

Garnaut Review on Climate Change

Submission with recommendations on

Issues Paper 5 (Transport & building sectors) and
Reference 4 of the Garnaut Review

Dr Chloë Mason

Adjunct Associate, Institute for Sustainable Futures
University of Technology Sydney

PO Box A973
Sydney South
NSW 1235

Table of Contents

Summary	4
Issues Paper 5: Context.....	5
Market failures.....	5
Phasing out the Fringe Benefit Tax concession	5
Direct expenditure on infrastructure for low emission modes.....	6
Geographic and spatial aspects of transport	7
Urban functioning	8
Sectoral analysis of ‘transport’ and ‘buildings’	8
Focus? current incentives to high-emission transport.....	9
Omissions	9
1 Indirect emissions	10
2 Co-benefits.....	11
3 Peak oil	12
4 Recreational travel and tourism	13
5 Inclusion of transport sector in an Emissions Trading Scheme.....	13
3 Transport and planning.....	13
3.1 Transport and emissions.....	13
“Passenger land transport”- emissions and barriers (section 3.1.1).....	13
Passenger transport emissions.....	13
Opportunities: in constraining high emission modes	14
Further opportunities available.....	15
Barriers (section 3.2).....	17
Price and information (section 3.1.1)	17
Uptake of more efficient vehicles (section 3.3.2)	17
Infrastructure and services (section 3.3.3)	18
Urban form and land-use planning (section 3.3.4)	19
Issues Paper Questions on land passenger transport - Q3, Q2, and Q 1..	20
Q1 Barriers and solutions by government policy to enable a modal shift from car dependence to healthy, active travel	21
Freight- emissions, barriers/solutions - (ss3.1.2,3.4)	24
Shipping & aviation - emissions, barriers/solutions - (ss 3.1.3. 3.5).....	24
Buildings sector: Q&As	25
Governance	26
Education to facilitate social change	27
REFERENCES	28
Mason’s Selected Publications, Papers & Conferences.....	30

Summary

I welcome this opportunity to present a submission to the Garnaut Climate Change Review.

In this submission I comment on the Issues Paper and within the text make recommendations for matters to be discussed in the Review's Draft Report, forthcoming in June. I also have responded to the questions in the Issues Paper, although in a different order.

In my view, key issues for reducing emissions from the transport-urban settlements sectors, are:

- Reducing the existing support and perverse subsidies for car use, in taxation and other policies
- Federal funding and policy on integrated transport services, including for Australian cities and towns
- The inclusion of co-benefits in transport policy that also achieves reduced greenhouse gas emissions.

This Submission makes use of three recent Parliamentary Inquiries on the future of oil supply (peak oil), sustainable cities, and whether Australia was doing enough to reduce climate change.

The most recent of these inquiries gave the compelling rationale for federally funded public transport, and responsibility by COAG, in observing:

Serious improvements to public transport infrastructure - particularly rail extensions - are costly, tend to come in large, indivisible packages, and have very long payback periods. They are hard to program within state-sized budgets, and easy to shelve in favour of more incremental roadworks. However this outcome is not necessarily optimal in the long term.

I believe we should use these findings and recommendations rather than beginning from scratch. It is an exciting time in which the Garnaut Climate Change Review may become a watershed in overcoming the paralysis in public transport investment and in requiring widespread access to safe cycling routes in towns and cities.

Further references could be given and any errors are mine alone.

Issues Paper 5: Context

Market failures

It is well documented that market failures in the transport sector act as barriers towards sustainability.

It has become essential and more publicly palatable for the Federal government (&COAG) to implement economic and taxation measures in “address[ing] the barriers to the adoption of low-cost abatement opportunities” (p. 2, p. 4 section 3.2 and Question 1). Therefore, it is imperative that the draft Review Report to address the existing economic and taxation measures for reform, as well as the institutional arrangements. It is such institutional arrangements that determine and reinforce the pre-eminent and preferential treatment of car travel in places where there is competition for the use of road and parking space (ie in cities and at the premises of trip generators). This treatment and the structuring of prestige within workplaces, the media and the wider society impact negatively on the uptake of low emission modes of travel and more appropriate investment decisions.

