



People for Ecologically Sustainable Transport

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Surviving peak oil and decarbonising the economy during an economic recession and toxic debt requires an innovative carbon tax .

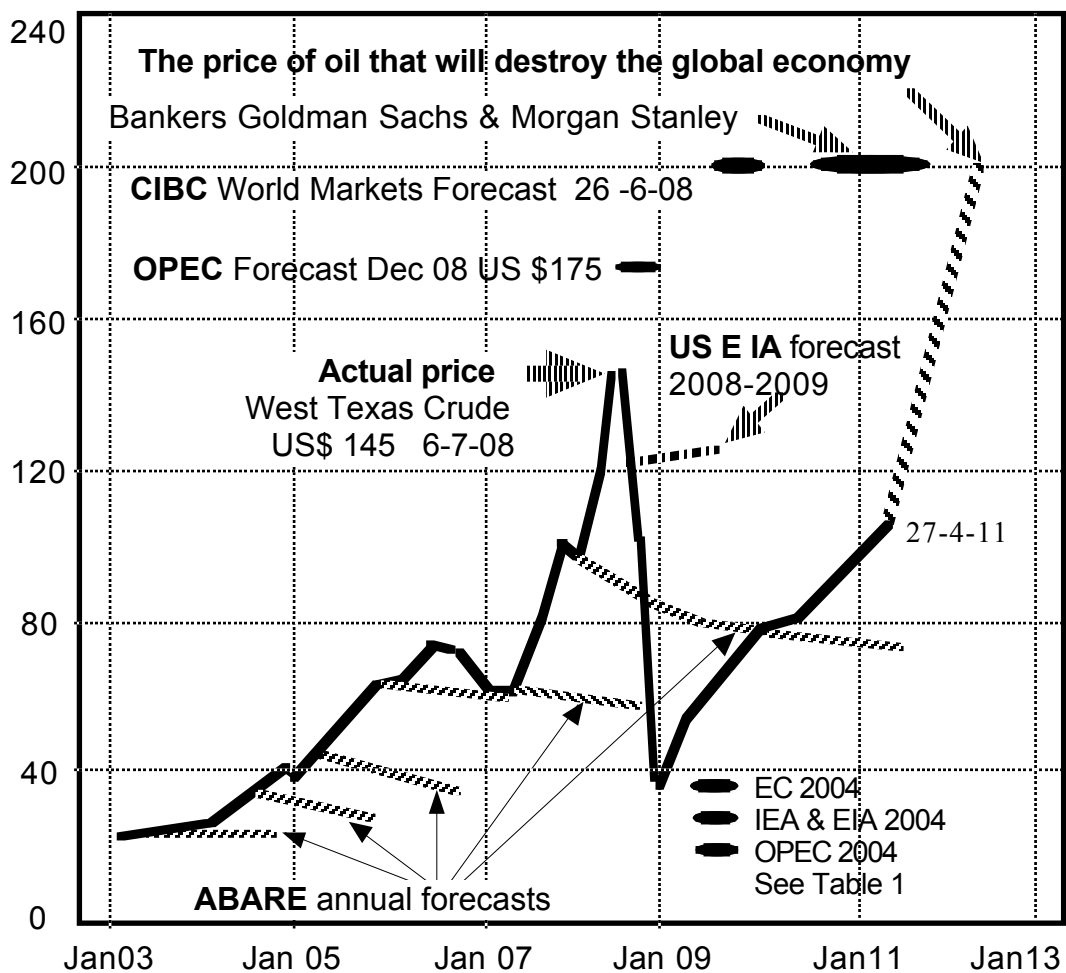


Figure 1. ABARE's recent oil price forecasts reflect the 2004 forecasts of the IEA , US, EIA and OPEC for 2010 and failure to model the consequences of a deep recession till 2012

PEST Submission to the Inquiry into Carbon Tax

1. Introduction

A sound tax system that changes behaviour is needed to create an economy that is ecologically sustainable and to cope with the negative synergies of climate change, peak oil, and an unstable world financial system that threatens our national security. Underlying these threats is the fact that the ratio of private debt to GDP is now more than double the level that triggered the Great Depression. Australia's current level of private debt is now 160 percent of GDP. when in 1929, the ratio was 80%. The growth of toxic debt, like the growth in oil dependence and carbon dioxide emissions, is not sustainable. The existing tax system is part of the problem and not part of the solution (Keen, S. 2010)

The transport sector is increasingly dependent on foreign sources of crude oil and is the fastest growing source of carbon pollution. There are more than 16 million registered vehicles on Australian roads; increasing car ownership owes its growth to energy derived from crude oil and is almost entirely dependent on it. There is no tax silver bullet to reduce our addiction to imported crude oil – instead we need a package of carbon taxation measures to reduce per capita oil use in an equitable way to cope with the inevitable shortages and with climate change which is a threat to both global and national security.

The failure to predict future oil prices over the last five years by the world's major energy and transport agencies should have been anticipated (see figure 1). Nearly all financial and political leaders, neo-conservative free traders and big oil, energy and transport consultants ignored the geopolitical and geophysical realities underlying the volatile growth in the price of oil in the last three years. Whether or not this would prevent the wheels falling off the world economy is still in doubt. Just as the consequences of peak oil are still in doubt; reflecting the level of uncertainty and incompetence in high places.

Until 2005, in the developed countries, asset values, national GDPs and world oil production had been assumed to keep on growing steadily for the next 30 years without any risk of a major economic depression. By 2011 we see these unsound assumptions challenged by reality. Australian forecasts of the growth of oil demand were merely copycat projections of the world's major energy agencies, particularly the International Energy Agency (IEA).

Australia may have half the proportion of toxic debt as the U.S. but it is just as vulnerable to future oil shortages. Figure 1 (Cover) shows the inaccurate forecasts of oil prices by the Australian agencies ABARE and BTRE, by the International Energy Agency and by OPEC within the last five years. Also shown are forecasts in 2008 by leading US banks and financial consultants predicting that oil prices could increase to US\$200 a barrel by 2010. Indeed, the price of crude increased to US\$147 in July 2008, more than five times the price of crude oil in 2003. (ABARE 2005)(BTRE 2005)(CIBC World Markets 2008) (Ward 2006). On April 27 the Australian oil price had ridden up to US \$108 per barrel.

To make the situation worse the Victorian and NSW governments have been changed and state planning and road agencies continue to ignore the coming decline in world oil production and to take this into account in transport and land use planning. Commonwealth and state governments have failed to recognise the possible need to ration oil for essential purposes within the next decade.

Worse still, the rise of petrol prices since 2003 has increased the demand for rail passenger transport in Melbourne and Sydney. In 2011 they are incapable of safely satisfying the demand for more rail services for travel to and from work.

The rail network and express bus network need to be extended into outer suburbia as an absolute necessity on social, environmental and equity grounds. If this does not happen the people living in outer-urban and rural areas will be disadvantaged. The price of food and other products which embody oil products, such as plastics and fertiliser, will also rise. Maps showing those suburbs most at risk from high oil prices in the capital cities are available (Dodson and Sipe 2008).

The main objective of this submission is to advocate the need for carbon taxes to reduce the dangerous level of oil dependence and encourage investing in ecologically sustainable transport infrastructure that increases walking, cycling, high occupancy public transport and shared motor vehicle use. Adopting New EU regulations for electric bicycles (Parker, A.A. 2011). Investment in High speed inter capital city trains is also needed (Zukerman, W. 2011)

The practical way to adapt to the inevitable decline in world oil production is to risk manage the threats of oil depletion, toxic debts and climate change together. The good news is that the coming Garnaut Report sets out most of the sound and practical transport and other options to decarbonise the economy. This submission provides more detail on the public transport, bicycle, electric bicycle, taxation incentives that are necessary as part of a carbon tax system.

The 'Inquiry 'Into Carbon Tax' should also recommend funding for research into more efficient use of renewable energy and thorium instead of uranium in nuclear reactors for efficient electric power production. In a decade or so electricity from black coal power stations can be replaced with even cleaner black coal power stations more efficiently using waste heat and water. Carbon capture is coming (Haszeldine & Scott 2011) but instead of shoving our CO₂ emissions underground - we should also recycle CO₂. Several companies have proposed turning cement making on its head, so that it captures more CO₂ than it now generates; cement now produces around 5% of all Australian CO₂ emissions. (MacKenna, P 2011)

This research could be part of multi national effort with Russia, India, and in 2011 China. All have plans to use thorium for their nuclear power reactors, partly because of its safety benefits. (Shiga David 2011). The largest new U S giant uranium reactors in South Texas have been dumped because of safety concerns about the nuclear disaster in Japan ; writing off \$A 315 million already invested. (Wald, Mathew.2011)

The US from 1964 to 1969 used Thorium-232 for breeding nuclear fuel – uranium-233, for example, in the molten-salt reactor experiment (MSR) However most of the US test reactors were closed down as their primary concern was producing nuclear weapons. It is clearly time for the nuclear power generation to shake off its military past (Editorial New Scientist 2011)

