

Peak Oil

Submission on behalf of the Zero Carbon Network

Introduction

Although the focus of this committee is on Peak Oil it is important that its deliberations are constructed with an awareness that Oil is but one of many products that are reaching or are beyond their peak. David Cohen writing in the New Scientist of 26 May 2007 asks the question how long it will be before we have exhausted the earth's mineral wealth.

Some of the materials that go into creating our 21st century lifestyle are already dangerously close to being exhausted. Rare metals such as indium and tantalum that are being used in flat screen TVs and electronic devices are close to running out. At present rates of consumption the world will run out of Platinum in 15 years. Platinum is a key ingredient not just in catalytic converters but also for Hydrogen Cells touted as an alternative energy source.

Even the most commonplace minerals such as zinc, copper, nickel and phosphorus are under pressure. That phosphorus is a key ingredient in the manufacture of fertiliser is of particular concern – we are able to feed the world in part due to the green revolution – remove fertiliser from the equation and the green revolution will wither and with it our capacity to feed the world's population.

The central problem with these projections is that we do not know the full extent of the world's mineral reserves. This also applies to oil. We can make informed guesses but the exact extent of world reserves of all mineral resources is unknown partly because the businesses that control the exploitation of these minerals see information about the exact size of the reserves under their control as a commercial secret.

What we do know is that a global economy that depends on finite resources will sooner or later run out of those resources. When looking at Australia's pattern of consumption we can readily see that we are particularly vulnerable with regard to the peaking of all natural resources. Stephen Lincoln from The University of Adelaide has argued[1] that Australia's ecological footprint is 9 hectares per person as opposed to a global capacity of 2.8 hectares. Regardless of how much of the world's resources are left we are living well beyond our means.

It is these considerations that have helped shape the Zero Carbon Network's submission with regard to Peak Oil.

Our central thesis is that Governments at all levels need to implement measures that enable us to make the transition from an unsustainable lifestyle to one that is sustainable. We believe that the solutions to making that change are at hand but it does require a government commitment to encourage people to embrace a sustainable lifestyle.

The movement of people around the State,

The conurbation that is Adelaide is characterised by a relatively low density population spread over a large area. 80% of South Australia's population lives in what may be described as "Greater Adelaide" i.e. within a radius of 80Kms from the GPO. (source <http://www.environment.sa.gov.au/reporting/human/population/density.html#sa>) This translates to about 60 people per square kilometre. When that is compared to English cities we find that their major urban centres average just under 8000 people per square mile. (source <http://www.demographia.com/db-ukcities.htm>)

The reason for our relatively low population density may in part be attributed to the relatively low price for fuel and ready access to private motor vehicles. This urban sprawl has also made it very difficult to implement an efficient public transport system.

A dispersed population means that you increase dependency on both private motor vehicles but also road transport to gain access to essential services.

The implications on the quality of life for people are likewise adversely affected. The greater the distance people need to commute the greater the amount of time added to the working day. The health costs of the increased stress that people experience as they negotiate peak hour traffic needs also to be factored into our thinking about ways to address peak oil.

Remote Communities and Outer Suburbs

If we class as remote any area that lies outside Greater Adelaide we see that in those areas private transport is not a luxury but an essential part of living. There simply is not the choice of public transport.

People also need to travel greater distances to access the services they need. This in turn means that a greater proportion of their income needs to be spent on purchasing fuel. When one also considers that the mean incomes in these areas is lower than that of greater Adelaide it follows that these people in particular are impoverished by the increase in fuel prices.

A similar case can be made out for the outer suburbs – in many ways these can be described as urban wastelands; to be without a car is to be imprisoned in one's own home.

Strategies

1. Alternative Fuels

- 1.1. Compressed Natural Gas (CNG) is an immediate short term solution. Most domestic vehicles can be converted to run on CNG. CNG will only be a viable alternative to those communities that are served by natural gas which, in this instance, will be most of greater Adelaide. It will not necessarily require the investment in additional infrastructure as people can fuel up using their domestic gas supply. There are particular benefits from encouraging this strategy. South Australia does have its own natural gas reserves and so we would, in the short term, guarantee our independence. Secondly CNG produces approximately half the Green House

Gas emissions compared to petrol. Thirdly in the event that hydrogen becomes a viable fuel source vehicles running on CNG will be able to switch to Hydrogen.

