ISSUES PAPER 5

TRANSPORT, PLANNING AND THE BUILT ENVIRONMENT - a Submission by The Urban Transport Institute and TreeSmart Australia

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1 INTRODUCTION

As part of the process for the design of Australia's emissions trading scheme, the Garnaut Climate Change Review was commissioned by Australia's State and Territory Governments on 30 April 2007. As part of this Review, a number of Public Forums have been held and Issues Papers released. The Review has called for submissions on Issues Paper 5, which highlighted issues raised at a Public Forum on Transport, Planning and the Built Environment.

This submission is made by Dr. Tony Richardson, Director of The Urban Transport Institute and TreeSmart Australia. The Urban Transport Institute is a private research consultancy, while conducts policy and data collection projects for the public and private sectors of the transport industry. Over the past 20 years, Dr. Richardson has been responsible for the design, conduct and analysis of several large-scale travel surveys in Victoria, Queensland, Western Australia and New Zealand, which provide the household travel data used by Government for policy analysis and network model building. TreeSmart is a private company established in 2005 for the purposes of offsetting greenhouse gas emissions from the transport sector, using carbon sequestered in farm forestry plantations. These plantations are destined for eventual harvesting, with the carbon continuing to be sequestered in two ways. This ongoing sequestration can be in long-lived timber products or in fossil fuels that are not used because the harvest residue has been used for bioenergy production.

Dr. Richardson's experience in both the transport and greenhouse offsetting areas is unique in Australia, giving a balanced approach to the issues involved in transport and climate change.

Because of Dr. Richardson's experience in transport, this submission will concentrate on the issues involved in the Transport and Planning sectors, with only a passing reference to one specific issue in the Built Environment area.

2 ISSUES

With respect to transport and planning, the Issues Paper concentrates on Land Transport emissions from private vehicles, but also considers emissions from the freight sector and also from aviation and shipping. In considering emissions from private vehicles, the Issues Paper concentrates on five main policy measures:

- Pricing of emissions through the Emissions Trading Scheme
- Behaviour Change
- Development of public transport systems
- Uptake of fuel efficient passenger vehicles
- Changes in city structure through land-use planning measures

Each of these measures has important long-term effects, and must be pursued. However, it must be remembered that while climate change itself is a long-term issue, the responses to curb the factors leading to climate change must have a short-term timeframe. As the Stern

Review, and some early papers from the Garnaut Review, pointed out, we cannot simply wait for long-term actions to take effect. We must also make short-term changes to reduce the levels of greenhouse gas in the atmosphere.

With this issue in mind, this Submission therefore concentrates on three issues:

- The adoption of an holistic overall framework for greenhouse gas reductions
- Consideration of the effect of the ETS in the transport sector
- Life-cycle analysis of building materials within the Built Environment

3 AN HOLISTIC FRAMEWORK

While public transport, vehicle technology (including fuels) and land-use planning have important long-term ramifications for climate change mitigation, it must be realized that their effects are long-term. No short-term changes of significance can be expected. Behaviour change programs (such as TravelSmart) can have short-term effects, but the size of this effect is limited, Even the most optimistic evaluations (by the proponents) of the TravelSmart programs claim only a reduction of 10% in vehicle kilometers, while other independent evaluations show much lower reductions. The ETS will have a flow-on effect on the price of fuel, which will lead to some short-term changes in behaviour. However, given the very low price elasticity with respect to fuel costs, such changes are likely to be miniscule given the anticipated changes in fuel price as a result of the ETS. The result of the above observations is that the measures discussed in Issues Paper 5 are likely to have very small short-term impacts on greenhouse gas levels in the atmosphere.

In order to obtain a more complete picture, such policies need to be seen within a broader context.

While the main objective of *TreeSmart Australia* is to offer carbon offsets for the transport sector, it is fully realised that offsets are only one part of an overall greenhouse emissions management strategy. *TreeSmart* has developed and works within the MAORI Model of Carbon Neutrality, which is composed of five major actions.