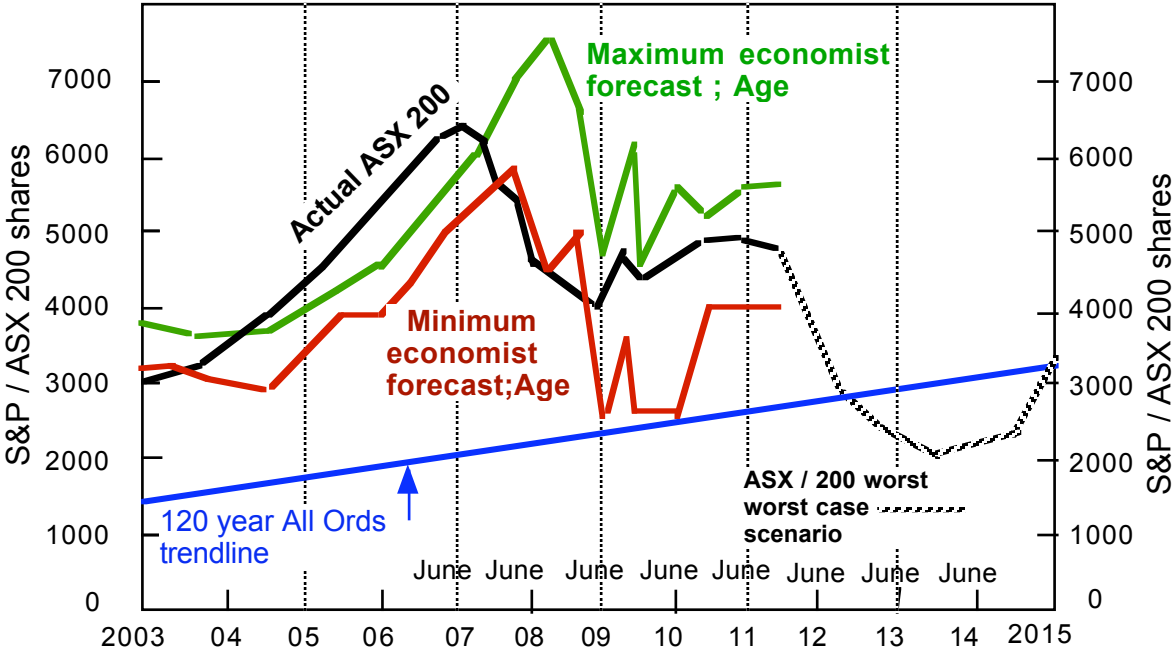
Thorium nuclear power reactors, are needed because they are safe and can be used to replace coal fired power stations to reduce CO₂ emissions to a level that does not produce a genocidal increase in global warming. Without these reactors to bolster the development of renewable energy, the preservation of a democratic and frugal but healthy way of life will be impossible.

Given the world-wide growth of rampant consumerism and population growth, where are the fresh water, energy, plastic, metal, wood, meat, fish and fowl and depleting rare earths going to come from ? "Peak everything" is on its way Carbon taxes and other measures are needed to address this problem. Despite repeated pledges to phase out fossil fuel subsidies and criticism from some quarters that government support for renewable energy technologies is too generous, global subsidies provided to renewable energy and biofuels are dwarfed by those enjoyed by the fossil fuel industry.

2. Computer modelling that ignored the complexity of the real world

The US and EU economies are going ‘belly up’ and it is only a matter of time before other economies like Australia and China go under. Figure 2 shows the decline of the S&P/ASX share price index and it is likely that that will bottom out in 2010 and then it will take five years to get back to the 120 year All Ords trend line. Note the inaccurate forecasts by 20 or so economists of the actual All Ords index from 2003 that are published every six months in the Melbourne Age.

Figure 2. Comparison of large groups of economists high and low forecasts of growth of the S&P / ASX shares from 2003 to 2011. And the authors estimate of the worst case scenario from 2011 to 2015



Data source: Melbourne Age 6 monthly Economic Surveys. Sydney Stock Exchange long term 120 year “All Ordinaries” smoothed trend line.

The former Commonwealth Greenhouse Office (AGO) estimates of future CO2 emissions are based on computer models that use low oil prices and a stable economy as their input to calculate high levels for future oil demand in transport to the year 2030. These models are all flawed because they fail to take into account the low or zero economic growth that will result from toxic debts and high oil prices. In 2011 the only certainty is that increasing oil dependency increases the risk of an economic depression in the US, EU and Australia which could then reduce the demand for oil and reduce CO2 in the most painful way possible.

Whether or not this would prevent the wheels falling off the world economy is still in doubt. Just as the consequences of peak oil are still in doubt; reflecting the level of uncertainty and incompetence in high places. The energy watchdog (IEA Oct 1010) lifted its forecast for world oil consumption but played down fears that prices will top 100 US dollars a barrel. They stated that global demand was expected to reach 88.2 million barrels a day in 2011 but by April 27 it was \$US 108.

This submission also details the failure of government agencies to predict increases in the price of oil in a stable financial environment.

No account was taken of the invest in renewable energy resources as recommended by the International Energy Agency (IEA 2008).

2.1 Negative synergies with the toxic debt crisis in the US, the EU and Australia

The European Central Bank (ECB) will probably take a dim view of the IEA's proposal to spend many trillions of Euros on alternatives to oil. The ECB has been directing all of its energies into deleveraging the dangerous levels of debt in the European banking system. If Europe's deleverage gets out of control the global credit crisis will get dramatically worse and put an end to any hope of new investment to reduce oil dependency and a painless reduction of carbon emissions.

Australia has far less toxic debt to deal with and the banks have been more responsible so it may be possible for Australia to fund and create an oil conserving infrastructure. According to ANZ chief executive Mike Smith :-

Australia's Big Four banks are among just 18 in the world given a AA rating by Standard & Poor's, while all Australian banks rated by the agency are BBB or higher. The Australian Prudential Regulation Authority (APRA) has in the past been considered heavy-handed by the banking fraternity, but as more lightly regulated banks in the US and Europe are in trouble, its diligence in policing authorised deposit-taking institutions is paying off. APRA says its role is not to eliminate all risk in financial services, which is necessary for any enterprise that seeks a return, but is instead to "ensure that those financial entities that we regulate meet the promises that they make to depositors" (Sharp 2008)

Global oil production has levelled out since 2005 and peaked, in 2006/11 despite significant investment and rising prices. The infrastructure and carbon tax challenge for Australia is to provide the means to enable communities to develop resilience and self-reliance and to use less energy derived from crude oil or coal for transport and electric power.

3. Gas as transitional fuel in gas/electric hybrid vehicles & power generation

The Carbon Tax challenge is to discourage wasteful activity and encourage the use of gas as a transitional fuel. Now more gas is becoming available with the new mining techniques that release gas from rock and shale formations underground. Horizontal drilling and explosive fracturing can release far more gas and some more oil. Coal may be history but in the next decade renewable energy has only a minor part to play compared to the use of gas as a transitional fuel in gas/electric hybrid cars and trucks and replace ageing brown and black coal power stations

The best use of the 450 years proven reserves of Victoria's brown coal may come from replacing the oldest inefficient brown coal power stations and/or or if the Calera \$40 million project In the Latrobe valley is successful in extracting CO₂ and converting it to make solid calcium and magnesium carbonate and bicarbonate minerals that can then be used as valuable building materials. (Bus Age (Energy and Emissions) P 11 28-4 2010).

The use of all forms of gas as a transitional fuel for power stations which can be switched on and off when electricity demand is low or when temperatures rise and millions of air conditioners switch on would conserve energy . Another option is gas /electric hybrid cars and trucks which would save even more more oil. Electric bicycles and e-scooters, of course use so little electricity compared to electric cars that gas fired power stations would make them even more energy efficient.

In the longer term electric bicycles and e-scooters with 36 volt DC ion lithium batteries charged from roof top 36 or 40 volt DC solar cells would be the most sustainable powered road vehicles. This could also be done one with commuters' electric cars parked and charged during the night from mains electricity but running on battery power during the day.

Another possibility In Victoria is reducing peak electricity load by buying a large brown coal fired power station but only firing it up when summer air conditioners and fans are turned on during the severe fire risk periods. In January and February in 2009 more older Victorians died of the heat that in the bush fires. Hence the need to avoid brown outs at the hottest times.

In future with serious risk of more drought enhanced bush fires In Victoria In NSW , SA and WA means that gas fired power stations need to replace black coal fired power stations as they wear out.

However, there is a serious ground water pollution problem with gas mining systems using shale rock fracturing. Toxic water getting into the aquifers could reduce food production in some states. That is not the only problem but long term food security because gas wells and coal mines have a life span of just 25 years, but often farms and vineyards have been productive for over a hundred years. The reality is that Australia has no shortage of coal and gas but we have built over so much productive agricultural land and need to protect what is left which could be productive for the next 100 years.(Cranson. Grigg. Murphy 2011)

Time Magazine front cover points out natural gas from shale rock can provide clean and abundant energy and the world and can solve the energy crisis The gas dilemma comes from the significant environmental and social costs . Can the energy Industry be trusted to deliver the goods so that e very one benefits? (Walsh , Brian 2011)

Table 1. 2010 value of production: mining and farming by state and territory

STATE	VALUE MINING	VALUE FARMING
W A	\$57bn	\$4.6bn
QLD	\$36bn	\$6bn
NT	\$4.2bn	\$0.4bn
TAS	\$0.5bn	\$1.5bn
NSW	\$14.5bn	\$5bn
SA	\$2.7bn	\$3.3bn
VIC	\$6.5bn	\$6bn
AUSTRALIA	\$121bn	\$27bn

Source; Week end Australian Financial Review.(Cranson. Grigg. Murphy 2011)

The carbon tax challenge for Australia is to keep the mining companies off prime agricultural land and do more R &D to prevent shale rock fracturing from polluting aquifers under good farming land or providing fresh water for rural communities and towns. Victoria in the past had the miners and the farmers union working together and both NSW and Victoria will be doing so in future. (Cranson. Grigg. Murphy 2011).