- 1.2. Electric vehicles are a longer term solution but one that should be seriously entertained. South Australia's manufacturing sector depends very much on the automotive industry. A domestically produced electric car can ensure the long term survival of that industry.

It also provides an opportunity for South Australia to develop a manufacturing model that takes into account the need to develop sustainable industries. This means taking a radically different approach to the way private motor vehicles are produced and sold. One of the key obstacles in the way of recycling is that the manufacturer does not merely sell a product, the responsibility for recycling is also sold to the consumer. However, if the manufacturer were to sell the right to use the vehicle rather than the actual vehicle the dynamics would change very quickly. Just as many companies currently have developed a niche market in leasing technology the idea here would be that the manufacturer would lease the vehicle to the consumer and replace the vehicle with an updated model at the end of a predetermined period. This would mean that the manufacturer would have a predictable number of vehicles that need to be produced on an annual basis. It would also make the development of eg carbon fibre technology more attractive which in turn would reduce the design cost and the also the environmental cost (Carbon fibre is far easier to recycle than steel).

To provide an incentive for an electric car manufacturer to locate here the government should be prepared to provide meaningful incentives for those interested in purchasing electric cars.

To ensure that the electric cars do not increase base load power demand cars would be sold with solar panels to enable them to be recharged domestically. (A similar model to that used in Denmark and Israel ought to be explored; see http://www.theregister.co.uk/2008/03/27/denmark_agassi_ev/)

Free Public Transport

To encourage people in greater Adelaide to use public transport, public transport during the peak hours should be free. This will also mean a need to put on additional services so that people will find that the services are efficient.

The free service is to be funded by developing a two tier registration system. People who live in areas serviced by public transport will pay a premium to use their private vehicles during peak hours. Those who have a legitimate need to have access to their private vehicles or who live outside an area serviced by public transport will pay the current registration fees.

It is not anticipated that the free service will be fully funded by the increased costs in registration. However, one also needs to factor in the savings that are made on road maintenance and the reduced demand for additional roads.

2. Consolidated Urban developments

Considerable work is being done on developing cities that can feed themselves. Given that greater Adelaide is located on one of the most fertile and well watered parts of the state there is the need to ensure that Adelaide can feed itself.

This challenge can best be met at local community level. Local communities should be given incentives to develop initiatives that will enable that community to feed itself.

With respect to planning the amount of land available for buildings of all types should be progressively reduced so that eventually each local government area has a ratio of productive arable land and non arable land of 40:60.

To ensure that this does not lead to driving house prices up land prices are to be frozen at current levels. When homes are sold all that is sold is the home – the land becomes the property of the state and is leased to the dwelling occupier. This will mean that people will be purchasing just the dwelling and will gain the benefits from maintaining that dwelling.

The over arching strategy will be to give all residents ready access to a rural lifestyle by actively encouraging the return of land on the Adelaide plains to production. To avoid hardship this strategy could be phased in over a 25 year period.

Movement of freight;

Consideration needs to be given to the creation of transport hubs. Freight is to be moved by electric rail to distribution hubs strategically placed around the state. The benefit will be that it will take heavy vehicles off the roads and thus reduce the demand for extra roads and also the demand for fuel. Freight can then be distributed using smaller electric vans. There will always be some large items that can be more efficiently moved by road but the development of distribution hubs should have as its aim to take 80% of the trucks off the road.

The government should own both the track and rolling stock. The rolling stock and right to use the track to be leased out to existing transport companies. The objective will be to set the lease costs so that there is a full cost recovery over 50 years.

Tourism;

The development of a genuine green city will be a tourist attraction in itself. If this is accompanied by a conscious creation of a leisurely lifestyle then South Australia will begin to attract a different type of tourist. The surrendering of the city and the countryside to car races should be phased out – the cost of these events outweighs the alleged benefits.