Phasing out the Fringe Benefit Tax concession

This argument has been made out repeatedly and now expressed in bipartisan Parliamentary reports and submissions on climate change, sustainable cities, and peak oil within the last decade. In particular, the **phasing out of the Fringe Benefit Tax concession** for motor vehicles, fuel and parking costs has been considered and recommended, for example, in the Senate report (2000) *The Heat is On: Australia's Greenhouse Future* and the bi-partisan House of Representatives report on *Sustainable Cities* (Committee on Environment & Heritage).

Inexplicably, in a recent address to the Sydney Transport Panel, Engineers Australia (1 April 2008), a Director of the NSW RTA John Brewer stated that the FBT concession does encourage driving. In response to question, he also stated that the RTA has not modelled [as yet] the impact of phasing-out the FBT concession on the reduction in motor vehicles on the road network.

Both the Parliamentary reports, almost as a secondary thought, recommended the extension or replacement of this concession to public transport users and cyclists - as if to give a leg-up to the traditional ‘second class’ travellers. The relative scale of such a new concession would not be comparable in financial benefit, would be spatially inequitable. It would be far preferable for the savings to be allocated for direct expenditures in the federal budget to public transport and neglected infrastructure for walking and cycling.

I **strongly recommend** that the Review recommend phasing out the Fringe Benefit Tax concession for motor vehicles, fuel and parking costs, first removing the regressive subsidy for fuel use, and subsequently phasing out the concession in urban areas. I **recommend** against some proposals for such tax concession to be used for encouraging public transport use or encouraging cycling. I **also recommend** that the tax concession estimated at a pecuniary value of somewhere between \$1.1 - \$3.4 billion per annum contribute to direct expenditures from the federal budget toward an infrastructure fund for public transport, safe cycling and

improved conditions for walking (including access to public transport, e.g. Town Hall Station, Granville and Bondi Junction interchanges).

Options to reduce emissions from transport and buildings were identified in the 1992 *National Greenhouse Response Strategy*. That *Strategy* stated that the overarching determinant of emissions for transport was economic. For the *Strategy*, next off the rank as a determining influence on emissions from (passenger, land) transport was transport-landuse integration.

Today, 15 years following publication of the *Strategy*, these two determining forces (aka 'drivers') continue to dominate the (passenger, land) 'transport' and 'buildings sectors'. I **recommend** that the draft Review Report take this into account in and in effect reverse the order of presentation in the Issues Paper 5.

A number of early Submissions elevated the economic and taxation issues to draw the Review's attention to the primacy of these forces for determining emissions from the two sectors, transport and buildings.

Direct expenditure on infrastructure for low emission modes

Treasury's (2005) *Tax expenditures statement* appears to show the pecuniary value of car benefits, car parking and car parking fringe benefits. In addition sales tax exemptions on motor vehicles are granted to councils, universities, government department and other entities and can result in fleet procurement being a profit-generating exercise, and act as an incentive for staff to have a car and to use larger cars.

Using Tax Expenditures Statements, Fairbairn has suggested that vehicles for private use have been undervalued and reduced the tax base by about \$1.1 billion in 2003-04.

As Turnbull & Temple point out:

Indeed, concerns have recently been expressed over the growth in claims for work related expenses. Neil Warren from ATax at the University of New South Wales has found that between 1991-92 and 2000-01, claims for work related car expenses grew by an average annualized rate of 11.1%. Moreover, the number of claimants also grew, by about 6.3% per annum over the same time period.

Work-related car expenses have become that the largest work related deductions and according to Fairbairn account for \$3.7 billion per annum.

Although Treasury cautions readers on estimating the value of a tax expenditure (whatever form including an exemption, deduction, tax offset, concessional tax rate etc), if tax revenue of this order of magnitude could be recouped, even in stages, it could be a significant direct expenditure on an infrastructure fund for transport.