Electric cars can make use of power station down time and the potential electric car market is estimated at 200,000 a year. All the big car manufacturers will be producing electric cars in 2011: Nissan, General motors, Volkswagon, Mitsubishi, Mercedes, Ford, Renault and Hyundai. Australia has abundant renewable energy and it is largely untapped. The carbon tax challenge for Australia is to encourage the use of electric vehicles, petrol electric hybrids, and gas electric hybrids. (White, Louis 2011)

4. Ensuring the safe disposal of uranium waste and use thorium nuclear reactors in Australia.

The statement by Tanaka that the International Atomic Energy Agency (IAEA) is the responsible body for assessing the long term availability of future uranium supplies is perhaps an unreal expectation. The IAEA is currently starved of funds and is in no position to take on that responsibility. Ernesto Zedillo chaired the international commission that was asked to look into the future of the IAEA which has been responsible for maintaining the global nuclear order for fifty years, but is now struggling to do its job because of a chronic lack of resources. He said that :-

“My colleagues and I were impressed by the agency’s technical competence, whether in assessing Iran’s nuclear program or helping to fight hunger by using nuclear techniques to breed more resilient varieties of rice. But we were frankly shocked to learn that the IAEA, one of the most respected international organisations, has been operating virtually on a shoestring for nearly two decades. The cost to the world of a single act of nuclear terrorism or a serious accident in a nuclear power plant would be incalculable. In contrast, the cost of strengthening the IAEA to help prevent such catastrophes is modest. The resource situation of the IAEA is now critical. Years of zero growth policies have left the organisation with a failing infrastructure. Vital elements of its work - for example nuclear safety and security - are funded largely on an unpredictable and unstable voluntary basis.” (Zedillo 2008)

Ensuring safety in the use of nuclear energy and the security of nuclear and other radioactive materials is important. Unless the IAEA is given adequate human and financial resources it will be unable to properly fulfil this crucial role. The Australian government, before investing in nuclear infrastructure, needs to satisfy itself that the US, the EU and China ensure that the IAEA gets the A\$135 million it needs to do what it can do well. (Zedillo 2008).

The IAEA needs to be a partner in the multinational R&D program for the design and testing of thorium nuclear reactors.

The carbon tax challenge for Australia is to have a Swedish style tax on uranium production high enough to sufficiently cover the safest and costly means of disposing of the radioactive waste produced from Australian uranium used in nuclear reactors overseas. This uranium waste disposal in Australia should be in accordance with existing Swedish engineering and radiological safety standards.

Australia with 20% of the world’s thorium resources needs to be part of multinational R&D program with China, India and the IAEA for the design and testing of thorium nuclear reactors. The carbon tax on thorium needs to be negative, that is providing a funding incentive to the R&D program. The current policy of opposing the building of uranium nuclear reactors in Australia should continue. However the design and testing of thorium nuclear reactors for power generation in Australia is a planning policy that could be built into carbon tax proposals and could be acceptable by both political parties.

5. OIL DEPLETION: Bureau of Transport and Regional Economics (BTRE)

Australian bureaucrats have always had an oil addict's state of mind induced by gross dependence on oil which is best described by James Howard Kunstler:

We are now hobbled by a tragic psychology of previous investment – that is, having poured so much of our late - 20th century wealth into this living arrangement – this Happy Motoring utopia – we can't imagine letting go of it, or substantially reforming it.

Whatever the reason, the preservation of a stable democracy depends on conserving oil for essential purposes. Australian government agency forecasts of falling oil prices have been consistently wrong for five years.

The Bureau of Transport and Regional Economics (BTRE) was the Commonwealth agency responsible for providing advice to the government, motoring organisations and state government agencies responsible for long term planning. In 2005 the BTRE did a review of the peak oil debate entitled "Is the world running out of oil: working paper 61" which shows that the BTRE was dependent on the forecasts of international energy agencies (See table 2).

Table 2 Oil price forecasts for the period 2010, 2020 and 2030 (US \$ per barrel)

Government or intergovernmental source	2010	2020	2030
International Energy Agency (IEA).	22	26	29
Energy Information Agency (EIA); US Department of Energy.	23	25	
European Commission (EC)	28	33	40
Organisation of Petroleum Exporting Countries (OPEC)	19	19	
Institute of Energy Economics Japan (IEEAJ)	24	27	
Centre for Global Energy Studies (GGES)	20	15	

Source: (BTRE 2005 working paper 61. p. 24).

The most powerful of these agencies was the International Energy Agency (IEA) which predicted that the price of oil in 2010 would be only US\$22 a barrel, US\$26 in 2020 and US\$29 in 2030. (See table 2) These over optimistic forecasts were the reason IEA's previous recommendations for an "Australian Strategic Oil Reserve" were ignored by the Howard Government. The Tax Review needs to recommend creating an "Australian Strategic Oil Reserve".

The US Energy Information Agency 2010 forecast was US\$23 a barrel and US\$25 in 2020. The Organisation of Petroleum Exporting Countries (OPEC), which owns 77 percent of the world's proven oil reserves, forecast only US\$19 a barrel for 2010 and 2020. The price of West Texas Crude was \$US 145 a barrel on the 16th July 2008., an event which was not anticipated at all by the BTRE which assumed that the price of oil in 2020 would be around \$US25 a barrel. The 27 April 2011 price is US \$120

These unsound forecasts were also assumed to be true by many economists who did not know that the data used in these forecasts were mostly derived from the nationalised oil industries of dictatorial regimes. They trusted national oil companies who do not publish details about how much oil is extracted from each reservoir or what methods are used to extract that oil; nor do they permit external audits. (Economist 2006)(Simmons 2005)

In Australia crude oil production from known oil fields will dramatically decline by 85 % over the next 10 years the prospect for new oil discoveries is not very good. Oil provides 40–43% of all energy used by the United States, Europe, and the world. Note that only 5% of condensate is produced in Australian refineries some of which may be shut down.

Fatih Birol, Chief Economist for the International Energy Agency, has warned that rising oil prices due to the conflicts in Libya could threaten the global economic recovery. (Birol 2011). Birol said the surge in oil prices could lead to growing inflation, damage trade, and put pressure on banks to raise interest rates. The comments follow a 66 point drop in the FTSE 100 index as the markets reacted to the escalating crisis in Libya. The US and Japan have seen similar drops. "Oil prices are a serious risk for the global economic recovery," said Birol. "The global economic recovery is very fragile - especially in OECD countries."

Birol announced that the IEA was considering dipping into emergency oil stocks if the supply crisis were to worsen. He also suggested Saudi Arabia could increase production to meet demand. Analysts are watching events in the Middle East closely, with Libya being the first major oil exporter to be at war. Oil firms have been evacuating staff and shutting down production as the protests against Muammar Gaddafi escalate.

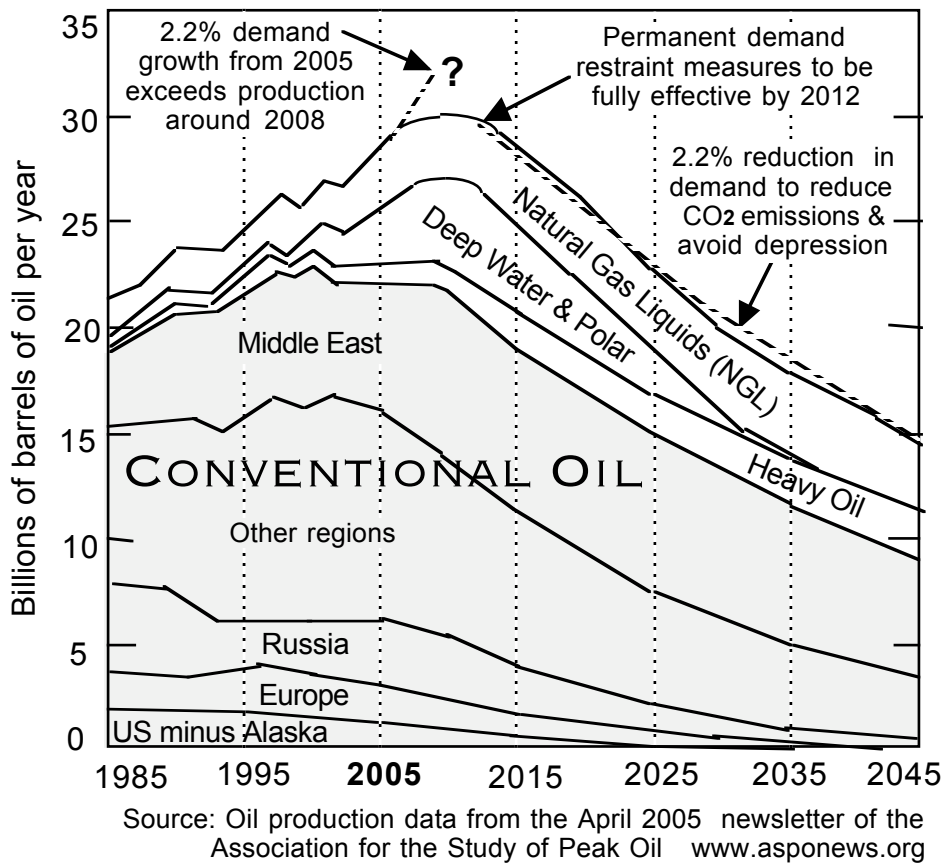


Figure 3 The problem of oil supplies peaking around 2010/11

The energy watchdog (IEA Oct 1010) lifted its forecast for world oil consumption but played down fears that prices will top 100 US dollars a barrel. Global demand was expected to reach 86.9 million barrels a day in 2010 and 88.2 million barrels a day in 2011.