Expansion of the mining industry;

Given that South Australia is a comparative late starter in the mining industry the impact of peak demand will provide a windfall income. As prices of metals like copper go up so will

the state revenues from royalties. Those royalties should be invested in building a sustainable future so that when the tide turns and we no longer have those revenues we will have a state that has developed an economy that is independent of mining royalties. We will also have a state that has used those royalties wisely to invest in infrastructure to enable us enjoy a sustainable economy.

The real challenge for the mining industry will be to mine in a manner that is at very least carbon neutral.

Primary industries and resultant food affordability and availability

South Australia has the capacity to feed and clothe itself. Our priority should be to ensure that we do in fact feed and clothe ourselves.

At the moment we are completely dependent on our ability to transport food to the vast majority of South Australians; in many instances that food has to travel a great many miles to get to our forks.

The objective should be to reduce that distance so that sufficient food is grown for domestic consumption within about 30 kms of the consumer.

South Australia's fuel storage

As long as we remain dependent on oil we rely on being able to import and store sufficient oil to cover periods of shortage.

In the long term this strategy will simply not work – as fuel becomes scarcer it will be increasingly difficult to maintain fuel supplies. For this reason alone, a move to alternative – fuel transport should be given highest priority so that people can continue to get to work, and continue to get food. If people cannot get to work the whole structure of society breaks down. If people cannot get food there will be riots, as we have already witnessed overseas.

Alternative fuels and fuel substitutes

Bio-fuels should be part of the energy mix. At current levels of consumption it is impossible for bio fuels to be a 100% substitution for oil. There is also a great deal of literature highlighting that bio-fuels can become part of the problem rather than a solution. In particular there is the problem with land devoted to food production being diverted to produce bio-fuels and rainforest being cleared to grow palm oil.

However, these problems with bio fuels also open up an opportunity for South Australia. South Australia could develop a global bio fuel accreditation system. Those bio fuels that are produced without diverting resources from food production nor from cleared land would be given a 100% green accreditation. Such an accreditation would work in much the same way as organic foods are accredited. This way consumers would be aware that the bio fuel has been created either through the treatment of waste products or through the exploitation of land that would otherwise not be suitable for primary production.

One possible source is waste paper: The Furfuel bio-crude oil process, developed by CSIRO and Monash University, can be used to produce petrol and diesel from forest thinnings, crop residues and waste paper, most of which are normally dumped in landfill or burned. This could be investigated further.

Optimum and sustainable levels of population under these constraints;

Population levels should be determined by our capacity to feed, shelter and clothe that population without being dependent on importing either food or clothing. Using that criterion alone we are currently over populated. Our capacity to increase our population should be directly linked to our capacity to develop a sustainable lifestyle.

The need for public education, awareness and preparedness;

There is a great need for the public to be informed. However, they need to be informed about solutions. There needs to be an active and critical engagement of the public in shaping our common future. To do that they need information both about the challenges that confront us and possible solutions.

The establishment of a Department of the Future staffed with a small secretariat but with a large number of South Australians on its books who have ideas and are prepared to share those ideas with a view to inventing a sustainable future for South Australia is one way of ensuring that our community is continually exposed to a rich vein of future possibilities and therefore engage in the debate to create such a future.

Other Issue: Water

The foregoing will be of little value if we are not able to ensure a reliable water supply. There is a temptation by governments to focus on ribbon cutting projects so that they can advertise their willingness to address problems. This can mean that solutions that do not lead to such ribbon cutting exercises tend to be shelved.

A case in point is the desalination plant. One has to question the wisdom of this project.

Currently close on 90% of water that is treated for use in domestic contexts is used for flushing toilets, washing clothes and bathing. If instead of building a desalination plant the government invested in infrastructure to phase in a dual system of water supply South Australia can become independent of pumping Murray water.

A dual system would mean that water dedicated for cooking and drinking would be sourced from the reservoirs and would be treated in the normal way. The rest of the supply would be recycled water. The recycling technology produces water fit for human consumption so there would be no health risk but a dual system would mean that there would be greater public acceptance.

If such a strategy were to be phased in then it would obviate the need for a desalination plant and would ensure South Australia's water supplies in the long term.

1. S. Lincoln, *Challenged Earth, An Overview of Humanity's Stewardship of Earth* 2006, London: Imperial College Press.