In any event, Treasury (2005) explains to its readers that the tax system:

...also provides government with the opportunity to promote objectives other than revenue raising. A government can achieve some of these

objectives by reducing taxes in selected areas to provide incentives for economic activities or to direct assistance (in the form of lower taxes) to particular groups, individuals, businesses or activities. A tax expenditure is a tax concession that provides a benefit to a specified activity or class of taxpayer.

Tax expenditures also redistribute the tax burden between taxpayers. This is because most tax expenditures result in less tax being collected from particular taxpayers. As a result, taxes paid by individuals and businesses that do not benefit from the tax expenditure will be higher than they otherwise would need to be to raise the same total revenue.

For the Review's draft report, I **recommend** a necessity to stop using tax policy to provide incentives for car use. A business-as-usual tax policy for cars will surely result in a business-as-usual emissions profile for passenger land transport.

Geographic and spatial aspects of transport

Data aggregation across inappropriate spatial scales obscures spatial variability and can become a barrier to understanding the potential for greenhouse-friendly practices. An example is given in response to Question 1.

Useful international sources on overcoming market failures in transport include:

- the WHO Charter on Transport, Environment and Health that was agreed jointly by the EU Ministers for Transport, Environment and Health in 1999¹
- Donald Shoup in his book *The High Cost of Free Parking*.

Over the last decade, the NSW Government commissioned a review of the guidelines, extended the legislation on parking taxes in the Sydney CBD and some centres, and announced its intentions to produce a Metropolitan Parking Policy. During the Sydney Transport Panel address, the RTA Director described the Metropolitan Parking Policy as having got caught up, and that in transport the institutional issues are difficult. The lack of resolution at this level of government paralyses local governments and frustrates communities that are willing to proceed with climate action at the local level. Likewise the NSW Ministry of Transport review of the CBD Parking Levy in 2003-04 was abandoned.

Hajer and Kesselring (1999) on this point suggested to:

broaden the conceptual definition of **technology** to refer to 'urban technologies', so as not only to include the means of transport but technologies of spatial organisation as well (Graham and Marvin 1996).

Advancing complex urban policy that is greenhouse-friendly is in urgent need of Federal support - whether through the forthcoming Federal Transport Policy, Ministerial Councils, COAG and the National Transport Commission.

¹ Mason C. (2000) MJA

Urban functioning

The Paper mentions cities in relation to their concentration of energy demand in geographic areas. Human settlements that are low density have been shown to consume greater amounts of energy (Victorian study comparing ‘traditional’, ‘low density’ and ‘transit-oriented development’, 1993?).

Buildings do not exist out of their urban context, comprising spatial, locational and mobility service aspects, at least². In 2007, Wilson & Navaro (2007) writing in the US e-news, *Environmental Building News (EBN)* stated:

many buildings are responsible for much more energy use getting people to and from those buildings [ed. - termed the ‘transportation energy intensity’ of a building]. That’s right—for an average office building in the United States, calculations done by *Environmental Building News (EBN)* show that commuting by office workers accounts for 30% more energy than the building itself uses. For an average *new* office building built to code, transportation accounts for more than *twice* as much energy use as building operation³.

Sectoral analysis of ‘transport’ and ‘buildings’

Sectoral analysis can provide clarity where aggregation across place and space is meaningful for the intended purpose. It is also useful to play the ‘Wedges Game’, as it were, to examine options of ‘technology + behaviour’ for achieving certain levels of abatement⁴.

In examining the potential ‘wedges’ for economy-wide carbon-intensity reduction (emissions/\$GDP) in the transport and building sectors, using the ‘existing technology + behaviour’ techniques, options typically considered include:

1. Efficient vehicles
2. Reduced use of motor vehicles
3. Efficient buildings

Professor Scolow, a founder of the Princeton Wedge Analysis, has emphasised the number of such options across sectors is arbitrary. Therefore, other options for the Review’s Draft Report could be categories of emissions for types of urban

² Hayashi Y. & Roy J. (eds) (1996), especially Michael Wegener’s “reduction of CO2 emissions of transport by reorganisation of urban activities” pp.103-124.