The forecast, came with news of record Chinese imports in September 2010 of 5.52 million barrels/day. A number of other organisations have become nervous and expressed concern about oil production levels.

The German military think tank.

The US Army.

The EIA.

Total Oil Company

Shell Oil Company

The British government about future supply.

The IMF(World Economic Outlook) in part of which it discusses peak crude oil.

ASPO -The Association for the study of Peak Oil. see figure 3.

Some government economists do not accept that low cost clean conventional oil is a finite resource. Nor do they accept that the high quality oil gets used up first and the quality drops off as an oil field becomes exhausted over many years. They believe that by increasing the price of crude oil the market creates more of the good oil, when all it does is to increase the supply of carbon intensive sour and heavy oils, tar sands and other substitutes with a much lower energy return on energy invested and producing far more CO₂ and other polluting emissions. Commonwealth bureaucrats, particularly the Productivity Commission and the BTRE..Ignore the pollution costs of all these forms non-conventional oil production.

Note that the Organisation of Petroleum Exporting Countries (OPEC) represents many national oil companies Its members are: Algeria, Angola, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela. OPEC's members own 77 percent of the world's proven oil reserves, or a total of more than 900 billion barrels. They account for about a third of the world's oil production and over 40 percent of global petroleum exports. OPEC's forecast for 2010 was a very low US \$19 a barrel (see Table 1).

5.1 Conserving oil to build the energy infrastructure required to replace oil

Because peak oil is certain to occur it would be prudent to conserve oil to maintain essential public services, maintain food production and construct the nuclear reactors using thorium, wind turbines and other renewable energy resources as envisaged by the IEA and the British Prime Minister at the June 2008 Conference of Oil Producers and Consumers. Given the unreliable record of past forecasting and the contradictory views of the major stake holders in the oil business prudence dictates that enough of the good oil has be conserved by government to build the infrastructure needed to survive the end of the age of oil. National governments need to act together to exploit renewable energy sources and nuclear power. (Parker 2005A & 2007)

Increasing the price of conventional oil makes it more economic to extract and process tar sands, oil shale and coal to make refined oils. Unfortunately these non-conventional oils have a much lower energy return on energy invested and increase CO₂ emissions 3 to 7 times. (Parker 2007) This is one of the reasons why, on the 12 th August 2008, the IEA Head Nobuo Tanaka stated that the only way that CO₂ emissions will be reduced by 2050 and the demand for oil reduced by 27% will be by a huge increase in the use of nuclear power and renewable energy. This will require a change of direction in Canberra which has been presented with inaccurate oil forecasts by the IEA for 10 years or more.

Global oil production has levelled out since 2005 and peaked, in 2011/11 despite significant investment and rising prices. The infrastructure challenge for Australia is to provide the means to enable local communities to develop resilience and self-reliance and to use fuels and energy not derived from crude oil. The tax challenge is encourage resilience and self reliance and discourage wasteful activity.

Making predictions of the future growth in conventional oil demand when world oil production is near its peak and decline is no basis for future planning.

6. The unsound forecasts of the Australian Greenhouse Office (AGO)

The Association for the Study of Peak oil (ASPO) has a good track record. Figure 3 uses data produced by ASPO in 2005 in the same year that the BTRE., the IEA and OPEC made their flawed forecasts of the price of oil in 2010 and 2030 (see table 1).

To put the inaccurate AGO forecasts of Australian CO₂ emissions into context we need to appreciate the evidence based recommendations for action on climate change. Further evidence of the need for radical action comes from, the economist and climate change expert Sir Nicholas Stern who says:-

“he underestimated the threat from global warming in a major report 18 months ago when he compared the economic risk to the Great Depression of the 1930s. Latest climate science showed global emissions of planet-heating gases were rising faster and upsetting the climate more than previously thought” (Reuters interview 17-4-08)

Evidence is growing that the planet's oceans - an important "sink" - are increasingly saturated and cannot absorb as much as previously of the main greenhouse gas carbon dioxide (CO₂). Methane emissions from the Arctic tundra are more dangerous than CO₂ and are growing much faster than previously thought, so the absorptive capacity of the planet is less than we had thought, the risks of greenhouse gases are potentially bigger than more cautious estimates, and the climate is changing faster.

The huge decline in the area of Arctic sea ice in September 2007 is an indicator that a faster than previously predicted rise in sea levels was on its way. (Spratt and Sutton 2008)

The most recent report on sea level rise is from Greenland which has the world's second largest ice cap and is predicted to hold enough ice to raise global sea levels by 7 metres if it all melts. New data and models show that Greenland's ice cap is on track to hit a point of no return in 2040.

On 4th August 2010, the Petermann glacier in Greenland sounded a warning. A gigantic slab of ice broke off and the glacier retreated 15 kilometres, leaving it further inland than it has been since observations began a century ago. That warning went unheeded at the UN climate talks in Cancún, Mexico. Delegates left without agreeing to drastic cuts in greenhouse gas emissions, leaving the planet on course for 3.2 °C of global warming, and the world's second largest ice cap heading for a point of no return. The suggestion is that the Greenland tipping point will be in the early 2040s. After that no amount of action on our part can save the ice sheet. Unless governments dramatically improve their game, the only thing that will change that date is natural variations in the climate, which might either hasten or delay the tipping point. (Ananthaswamy, Anil. 2011)

Glaciers have not yet fully responded to global warming. Even if warming stops, melting will go on. This worries Mernild. His team modelled the fate of Greenland, using a scenario for future human development outlined by the Intergovernmental Panel on Climate Change. The scenario assumes rapid economic growth, a global population that peaks in 2050, and rapid adoption of new, efficient technologies for energy use and generation. Given the outcome in Cancún last month, it is a likely scenario for the future. Mernild's models show that if it does play out, Greenland will reach a tipping point in about 30 years. After that nothing will prevent the ice cap from eventually vanishing entirely (Mernild, Sebastian. 2009)

7. The laws of supply and demand cannot create more of the good oil.

Increasing the price of crude oil on the the market does not create more of the good oil, all it does is increase the supply of sour and heavy oils. After half of the oil in a reservoir is extracted the quality and quantity of the remaining extractable oil declines until all that is left are the viscous dregs, saturated with sulphur and /or other pollutants. Increasing the price of conventional oil also makes makes it more economic to extract and process tar sands, oil shale and coal to make refined oils. These non-conventional oils have a much lower energy return on energy invested and increase CO2 emissions 3 to 7 times. (Parker 2007)

The modelling of the energy costs of conventional and non conventional oil in the long term in Australia by CSIRO confirms that the emissions of CO2 will increase per barrel of oil produced:

“the energy return on energy invested (EROEI)” in finding, extracting, transporting and refining oil will decrease. The reality is that the energy costs and benefits of oil extraction do change for the worse over time, and CSIRO scientists, recommend that physical energy profit accounting procedures should complement monetary accounting procedures for all important energy companies and national accounts ”. (Foran and Poldy 2002).

The increasing energy costs of discovering and extracting conventional oil apply generally to other new sources of conventional oil in deep water and hazardous locations. Tomorrow's extraction, refining and use of oil will produce more CO2 emissions per barrel than it did 30 years ago and will increase its cost relative to more abundant fuels such as coal. (Foran and Poldy 2002) Members of the Tax Review Panel need to meet with CSIRO to see if the 2002 assessment above is correct

8. Other negative synergies with other resource shortages in the next 30 years

There are other well-known resource depletion problems for many countries occurring in the same time frame as peak oil; world shortages of natural gas, low sulphur coals, fertiliser and fresh water supplies without which food production will be put at risk and carbon dioxide emissions will increase. Climate change threatens to increase the number of the world's hungry by reducing the area of land available for farming in developing countries. Sixty-five developing countries, home to half the developing world's population, risk losing about 280 million tonnes of potential cereal production as a result of climate change. This loss would have a value of US\$56 billion, or 16 percent of the agricultural gross domestic product of these countries. Climate change will drastically increase the number of undernourished people, severely hindering progress in combating poverty and food insecurity (Brown 2007).

The synergetic interaction of oil depletion with other environmental “time bombs” that have been ticking away for many years will result in world food production peaking and then declining at a rapid rate in a few years. Conventional oil production is declining in the same 30-year time frame as increased drought, storm damage and rising sea levels due to global warming; a decline in fresh water availability and quality; increasing salinity and soil loss. All of these environmental problems are beginning to reduce food production. World stocks of food grains have reached critically low levels that put the survival of 100 million people at risk. (Weisman 2008)(Parker 2005 A)

It is not possible to feed the world without low cost oil supplies to power food production. What is happening is a political recipe for disaster.

