away much at all, as much of the tax revenue foregone would simply be collected at later stages as it passes into private hands or flows elsewhere through the economy.
- Second, it could remove another major obstacle by fast-tracking such development through the bureaucratic morass of environmental and other regulations.

If government were to seriously get behind this goal, Australia could be energy-independent five years from now.

At the very least, we would gain a large reduction in our trade deficit. In the only too real likelihood of some future global fuel crisis, it could mean the difference between a safe passage and a recession that could be of disastrous severity.

The choice is a no-brainer.