

PEAK OIL (PART 3)

In my first two articles for Cityscape I described “peak oil” and outlined the implications for urban planning in Australia. Many alternative fuels to oil are now being discussed. This concluding article will address the extent to which technology might come up with something in time to enable us to carry on without changing our habits.

The bottom line is - it won't. All the options have disadvantages – starting with the fact that the price of transport energy will rise – as well as advantages.

Aside from the debate about more coal-fired power stations versus nuclear ones – neither of which will help transport very much – the leading alternative fuel contenders appear to be hydrogen, biofuels, natural gas, and use of oil from non-conventional sources. There are other alternatives (eg LPG).

Hydrogen

Hydrogen is sometimes seen as the energy basis for a “post-oil” age. It is the most common element in nature, but it always exists in combination with something else. It is an energy carrier, like electricity, not an energy source - energy has to be expended to produce it.

The commercial development of fuel-cell vehicles appears to be decades away. In any case there is a natural limit to the production of hydrogen - when it requires more energy to produce than the energy it provides, is it really worth producing? The Senate Committee inquiring into Alternative Fuels said of hydrogen in its Interim Report (September 2006) that it “is not a useful option to consider in Australia’s current or medium term transport fuels mix”.

Biofuels

The main biofuel options are ethanol, made from sugarcane or grain, and biodiesel, mainly made from crops such as canola and palm oil.

The addition of 10% ethanol to petrol sold in NSW has been mandated by the NSW government from 2011. Many questions remain to be assessed – whether enough land to grow ethanol-producing crops is available, the excise position, the net effects on our balance of payments if land is switched from growing crops for food to growing crops to provide transport fuel. What will those Asian countries eat who currently depend on Australian food exports? Other food-exporting countries – like the United States – are facing the same pressures as Australia.

The aviation industry may need ethanol too – it is an alternative to refined jet fuel. To use ethanol, aircraft would need to be designed with larger fuel tanks, because it is less energy-dense than jet fuel.

Biodiesel lacks a distribution system. Nevertheless the Senate Inquiry concluded that the current national target for biofuels (350 million litres by 2010) is far too modest.

Natural Gas

Australia is endowed with large quantities of natural gas (principally methane). The technology is sufficiently mature to modify diesel and petrol engines to run on gas, but the lack of any significant refuelling or distribution infrastructure is an obstacle to its further use. Current national policy appears to encourage the use of diesel in heavy vehicles.

Non-conventional oil, CTL, GTL

Here the options are more technical possibilities than commercial ones. Substantially more greenhouse gases are produced by the processing than is the case with conventional (liquid) crude oil. Most options rely on geo-sequestration (burying the gas underground), an unproven technology.

Moreover the price of these options would be impacted by the imposition of a price on carbon dioxide emissions, something global warming is likely to dictate in future.

Summary

Perhaps the best that can be said of the alternatives is that they offer governments the chance to be seen to be “doing something” about the peak oil issue, in the face of which they are really helpless. With federal, state and local elections all due in NSW in 2007, this is not to be sneezed at!

The basic problem remains that the world is using too much oil and this is unsustainable. The only option really open to us is to reduce our use of fossil fuels – and that is something that requires time. All the alternatives outlined above should be pursued but none will make sufficient difference to save us from the need to use less energy.