Figure 4 shows the trends for the growth in the Asian and world population, the faster growth in Asian oil consumption and the peaking of conventional world oil production. Continued population growth and the faster growth of GDP in Asia have escalated the demand for oil and put the oil needs of Asia on a collision course with the western world. I

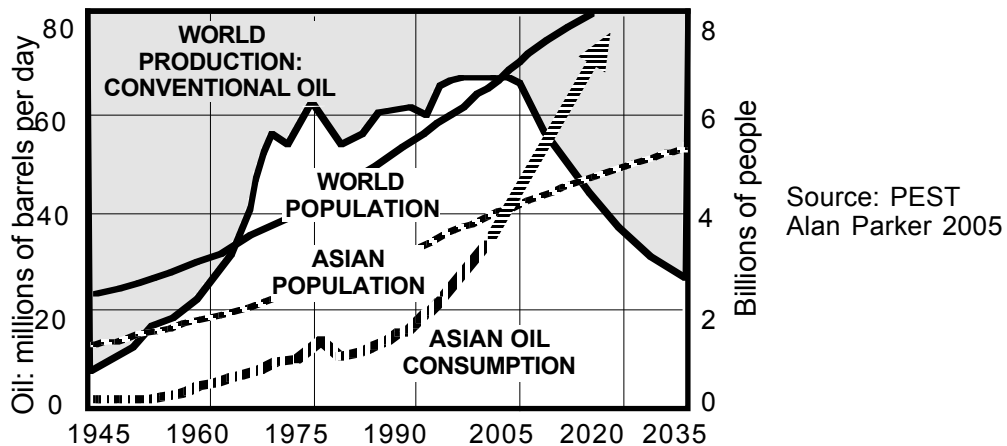


Figure 4 Peak oil and the growth in population, oil consumption

To reduce greenhouse gas emissions and conserve oil resources a significant percentage of the world's motor vehicle fleet of 900 million will need to be replaced with vehicles relying on batteries. The lightest and most efficient of these are lithium ion. However, there is uncertainty about future supplies of the lithium carbonate and their future as batteries for the next generation of motor vehicles is in doubt. However lithium ion batteries used in portable electronic equipment and electric bicycles will be feasible. (Tahil 2006)

9. INNOVATIVE TRANSPORT SOLUTIONS THAT INCREASE ENERGY EFFICIENCY

Reduced CO2 emissions must be taken into account for both fuel consumption and the embodied fuel use and emissions involved in the manufacture of cars. The most difficult problem is that, in the outer suburbs of the capital cities, there are hardly any public transport services and what services there are do not go where people want to go. Lower density housing and poor pedestrian access ways make it very difficult for many people to access the limited public transport services by walking.

Figure 4 indicates the need to extend public transport services in outer suburbia; to provide safe and secure bicycle access routes and storage at rail stations and express and trunk bus stops. The use of bicycles and electric bicycles has great potential as an access mode to new public transport services. Figure 4 shows the need for petrol and diesel fuel efficiency standards, the objective of which is to reduce the size and increase the fuel efficiency of the Australian vehicle fleet by making more energy efficient cars available. Encouraging people to share the existing and new car hire co-ops and to use them to access public transport is also important.

The taxation challenge is to replace incentives to overuse cars, such as in salary packaging schemes, and replace them with incentives to ride bicycles and use public transport and to buy the latest and safest electric bicycles made to Japanese safety standards which Australian consumers cannot buy because of obsolete regulations. The introduction of hybrid cars and trucks powered by compressed natural gas will be feasible.

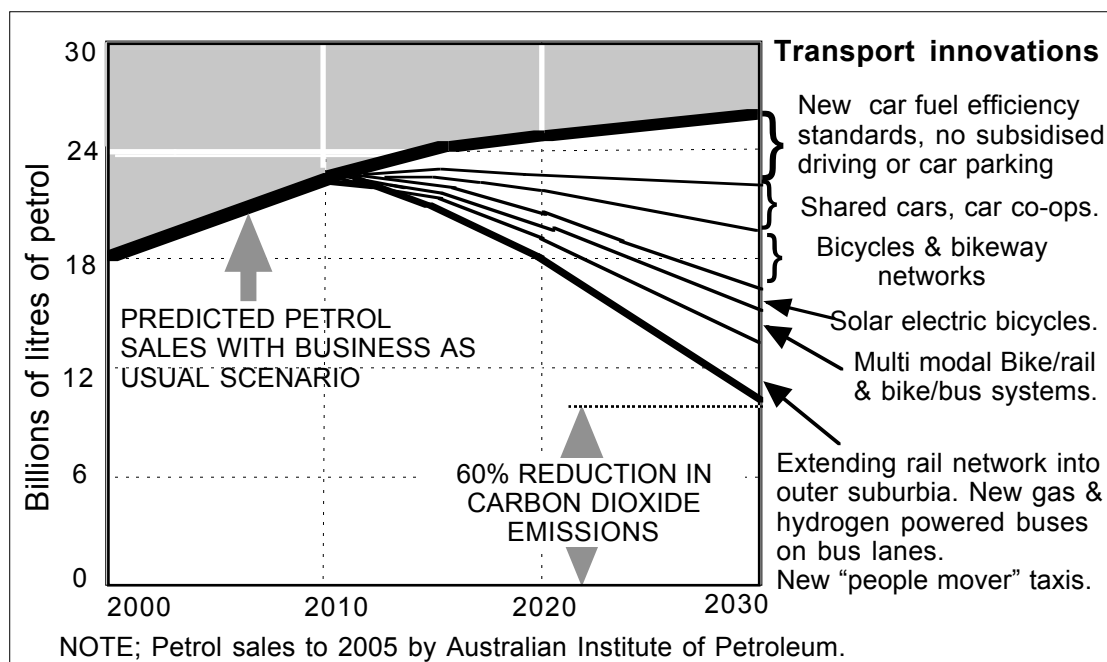


Figure 4 Transport innovations that reduce CO2 emissions by 60%

Railways have been neglected for 30 years. More energy efficient locomotives are now becoming available and could reduce oil dependence and reduce Australia's contribution to global warming. Australian freight and passenger rail infrastructure has taken 100 years to build and is more or less complete with the rail reserves of services no longer in use still being available in most rural areas.

A lot of the rail tracks in use need upgraded and many extensions are needed to the urban rail networks. Railways could triple the use of non-bulk rail freight, greatly, use the new Melbourne to Brisbane inland rail link and create a more sustainable transport system for our children and grandchildren. Modal interchanges need to become a highly visible focal point of surrounding footpaths, cycle networks, and land use development. Integration between alternative transport modes will thus assist travel patterns that do not use private vehicles for most, but not all trips. In the longer term energy efficient high speed intercity trains are needed to replace intercity air travel which is totally dependent on liquid fuels. (Zukerman, Wendy, 2011)

The adaptation measures of transport mode shift and lifestyle changes can best be made at local government level by the promotion of Travel Smart programs supplemented by the provision of safe bicycle route networks that provide safe and secure access to public transport. The Commonwealth's role in the development of all these transport innovations is at the strategic planning level, in the funding for bicycle, electric bicycle and pedestrian infrastructure and in the provision of tax incentives.

9.1 Imported Pedelects and Bicycles should be free of carbon or import tax

Given Australia's sunny climate the widespread use of electric bicycles with ion lithium batteries charged by small solar cell arrays at home or work will be feasible five years. The 250 watt "Pedelec" is the safest electric bicycle.

Designed in Japan and mass produced in Europe and China in the last 3 years. 250 watt electric bicycles and pedelecs have been banned in Australia since 2001. They offer a simple, healthy and viable alternative to much motor vehicle travel in urban areas.

The 2011 EU regulations for 250 watts should be adopted in Australia for 7 reasons.

1. In 2008 pedelecs were considered safe and used in countries with overall low road death rates per 100,000 population: Netherlands and Sweden 4.0, Japan 4.7, Germany 5.4 and China 5.7. All lower than Australia with 6.8 in 2009.
2. Pedelecs make productive use of public transport by enlarging PT catchment areas and making cross suburban travel much easier across radiating rail and express bus networks.
3. Riding a bicycle uses the ergonomic 'mechanical advantage' of pedalling over walking to go 3.5 times as far, making tenfold more homes accessible to railway stations. Pedelecs are even better and free up car parking space. Five pedelecs can be parked in one car parking space.
4. Millions of the elderly find walking and driving too stressful. In 1990 Japan conducted research which found that elderly cyclists needed bicycles with auxiliary motors that took 50% less effort to pedal, and contributed to their own overall wellness and mobility.
5. Pedelecs look similar to bicycles (see figure 1) with male, female, fold up and tricycle frames; have wheels 20 to 28 inches; weigh 15 kg to 25 kg.; have automatic start by ignition key; cutting out at 25 Km/hr; and use EU approved lithium batteries.
6. Pedelec designs with regenerative braking when slowing or going down hill extend the life or range of batteries. They can also be charged during the day from solar cells.
7. At night pedelecs could be charged with off peak mains electricity or from "back up batteries" in pedelec 'stables' at places of work, study, shop or play. The "back up batteries" would be charged from roof top solar cells during the day. In future pedelecs have the potential to reduce peak hour loads on power stations.

9.2 Bikeway network that connects with the existing rail stations.

When petrol rationing is introduced, as it inevitably will be, outer suburban households are going to need a bicycle network that connects with the existing rail stations and new rail stations and modal interchanges. Direct cross suburban rail linkages are going to be required for passengers. Using bicycles to access stations feeding the cross suburban CBD rail routes will be very important. (Parker 1996)(Parker 2002).

