

Preparing for Oil Decline

Preparation for Probable Oil Shocks

There is a great deal that can be done to prepare for the likelihood of future oil shocks and hence to ameliorate the effects when (or if) they hit us. Many possible precautions will be "no-regrets" options already justified on equity, environment, health, social or economic grounds. Australia's existing reserves of uncommitted natural gas coupled with local understanding of demand management (especially in water use efficiency and TravelSmart individualised marketing) provide an encouraging opportunity for the nation to both forecast and to weather the coming storms better than many other regions. It is particularly important that the issues be tackled seriously and urgently at all levels in the community. WA Planning and Infrastructure Minister, Alannah MacTiernan (2004) said, in opening the "Oil: Living with Less" conference "It is also certain that the cost of preparing too early is nowhere near the cost of not being ready on time."

Communication about potential solutions and their limitations

It will be crucially important that there be open and informed discussion about oil depletion. Broad consideration of the various strategies for reducing our oil vulnerability; especially their limitations and the input energy needed, the time required and the costs needed to implement them are essential precursors to effective decision-making.

Contrary to many common predictions, it is highly unlikely there will ever be a single "Magic Bullet" panacea for our oil vulnerability. A major aim should be to reduce our very high levels of automobile dependency. Some of the possible oil-use reduction and replacement strategies are outlined in Figure 5.

Figure 5. An adaptation of the scenario outlined by Swenson (1998) of the various mechanisms of bridging the coming gulf between growing current world demand for oil and the forecast decline in the production of conventional oil (Robinson (2002)).

Travel mode shifts: Individualised Marketing

Very substantial changes have already been triggered in existing urban travel patterns when people are given personalised information about the travel choices available to them. Empowering people in this way has resulted in sustained decreases of 8% to 19% in car-kms travelled. The oil saved by these voluntary travel pattern changes is very significant, and shows that reducing car-travel demand is more cost-effective than exploring for more oil.

Australia leads the world in the application of Individualised Marketing to make very significant reductions in car travel rates. Programmes have been completed or are underway in several states. WA has the most extensive record with a number of very successful and well documented programmes. The average reduction in car-kms travelled in the completed WA projects is 13% at a benefit:cost ratio of 30:1, far higher than those of most transport projects. Similar results have been obtained in Europe and the US, (Robinson (2004), Socialdata (2004)).

The TravelSmart Individualised Marketing programmes in WA have covered suburbs with some 158,000 people to date, and have resulted in the annual saving of some 115 million car-kms, or 11 million litres of petrol (John (2004), MacTiernan (2004)). Extrapolated to Australia's urban population, this would equate to about a thousand megalitres of oil saved each year. Globally, this level of travel reduction and mode shift would save each year oil amounting roughly to the annual production of Iraq, as an example.

Alternative Fuels

All alternative fuels to replace petrol and diesel have severe constraints to their introduction. Enormous volumes are required to replace a sizeable proportion of our current liquid fuel usage, and the timescale for their provision in these volumes is very short. For instance, diverting Australia's entire wheat crop to produce ethanol would replace less than 10% of our oil usage. Hydrogen is an energy carrier, not an energy source. It requires large amounts of energy for its manufacture and for its distribution. For the foreseeable future, the vast bulk of the world's hydrogen will continue to be made from oil and gas. The 'Hydrogen Economy' may well turn out to be just a pipe-dream like fusion power. Concentration on hydrogen diverts attention and resources from practical and immediate fuel conservation options. The most likely alternative for our current cheap plentiful oil will also be oil, but much more expensive and less plentiful oil.