Measure

Avoid

Offset

Reduce

Iterate

Measure

The first step in going Carbon Neutral is to ***Measure*** (or at least estimate) the emissions associated with specific activities. In the context of transport, this is a relatively straight-forward task for land-based transport, since greenhouse emissions (mainly CO_2) are directly related to fuel consumption, and many methods exist for modelling and measuring fuel consumption from land-based transport. For air transport, the position is not quite so clear, since CO_2 is not the only (or the major) greenhouse emission from air transport. At high altitudes, other emissions (even water vapour) are significant contributors to greenhouse emissions, with the result that total greenhouse emissions are about 2-3 times greater than the CO_2 emissions, although debate persists as to the best value of this factor to apply.

Avoid

Having identified the greenhouse emissions attributable to an individual, a household or an organization, there may be some activities that result in emissions that are relatively easy to ***Avoid***. These activities are often referred to as "low-hanging fruit". Examples of such activities in the context of personal travel might include walking to the local shops instead of driving, combining activities on one round-trip rather than making separate trips, and car-pooling for trips where this is a viable alternative. These actions are often grouped under the heading of Demand Management, and marketed in Australia under the TravelSmart banner.

However, the number of such activities where emissions can easily be Avoided is likely to be relatively few in number, and the total emissions avoidable is likely to be relatively small. While short-term avoidance is important, these actions cannot achieve the required Greenhouse Gas emissions reductions on their own, and other options must be considered.

Offset

While other models of Carbon Neutrality tend to put offsetting at the end of the chain of activities, the MAORI model puts ***Offsets*** in the centre of activities, for two main reasons.

Firstly, as noted by Stern, there is a need for immediate action with respect to reductions in greenhouse emissions in the atmosphere. While the long-term aim might be to eliminate or change the activities which give rise to the emissions, such changes typically take a considerable period of time (e.g. changing over the fleet to low emission vehicles will take at least 10-20 years), and we simply can't wait that long to do something about reducing atmospheric CO_2. While waiting for the long-term changes to occur, we need to make immediate reductions in atmospheric CO_2, both for our current activities and also for past activities which have contributed to CO_2 emissions.

Secondly, having offset the emissions that cannot easily be avoided this year provides a metric and an incentive to proceed to the next steps in the MAORI process (Reducing and Iterating), as will be described below.

Reduce

Having removed the polluting activities that can easily be avoided, and then offset the emissions that cannot easily be avoided this year, the next step is to start to ***Reduce*** the emissions that are not easily avoided and that may take some time to completely remove. This process may take several years to completely implement. Examples of such changes (in a household context) might include reducing the number of vehicles in the household, changing those vehicles to low-emission vehicles, and changing residential location to be in a position to make better use of public transport services. None of these changes will occur overnight, and yet we need to make immediate changes in atmospheric CO_2 if we are to stave off the inevitable global warming consequences. This is why Offsets come before Reductions in the MAORI model. We need to take short-term action while we start implementing the long-term actions.

This submission considers that the emphasis in Issues Paper 5 on long-term reduction activities is a fundamental weakness of its overall approach. Such long-term reductions are clearly important in the long-term, but they are too slow to achieve meaningful results. While waiting for these long-term changes to occur, transport emissions will continue at the same or increased rates. Importantly, a concentration on these long-term reduction activities could mislead the public and private sectors into believing that this is all they need to do. However, while these long-term actions are slowly occurring, the transport sector must also be offsetting the emissions that have not yet been reduced. As the long-term reduction activities bring about the desired results, the amount of offsetting can be reduced. But until that happens, transport emissions must be offset if real and immediate reductions in atmospheric greenhouse gases are to be achieved.

Iterate

The final step in the MAORI model is to ***Iterate***, by going back around and doing it all again next year. Experience gained in year 1 may show a few more emissions that can be easily Avoided in year 2. In year 2, there will still be a need to Offset what hasn't been able to be Avoided or Reduced in year 1, but the amount of Offsets required in year 2 should be less than what was required in year 1. Indeed, the true test of the success of the MAORI model is that the offsets should reduce year by year until they reach a minimum level.

A complete emissions management strategy must include all five steps of the MAORI Model. Only by combining offsetting and emissions reduction will a holistic strategy be developed which has the desired short-term and long-term consequences.