Bicycle theft and vandalism are serious problems at stations all over Australia so it is important to provide secure thief and vandal proof storage for bicycles at rail stations and at express bus stops

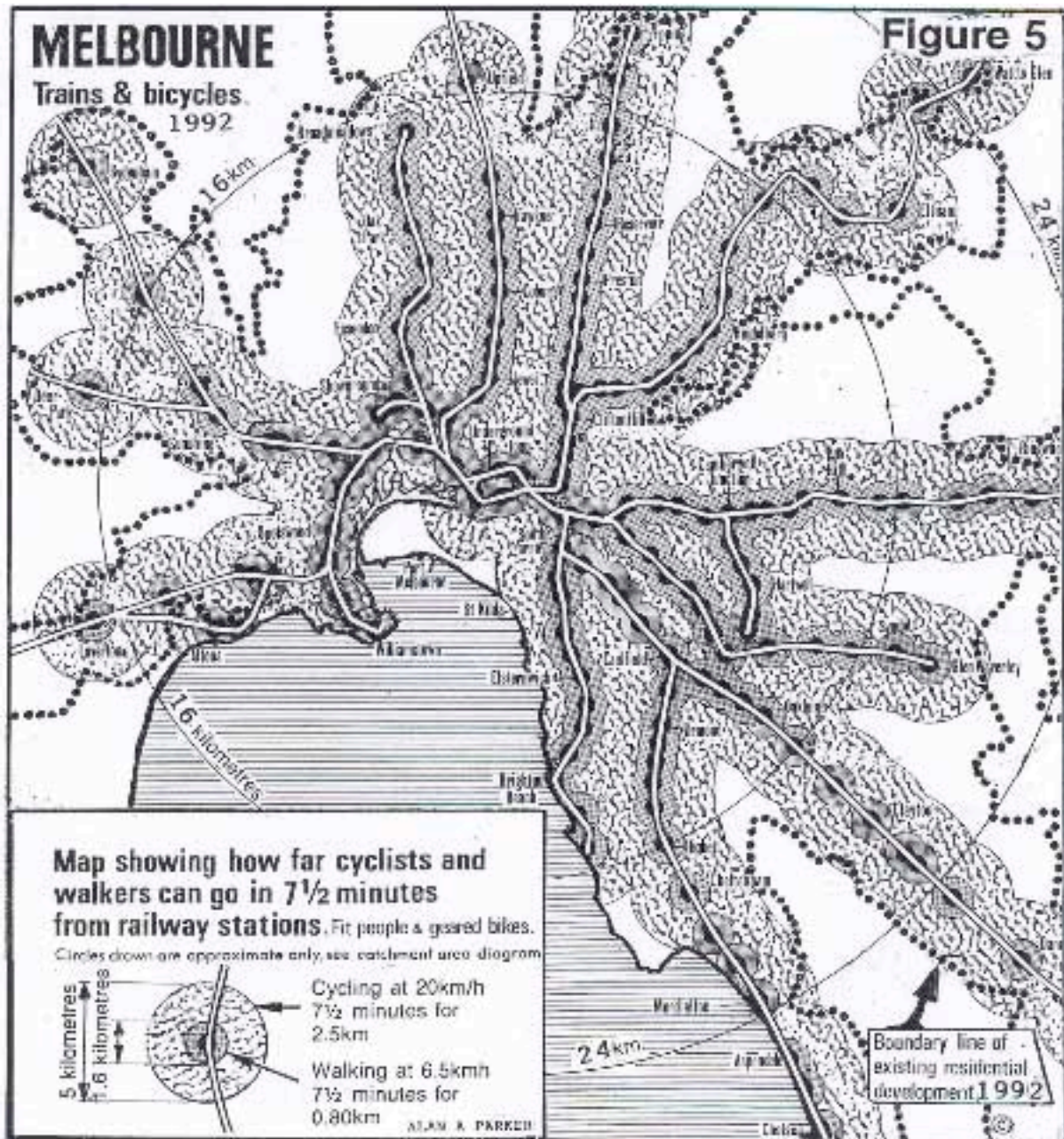


Figure 5. Melbourne (1992) showing access to rail stations by bicycle and walking

. For example in Melbourne secure bicycle parking has been ignored since 1970 when a program for building new car parks began. There are now 29,000 people who drive and park cars at rail stations and around 40% to 45% drive less than 2 km, a very easy cycling distance. The average cost of one car parking space, taking into account the opportunity cost and the costs of drainage, is around \$18,000; bike lockers for 12 bikes could be made and installed for that price.

The tax challenge is to recognise the benefits of bicycle parking and to provide a tax incentive to cyclists for commuting directly to places of higher education, factories and offices and for bike/rail commuting.

Figure 5 is a 1992 map of Melbourne showing how far walkers and cyclists can go in 7.5 minutes and is based on an estimate of what fit people walking or using geared bicycles can easily do. The map shows the large increase in the area of built up Melbourne that can be reached by bicycling instead of walking. The boundary line of built up Melbourne is shown as a bold dotted line. That boundary line is much further out in 2008 and there are very few stations in these new urban areas.

In 2008 there are approximately 2.5 million (70%) Melbournians living within easy cycling distance (3 km) of a railway station. but only 430,000 (12%) live within easy walking distance. The science of ergonomics provides hard data on the advantage of using bicycles instead of walking to go from A to B with the same expenditure of physical effort. Figure 6 shows that utilising the ergonomic advantage of pedalling over walking takes the average fit person 3.1 times as far in a straight line and the fit rider using a lightweight racing bicycle with high pressure tires 3.8 times as far. Pedalling instead of walking increases the theoretical catchment area of a railway station 12 times for an ordinary bicycle user and 19 times the area using a racing bicycle.

In Melbourne the potential for safe access to stations is good. Of the 190 stations, around 100 can be accessed safely by bicycle from quiet residential streets on one side or both sides of the rail lines and most of the other 90 stations can be safely accessed on main roads by experienced adult bike riders. There is a need for more rail stations in outer suburbia; these will mostly be too far away to walk to, too time consuming to access by local bus, or not accessible at all by public transport. (Loder & Bayly 1987)

9.3 Bikeway networks in the capital cities have far too coarse a mesh

In the inner suburbs of the capital cities there is a partial network of bikeways that is supported by an extensive network of bus and heavy rail routes and some tram or light rail vehicle routes. It is feasible to extend these bikeway networks and extend them into the middle suburbs. These networks can link to rail and bus services as the middle suburbs are mostly well served by public transport. This would reduce car use and oil consumption, particularly for the journey to work for those living in the inner and middle suburbs.

The need is for an arterial network of bikeway routes of finer mesh than the arterial road network. The bikeway route network is far too coarse, with too many breaks in the network and too few shortcuts to encourage bicycle use. For example in Melbourne, after 12 years development, it was only 35% complete in 2007 and not keeping up with urban growth. In Sydney it is much worse but similar to Melbourne in the other capitals. (BFA 2000)

In Melbourne a complete bicycle arterial network would have around 8,000 km of routes (See figure 10) This would provide short cuts for cyclists and pedestrians over and under freeways, railway lines, rivers and other barriers to motor vehicle travel. Main road bikeways on or alongside the roads, linked with traffic calmed local streets and off-road shared footways, are required. The mesh of the bike way network would be 500m x 500m in the inner areas and 750m x 750m in the outer areas, or the rectangular equivalent .

Most one way streets for cars should be two way for bicycles and roads with bikelanes and should have a maximum speed limit of 50 kph. The introduction of a 50 kph limit on local roads in January 2002 in Victoria and the reduction of the legal leeway given to violators to 3 kph have made these roads safer for cycling and walking. It makes sense to use them to bypass sections of dangerous main roads. In the longer term a 40 km per limit on all residential streets is required, as has been implemented in Unley in South Australia.

On outer urban residential streets, without a footpath for child cyclists to use, there should a 30 km /per hour speed limit. It is necessary to develop well connected fine-grained street networks that avoid no-exit cul-de-sacs, particularly those that do not allow for pedestrian through traffic. The tax challenge here is to allow provide a carbon tax incentive for developers and the road agencies to provide secure bicycle and pedestrian access.

More transport infrastructure funding to be spent on new cycling infrastructure in outer spread out suburbs which are beyond walking distance of stations and express bus routes. The ability to bring off peak bicycles on trains and buses, and/or park them securely at public transport stations, should also be universal and convenient.

