

18 April 2008

Garnaut Climate Change Review
Level 2, 1 Treasury Place
Melbourne VIC 3002

Dear Professor Garnaut,

**The need to develop innovative policy mechanisms in parallel
with the Emissions Trading Scheme**

HAC Consulting is an Australian firm providing sustainability and climate change services to government and corporate clients. Our practices operate across several sectors, including both the conventional and alternative energy industries.

We appreciate the opportunity to contribute to the Garnaut Review, and are pleased to provide this concise submission for your consideration.

Regards,



Jamie Ally
Director

Putting the challenge in context

The economic theory which underpins the Emissions Trading Scheme (ETS) assumes that markets are a cost-efficient mechanism to achieve a given level of greenhouse gas abatement. The ETS will likely prove effective in the short term, during which the emissions cap will be relatively well aligned with Australia's current level of emissions. However if the emissions cap trajectory is to arrive at a 60-90% reduction within a period of decades then the national greenhouse account will experience some significant step changes as new technologies are implemented along the way.

A shortcoming of the ETS is that it relies on a relatively high level of certainty in the marginal cost of abatement – a level of certainty which currently does not exist, at least not in the long term. Indeed, many of the technologies which could deliver substantial reductions have not yet been developed on a scale that could provide indicative costs for widespread implementation.

Such technologies require a large upfront investment in research and development to accelerate the innovation cycle, and a large upfront investment in infrastructure to achieve penetration. A considerable time-lag exists between the initial capital investment and the realisation of deep cuts in greenhouse gas emissions. Depending on the particular technology, the time lag could range anywhere from years to decades. As stated in the Garnaut Review ETS Discussion paper, “Although the revenues from auctioning all permits would be large, they will turn out to be uncomfortably tight in comparison with the valid claims on increased public expenditure.”¹, such as payments to TEEII's², low-income households, and declining communities. This suggests that the ETS is unlikely to provide sufficient funding to correct for market failures.

One example of a sector which contributes significant emissions and will likely suffer from market failure is transport.

Learning from the European Experience

“If transport, and particularly road transport, had followed the trends of other economic sectors, we could have shown international leadership by having reached our greenhouse gas emission targets under the Kyoto Protocol several years ago.”³

- *Professor Jacqueline McGlade, Executive Director of the European Environment Agency (EEA)*

The total emissions of the EU-27 decreased by 7.9% from 1990 to 2005 however emissions from the transport sector *increased* by 26% during that period. Freight transport growth is outpacing economic growth and passenger car usage is rising at a rate that surpasses the incremental improvements in vehicle efficiency. Greenhouse emissions from the transport sector are growing at an alarming rate.

One lesson that Australia can learn from the European experience is to recognise that previous attempts to contain or reduce transport emissions have failed, and that substantial efforts must be undertaken to develop a suite of innovative and powerful policies that have the capability to curb emissions from the transport sector.

¹ Garnaut Climate Change Review, *Emissions Trading Scheme Discussion Paper* (2008).

² Trade Exposed Energy Intensive Industries

³ <http://www.eea.europa.eu/pressroom/newsreleases/eu-fails-to-curb-emissions-from-transport-dramatic-improvements-and-clear-targets-needed>

Trends in the transport sector

The *Bureau of Transport and Regional Economics* forecasts strong growth in the Australian passenger and freight transport tasks. Compounding this, the social costs of congestion are expected to double by 2020⁴, and declining domestic oil production threatens Australia's trade balance.

The *IEA* predicts that the transport sector will likely be one of the fastest growing sectors contributing to climate change, and one of the last sectors to reduce greenhouse gas emissions below current levels⁵.

The security of fuel supply has become a growing concern for Australia as the economy is largely dependent on crude oil and demand is relatively inelastic because there is no substitute for transport. As a net importer of transport fuel, Australia is particularly vulnerable; a rise in the price of foreign oil coupled with inelastic demand will result in a net loss for the Australian economy⁶.

Aviation was a relatively small contributor to total transport emissions (2.9 Mt CO₂-e of the total 61.6 Mt CO₂-e in 1990) but it is showing the fastest growth and will reach 122% of 1990 levels during the Kyoto period and 198% by 2020⁷.

The demand for domestic air services is far more elastic than private car travel. An increase in the cost of domestic airfares will result in a much greater reduction in demand for discretionary travel than a proportional increase in the costs of private car travel. A similar situation has been observed in Europe.