4 THE ETS AND TRANSPORT

The ETS is probably the single most important component of Australia's fight against climate change. Indeed, the Garnaut Interim Report stated that "The emissions trading scheme (ETS) is the centre-piece of a domestic mitigation policy". However, there appear to be mixed messages about what the ETS will achieve, and how it will achieve it. Clearly, the overall purpose of the ETS is to reduce greenhouse gases in the atmosphere. However, several speakers at Forum 5 in Perth stated that, in the transport context, the increases in fuel prices due to the ETS would be too small to have any significant effect. This submission believes that such a view is mistaken and is based upon a limited view of how the ETS can achieve its aims, as explained below.

The ETS can achieve its goals in two main ways; demand-side changes and supply-side changes.

Demand-side changes are created when the price of fuel (or energy) is increased and the consumer changes his/her behavior (i.e a change in demand), such that less greenhouse-intensive travel patterns emerge. Examples of such demand-side changes might include simply travelling less, changing to public transport, changing to a more fuel-efficient vehicle, changing to walk or bicycle, or moving to a new residential location which supports less greenhouse-intensive means of transport. Since the Forum 5 speakers were advocating such changes, they were of the view that the predicted increase in petrol price arising from the ETS (around 10 cents per litre) would be too small to bring about the required behavioural changes. And they would be right in this conclusion, because it is well-known from previous research that the price elasticity of travel demand with respect to fuel price is very low (around -0.3). Hence, a 10 cent/litre price increase would be about a 7% increase in fuel price, which would lead to only a 2% reduction in travel demand. By simple scaling (but realizing that the elasticity might not be constant as the size of the change increases), a 20% reduction in demand would require a $1.00/litre increase in fuel price. It is therefore clear that demand-side changes, induced by a change in fuel price, will not be sufficient.

Supply-side changes are created when the revenue, generated by fuel price increases arising from the ETS, is invested in changing the physical system in which the traveller operates. This supply-side investment will bring about changes in atmospheric greenhouse gases, as the traveller continues to travel. It is not necessary that the traveller changes his/her travel patterns, but any supportive demand-side changes will help to amplify the effect of the supply-side changes. Examples of supply-side changes could include infrastructure investments in less greenhouse-intensive transport systems, such as new public transport systems and better walk and cycle paths, investment in less greenhouse-intensive urban developments, research into new vehicle technologies etc. However, as noted above, these investments would mostly be investments in long-term reductions in greenhouse gases, and very few short-term benefits could be expected.

It must be realized, therefore, that an alternative supply-side investment would be in offsetting the emissions created by usage of the transport system. This has the advantage that short-term impacts are achievable and at a much lower unit cost. For example, with a 10 cent/litre fuel surcharge, 100% of the land transport greenhouse emissions could be offset, even if the price of carbon offsets was as high as $40/tonne CO2-e. Clearly, not all of the revenue raised from an ETS fuel price increase

would be used on offsets. Some would go into infrastructure investment, and some would be used to compensate low-income households affected by the fuel price increase. However, maximum short-term reductions in atmospheric greenhouse gases can be achieved by using a substantial proportion of the revenue to invest in carbon offsets in the short-term, while the long-term reductions are given time to realize their benefits.

5 LIFE-CYCLE ANALYSIS OF BUILDING MATERIALS

Most of this submission has concentrated on transport issues. However, there is one issue with respect to buildings that does not appear to have been considered in Section 4 of Issues Paper 5. This is concerned with the materials used for the construction of new buildings, especially residential buildings (which are about half of the building sector). Considering the full life-cycle of materials used in the construction of residential buildings, it is clear from many studies that timber has a lower greenhouse intensity than alternative building materials such as steel, aluminium and concrete. It therefore makes sense that the ETS should send the correct price signals to encourage use of the lower greenhouse-intensity building materials. This would normally be expected to be the case if all building materials were required to bear the carbon cost inherent to each material.

However, that section of the ETS related to Trade-Exposed Emissions Intensive Industries (TEEII) would see the steel, aluminium and concrete industries protected from bearing the carbon cost of their activities because of their trade-exposed nature. This would prevent the correct price signals being conveyed, and would even give the wrong price signals if the timber industry was a covered sector and had to pay for its carbon emissions.

While the logic of the TEEII provisions makes sense (in a global economic environment), care should be taken to ensure that this distortion in the ETS regulations does not lead to a further distortion in terms of sending the wrong price signals to the construction sector.

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