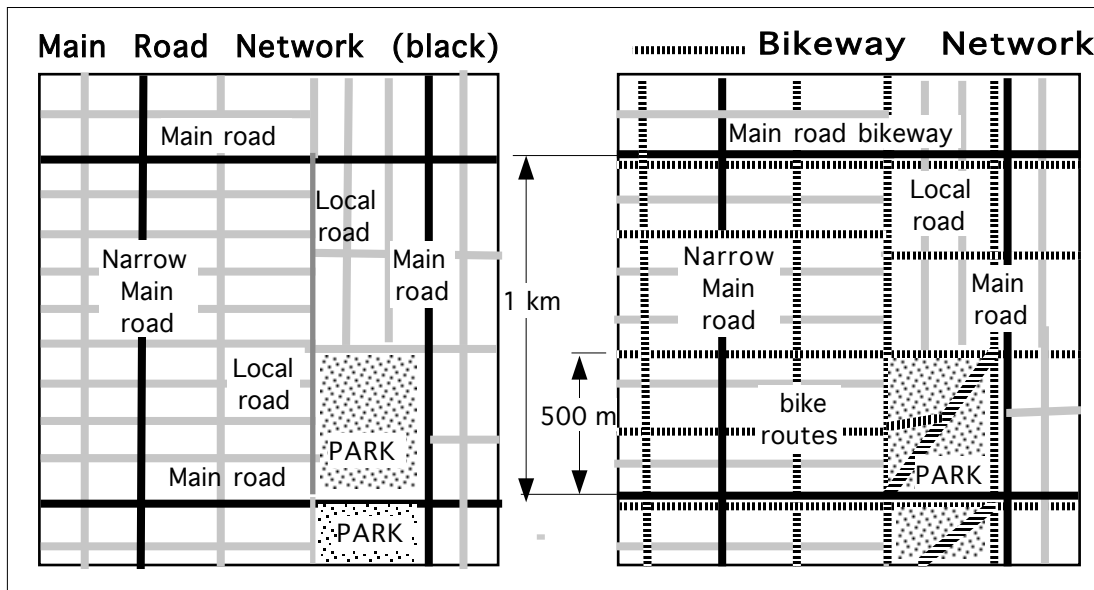


Figure 6 A Bicycle arterial network with a finer mesh than the main road network

10. Green taxes to reduce CO 2 transport emissions in the Netherlands

As yet no country in the world has made a total commitment to achieving Ecologically Sustainable Development (ESD) least of all in passenger transport which in most countries, including Australia, has become less sustainable with increasing levels of motorisation. However for 15 years The Netherlands has been moving slowly towards ESD.

The Dutch objective was to slowly decouple the growth of GDP from the growth in fuel consumption (N.E.P.P 1998) The growth in Greenhouse gas emissions from passenger cars has been constrained, the proportion of walking trips has not declined, rail patronage has increased and proportion of “everyday cycling” trips has increased since 1975 (see figure 1). All this was done in order to implement the following Agenda 21 (Rio de Janeiro 1992) transport strategy which all Australian state governments subsequently endorsed:-

Transportation strategies should reduce the need for motor vehicles by favouring high occupancy public transport and providing safe bicycle and foot paths. Municipalities need to be developed in ways that reduce the need for long distance commuting.

The Dutch experience in implementing their National Environment and Policy Plan (NEPP 1, 2, & 3) clearly shows that “green taxes”(eco-taxes) have great potential to increase the quality

of life while reducing greenhouse gas emissions and oil dependence.

Some of these measures are as follows:-

1. greening of the tax system, whereby there is a shift from the taxation of labour to the taxation of environmentally harmful activities. Direct taxation of wages and incomes will be reduced while taxes on consumption will be increased. (Depending on the environmental implications of that consumption).
2. Increase in fuel tax rates (1995); increase the variable component of motoring costs by increasing excise duty on motor fuels (1997).
3. Value-added tax incentives for employers to provide bicycles (1996) Reimbursement of cycle commuting costs in wages and income tax (1997)
4. Increase in scope and magnitude of the tax allowance for trip to work travel costs by means of public transport and the tax free reimbursement of public transport costs in wages and income tax (1997); increased allowance (1998)
5. Freeze on car commuting tax allowance (1997)
6. Incentives for tele-working in wages and income tax (1997) increased concessions (1998)
7. Widening and simplification of the wages and income tax concessions for car pooling (1998)
8. Incorporating an environmental component in the excise levied on new vehicles and the annual vehicle tax so as to provide incentives for the purchase of clean, energy-efficient cars, and to optimise the fuel mix.

According to Wellemen, the Manager of the Dutch Bicycle Masterplan, the most important measure in increasing bicycle use in Dutch cities is taxing car parking and reducing car parking on a systematic basis in inner urban areas. (Welleman 1998)

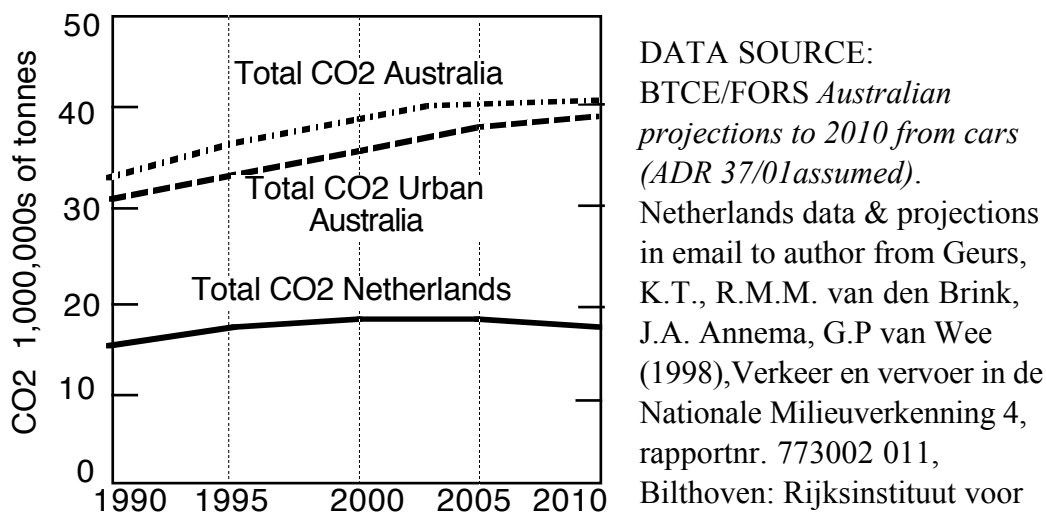


Figure 7, Australia and the Netherlands: Passenger Car Emissions 1990 to 2010 of CO2 emissions from passenger cars:

Figure 7 shows how much more energy efficient the Dutch car fleet is compared to the Australian urban car fleet. Urban Australia and The Netherlands have almost the same population, surface area and per capita GDP so this is a relevant comparison for the purpose of assessing the importance of environmental planning for changing transport behaviours.

What the Dutch experience shows is that carbon trading needs to be backed up by eco-taxes to replace current tax incentives to overuse cars if unsustainable trends are to be reversed. The high level of bicycle and walking trips shown on figure 8 demonstrates the potential to create high levels of bicycle use by the provision of infrastructure and taxes.

The Australian tax system should be based on the principle that the polluter must pay. Petrol and diesel fuels need to be regarded as harmful commodities, just as tobacco and alcohol are. Internalising environmental costs in prices as an essential requirement. Furthermore a "carrot and stick" approach is needed to constrain the growth in car use by rationing car parking and road user charges; while funding the more sustainable transport modes.

If one of the objectives of tax reform is to change unsustainable transport behaviours then at least a start must be made in integrating tax and environmental policy. The Dutch NEPP versions 1, 2 and 3 are excellent models to study. (An English language version of NEPP 3 is available from PEST).

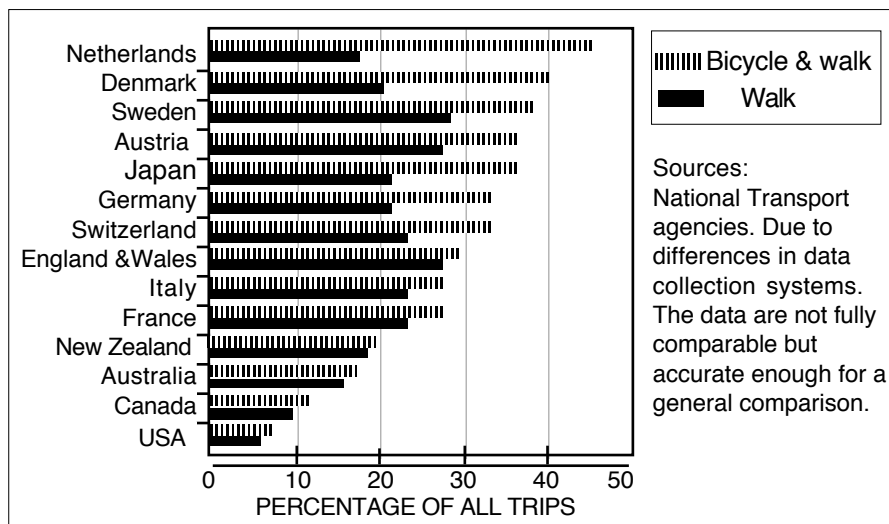


Fig 8 Selected OECD Countries 1995: Walking & bicycling %age modal share of all trips

Another aspect of encouraging cycling is to reduce the health costs of ageing. Details of the cost savings are set out in the publication of the Cycling Promotion Fund Melbourne (Bauman et al 2008) This publication also describes the barriers, facilitators and interventions needed to get more Australians physically active through cycling.

There is a high level of ignorance about the basic ergonomics of walking and cycling in Australian transport planning and in accessing public transport and getting around generally. Figure 8 provides data on access to rail stations .