The *Stern Review*⁸ noted that transport is a derived demand, in that it is not demanded for its own sake but rather for the things it enables, such as personal travel, centralised production, distribution of materials, and other tasks. Growth in transport demand can be attributed to:

- Growth in personal income. Stern found that as people become more affluent they choose to travel more and transport more goods. They also tend to prefer more carbon-intensive modes of transport.
- Economic growth. As the economy grows, the demand for commercial transport grows at least as quickly. Improvements in efficiency, such as larger trucks or new rail links, tend to reduce the cost of commercial transport which triggers a rebound effect that increases the overall transport demand.

The expanse of the existing fossil fuel network, and the 'behaviour inertia' associated with existing technologies, creates a 'lock-in' effect which presents a barrier to nearly all alternative measures.

⁴ Bureau of Transport and Regional Economics, *Estimating urban traffic and congestion cost trends for Australian Capital cities, Working Paper No. 71*. (2007), Australian Government. The BTRE predicts a doubling from 2005 levels by 2020.

⁵ International Energy Agency, *Energy Technology Perspectives: Scenarios and Strategies to 2050* (2006).

⁶ Senate Standing Committee on Rural and Regional Affairs and Transport, *Australia's future oil supply and alternative transport fuels – Final report* (2007). Australian Government.

⁷ Department of Climate Change – Transport Sector Greenhouse gas emissions Projections 2007 - <http://www.greenhouse.gov.au/projections/pubs/transport2007.pdf>

⁸ Stern Review on the economics of climate change, *Stern Review Final Report* (2006), HM Treasury.

The number of registered motor vehicles in Australia is growing at a faster rate than population growth. Between 2003 and 2007 the number of vehicle per 1000 residents increased from 663 to 705⁹.

The growth in ownership is attributed to small low-fuel-consumption vehicles, imported luxury cars and SUVs¹⁰. This indicates that rising fuel costs and to a lesser extent, concerns over climate change, are having some affect on consumer preference. But this is not consistent across society as evidenced by the accompanying increase in sales of larger vehicles. Any reduction in emissions due to the increasing market share of more fuel efficient vehicles has been overtaken by other factors.

Vehicle ownership and use is closely linked to lifestyle and social status. This adds significantly to the social inertia that resists behaviour change initiatives.

Recent increases in the price of crude oil have revealed an extreme inelasticity in transport demand, suggesting that the marginal increase in fuel price due to a carbon cost will have little effect on demand.

The time lag of transport emissions abatement options

All options to reduce greenhouse gas emissions from the transport sector can be separated into three broad categories:

- Options that reduce travel demand, such as improved urban planning and telecommuting;
- Options that improve the energy efficiency of conventional transport, such as intelligent transport systems, and mechanisms to increase passenger-km per vehicle-km; and
- Technology improvements, such as vehicle weight reduction, fuel efficiency improvements, and alternative fuels.

Any appreciable reduction in transport emissions will likely result from a mixture of these solutions, however the timeframe for widespread implementation of all options is relatively long. Changes in urban planning, installation of mass-transit infrastructure, and widespread permanent behaviour changes, all take time to develop and implement.

The recent review of the Australian Automotive Industry¹¹ conducted by the Department of Innovation, Industry, Science and Research states that the development of a new motor vehicle required an investment of \$1bn US in 2002 and is continuing to rise. The Australian Government has proposed a \$500m Green Car Innovation Fund starting in 2001 to help build Australia's first "green car". It is expected to be matched by industry funds, resulting in a total value of \$2bn.

This is a significant amount of money but is insufficient to deliver any real reduction in emissions if it is not part of a co-ordinated strategy designed to address all of the issues described above.

The Emissions Trading Scheme (ETS) may serve as an effective economy-wide mitigation strategy however the Garnaut Review has stated that the "...ETS will need to

⁹ Review of Australia's Automotive Industry 2008 – Background Paper, <http://www.innovation.gov.au/automotivereview/Pages/ReviewofAustralia'sAutomotiveIndustry.aspx>

¹⁰ Review of Australia's Automotive Industry 2008 – Discussion Paper, <http://www.innovation.gov.au/automotivereview/Pages/ReviewofAustralia'sAutomotiveIndustry.aspx>

¹¹ www.innovation.gov.au/automotivereview/Pages/ReviewofAustralia'sAutomotiveIndustry.aspx

be supported by measures to correct market failures...” in the areas of “innovation, demand-side energy use, and provision of network infrastructure”¹².

The development of innovative approaches to handle market failure in parallel with the ETS is a matter of urgency. We hope that this work, or at least the strong recommendation that Australia immediately undertake in this time-critical task, is considered to be within the scope and mandate of the Garnaut Review.

¹² Garnaut Climate Change Review, *Interim Report to the Commonwealth, State and Territory Governments of Australia* (2008).