Technological changes

It will be very risky indeed to rely on unproven technologies becoming available on such enormous scales within a decade or so, which is the timeframe likely to be required if the Big Rollover forecasts are accurate. There are around 14 million motor vehicles in Australia, and at only \$25,000 each, a fleet replacement exercise to change them to other technologies or other fuels would need the outlay of \$350,000 million, which would be diverted from other community and Government needs. Currently half the registered motor vehicles are more than ten years old, and 20% more than 20 years old. Normal fleet changeover rates are actually very slow. Half of today's new cars will still be on the roads in 20 years (BTRE (2002))

For instance, it has taken Australia almost two decades since 1985 to switch from leaded to unleaded petrol (Figure 6), a very much simpler technological change indeed than a conversion to fuel-cell cars, for instance. This change was mandatory for all new cars purchased from 1st January 1986.

Figure 6. Example of the inevitably slow rate of introduction of new technology into Australia's vehicle fleet. Unleaded and leaded (or LRP) petrol sales, Australia, from 1987 and extrapolated to 2008, (Australian Institute of Petroleum at www.aip.com.au), following mandatory introduction of emission-control engines in new cars in 1986. The introduction of hybrid vehicles and fuel cells is likely to be much slower as the technological differences are much greater.

Suggested Oil Dependence Reduction Measures

Australia is very wasteful of energy in general, and of petroleum fuels in particular, and there are a great many measures which can reduce this wastage while either improving or not diminishing our quality of life. Changes to the built environment can substantially improve transport energy efficiency if our automobile-dependent perspective is cast aside. Sadly, all too many planners and transport decision-makers give an impression of having a windscreen-shaped view of the world. There is great scope for simple and cost-effective steps to make our cities and towns far less automobile dependent and much friendlier and more efficient for walking and bicycle transport.

In its submission to the COAG Energy Markets review, BP recommended :-

"Achieve a step change in energy efficiency – BP knows from its own experience that significant cost

savings are available through greater energy efficiency. Better energy efficiency is the "low hanging fruit" of the energy challenge." (BP (2002))

There is a wide range of oil consumption reduction measures outlined by Denniss (2003), in Robinson (2002) and (2003) and by the Sustainable Transport Coalition (2004). A crucial first step would be to review and remove the inequitable perverse subsidies which fund and encourage excessive private motor vehicle use in our cities and towns.

"Perverse policies, that is policies which actually reduce the sustainability and efficiency of the transport sector, continue to be implemented, and continue to receive the support of various levels of government in Australia". (Denniss (2003))

These include 10% Federal tariff subsidies to fuel-inefficient urban 4WD vehicles; FBT regimes which reward heavy car use and penalise modest usage; and the GST which increased the price of public transport while leaving that of petrol unchanged. There are massive Federal funds to build freeways, but no specific allocation at all to build cycleways. State Governments have high fixed "vehicle ownership" charges rather than "vehicle use" charges (especially for third party injury insurance). These mean that those frugal with car use are forced to subsidise the profligate users. Local Government ratepayers are forced to pay more for planning and engineering staff who live long distances away (because of high company car package costs) than they do for local staff who are of more value to residents because of their better local knowledge. The provision of salary-packaged vehicles mean that most decision-makers do not pay directly for their petrol and hence tend to have an automobile-dominated outlook. Even supermarket chains like Coles and Woolworths now force shoppers who use cars only rarely to subsidise the gas-guzzlers due to the inequitable petrol discount schemes, funded by increased supermarket food prices.

Like BP, the author recommends starting with the low-hanging fruit, of simple good engineering and urban planning to end the addiction to continual expansion of facilities for motor vehicles. For example, the overall disjointed and low standard facilities for pedestrians and bicycle transport users are an indictment of past and current planning and engineering practices throughout Australia.

People must look now towards evaluating the oil shortage scenarios

outlined, so there is much more information on which to base the crucial decisions which must be made soon. Making decisions by default, using the current business-as-usual forecasts will prove extremely costly to nations, communities and individuals.

There is enormous scope for economic gains and for the avoidance of serious losses if the community, the professions and governments can turn away from car-dominated thinking. People who take notice of the oil storms now appearing on the radar screens will be far better equipped to help the community survive the large changes that are very likely to sweep through Australia in the near future.