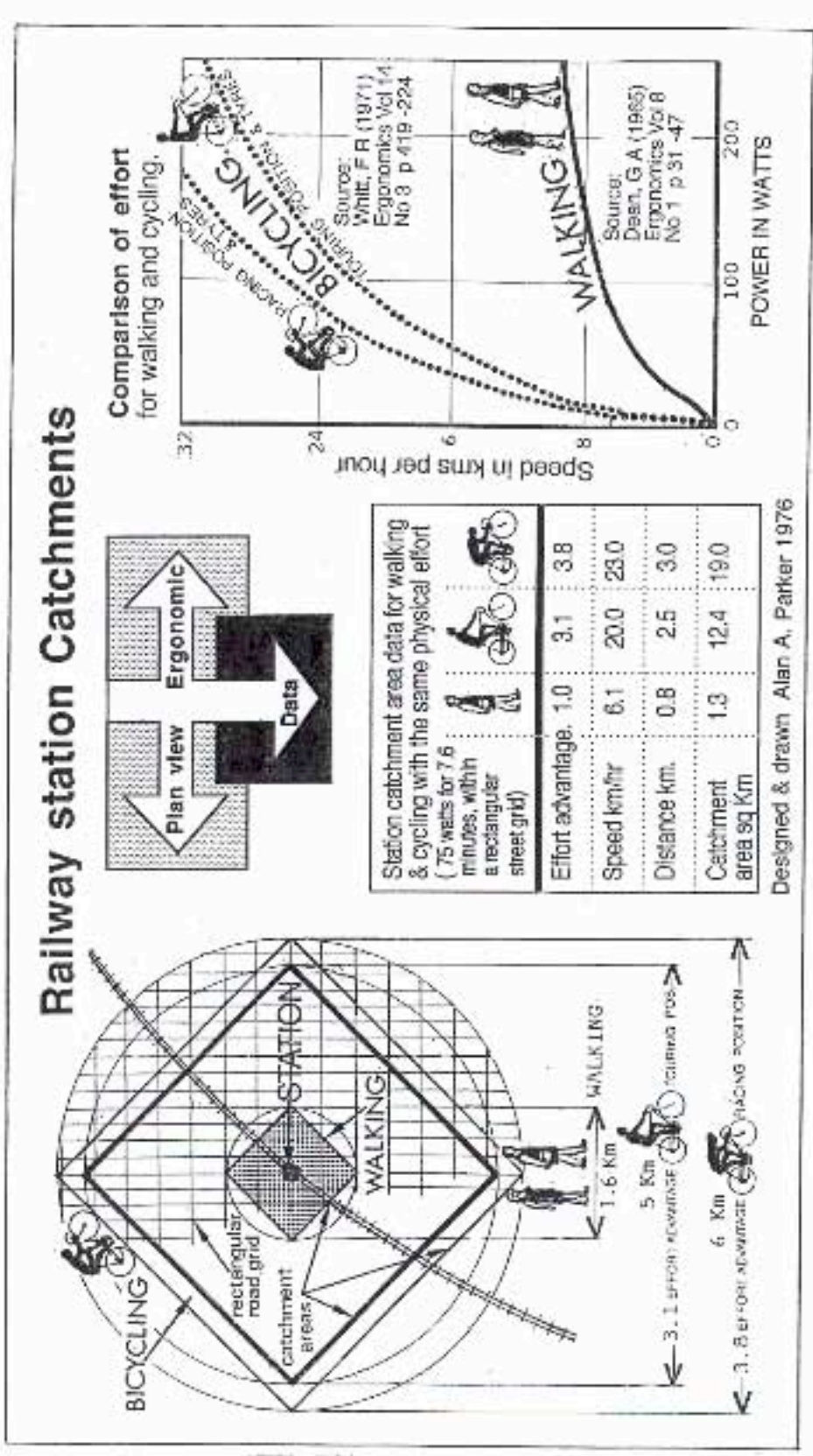


Figure 9 . Railway station catchments; walking and cycling

11. CONCLUSIONS

There is a serious and urgent risk that high oil prices will eventuate within the next five years and if the price does not go up it will be because the US, EU and Australian toxic debt problem will have created economic depression and reduced the demand for oil. Neither of these consequences were forecast by government agencies. The tax system review panel should recognise that the key government agencies with a brief under the Westminster system "to tell the truth to power" did not know the truth, or withheld the truth, or considered the truth to be a "known unknown" during the last government's term of office. Whatever the reason for bad advice it would be prudent now to take a risk management approach to both climate change, peak oil, and toxic debt (Hirsch et al 2005) Carbon taxation could have a significant role in coping with these problems.

In comparison to the Dutch government's actions to reduce greenhouse emissions by the use of tax incentives and constraints and infrastructure provision, the Howard government's role was fragmented to the point of incoherence. New legislation was introduced in the form of "band aids" for this or that and inevitably failed because the really difficult problems were not addressed because of an ideological commitment to free markets which included an appalling ignorance of the threats of toxic debt. The Howard government did better than the Dutch government and the European and US central bank in regulating toxic debt but the transport and oil consumption trends in Australia show how the market has failed to incorporate the full environmental costs of many human activities and created many perverse economic incentives that has created a dangerously high level of oil dependence.

Railways have been neglected for 30 years. A lot of the rail tracks in use need upgraded and many extensions are needed to the urban rail networks. Railways could triple the use of non-bulk rail freight. In the longer term, energy efficient high speed intercity trains are needed to replace intercity air travel which is totally dependent on liquid fuels.

An important rail passenger transport innovation in Australian capital cities is to increase the interaction of rail passenger transport with other sustainable modes. The growth of bike/rail travel and bike/rail commuting has been constrained by the absence of sustainable, cost effective, vandal and theft proof vehicle parking facilities for bicycles, electric bicycles, light scooters and motor cycles. Carbon tax incentives are needed for the above.

The Australian car industry is locked into producing large cars and SUVs and there are no carbon tax incentives to encourage the purchase of small energy efficient cars or to encourage the use of car pooling or the use of car sharing clubs.

12. Carbon Tax recommendations

There is a need to green the Commonwealth's tax system to embody the costs of oil depletion into the price of diesel, petrol and aviation fuel and use the funds raised to decouple the growth in oil consumption and greenhouse emissions from the growth of GDP.

- 1 Provide policy support for tax and other measures by Commonwealth, state governments, local governments and private companies to reduce oil dependence and greenhouse gases:
- 2 Make better use of the existing Australian car fleet by providing carbon tax incentives for using CNG as a transitional fuel and the provision of CNG infrastructure at petrol stations.
3. Provide carbon tax incentives to make better use of all new cars by 2012 and encourage the use of electric cars: gas /electric, petrol/electric and diesel/electric hybrid cars.

4. Commonwealth to increase car fleet fuel efficiency by introducing car "fuel efficiency standards so that the average fuel consumption of the car fleet including most 4WD's be 5 litres/100 km and for the 4WDs with truck chassis and light truck fleet to be 6.5 litres/100 km.
- 5 Establish the general principle that car travel to and from work is a personal expense Salary packaging for commuting or for vehicles owned by other family members will not be subsidised. Season tickets on public transport and the provision of bicycles, electric bicycle and electric scooters for commuting and or for work business should be salary packaged instead.
- 6 Provide tax incentives for employers to promote telecommuting, car sharing and car co-operatives: reduce subsidised car parking for able bodied drive alone commuters and provide electric car, electric scooter and electric bicycle recharging facilities.
- 7 Provide policy support for zero carbon taxes carbon taxes raised to be used to build bikeway networks in all Australian cities, enhance rail infrastructure, extend rail services and express bus services into all outer urban areas and provide secure bicycle parking at all modal interchanges and railway stations. Fund Travel Smart programs in all urban areas directed to reducing the number of multi car households.
- 8 Provide policy support for state planning agencies to provide state tax incentives and constraints on developers to reduce urban sprawl and provide public transport services in new residential and industrial areas and make urban areas more permeable for walkers and cyclists.
- 9 Provide policy support for the provision of more short cuts for pedestrians and cyclists,, that is more bridges and off road shortcuts through both public and private properties, bridges over barriers, safe mid block main road crossings linking and better route signage and in central areas more roads that are one way for cars but are two way for pedestrians, cyclists, buses and trams. Plan to make it more convenient to go by bicycle than cars for trips of less than 5 km. and as feeders to the rail system.
10. Provide policy support for the states to change the constitution of road planning agencies to make it their responsibility to reduce the; demand for road space, unsustainable travel,, road congestion and the creation of a continuous arterial bike network within the overall hierarchy of urban roads.
- 11 Provide bike lanes on main roads and reduce speed limits 50 kph. When there is not room for a bikelane or bike path in the road reserve a safe alternative route would be provided on residential streets with a 40 km per hour speed limit
12. Provide policy support for the Commonwealth's climate change and state environmental agencies to change the regulations to allow importing of electric bikes with power outputs 250 watts to EU regulations and permit battery charging. solar photovoltaic cells. This will enable older people to continue cycling much longer.
- 13 Provide policy support for the Commonwealth to produce a national Energy Security Policy , to mitigate oil dependency with both demand and supply side measures and to unilaterally reduce oil consumption by 2.2 % per year. This will make a a commitment to freeing Australia from oil dependence by 2020 as is being done in Sweden and Norway.
- 14 The Carbon tax Inquiry obtain a confidential briefing from the CSIRO to confirms that the emissions of CO2 will increase per barrel of oil produced by the growing use of no-conventional oil supplies as previously estimated by Foran and Poldyin 2002, See page 12)
- 15 Provide funding for researching the use of thorium instead of uranium in nuclear reactors to produce electricity instead of brown coal and later black coal. Research to be a joint effort with India, and China. Carbon capture and storage is coming - but instead of shoving our CO 2 emissions underground they can also be recycled .
- 16 Encourage and research CO2.recycling. Several companies have proposed turning cement making on its head, so that it captures more CO2 than it now generates; cement now produces around 5% of all Australian CO2 emissions.(MacKenna, P 2011)
17. The Tax Review needs to recommend creating an "Australian Strategic Oil Reserve".

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