³ *Driving to Green Buildings: The Transportation Energy Intensity of Buildings*

⁴ The term ‘wedge’ to portray the shape of the area on a graph lying between one curve showing a projected business-as-usual emissions profile and a second lower curve for a particular emissions reduction initiative/option. The term arose from work at the US Pew Center and at Princeton University’s Princeton Environment Initiative, hence the badging ‘Princeton wedge analysis’ to reflect greenhouse gas emissions reductions due to changes in behaviour and technology and combinations. Department of Premier and Cabinet (December 2007) *Understanding the Potential to Reduce Victoria’s Greenhouse Gas Emissions*, Chair: Steve Bracks, prepared by MOPUS & SKM; *Climate Repair: a technology toolbox* http://www.eenews.net/special_reports/climate_repair/wedges_chart/

development-TransitOriented - I **recommend** that this option be added as so far the scope fails to deal with the urban condition in which modes or buildings operate.

At some point, technical options would need to be drawn out from the two sectors and formulated as a 'complementary policies' to an Emissions Trading Scheme (ETS). However, I **recommend** the Review's Draft Report elaborate on, and broaden, the combination of 'technology + behaviour' to include economic and social change⁵.

Focus? current incentives to high-emission transport

The Issues Paper describes its structure as exploring the emissions from the sector, technical options to reduce emissions, and potential barriers to emission reduction strategies (p. 2). The Paper's declared **focus** is barriers to existing low-emission technologies and practices.

Is there a risk that this Review will overlook an examination of the 'driving forces' that support and uphold the high-emissions mode uses and fuel inefficient vehicles?

I **recommend strongly** that for transport, at least, the Draft Report discuss both the supports/perverse incentives to high-emission transport (& urban form) as well as barriers to low-emission transport (& urban form). For example, the underpinning by the FBT concession, and other perverse subsidies to car use that shape cultural expectations and prestige and hence organisational behaviour and values learned by individuals (e.g. designated car parking spaces, like size of office space).

I **suggest** the Review consider other comparable areas of public policy dealing with seemingly as intractable problems as car dependency/high-emission mode use. e.g. in the early 1980s seeking to overturning entrenched discrimination practices. A package of measures included: legislation with prohibitions and penalties, complaint handling and mediation services, capacity-building for organisations, organisational practitioners and stakeholders, and community education and information, as well as huge changes in educational curricula. What is less well known is that research was also undertaken to identify direct and indirect discrimination provisions in all State legislation and policies and undertake progressive reforms to overcome their provisional exemptions (e.g. reform of the 'weight limit', a restrictive practice to women's employment, to manual handling provisions for all workers in all industries).

This parallel could be extended for research to identify the 'indirect' drivers for driving. At some forums, people express a desire for affirmative action in the urban environment for walking and cycling and public transport users⁶!

Omissions

The Context section neatly outlines the scope of the Issues Paper 5, explaining that some issues not covered in the Issues Paper are being covered by the Garnaut

⁵ Refer here to Moser & Dilling (eds) (2007).

Climate Change Review and will be picked up and discussed in the Review's Draft Report.

Five issues are not mentioned in the Issues Paper that are highly relevant to formulating solutions for reducing greenhouse gas emissions in Australia; these issues are:

1 Indirect emissions

Reference be made to the volume of Indirect greenhouse gas emissions from the transport and building sectors.

Distinctions between direct emissions, end-use fuel consumption by transport vehicles, and indirect emissions for transport are complex for voluntary greenhouse gas reporting systems⁷. For reporting purposes, it is understandable that emissions upstream from the fuel consumption - notably the production and delivery of fuels and materials for road pavements - are attributed to those industrial sectors. Fugitive emissions from fuels are treated as another indirect source of emissions and these are of significant contribution in Australia, shown in the table below:

Net greenhouse gas emissions (Mt CO₂-e) by sector in Australia (United Nations Framework Convention on Climate Change accounting)

Sector	2003 Mt CO ₂ -e	% total
Stationary energy	279.4	53.5
Transport	80.4	15.4
Fugitive emissions from fuels	31.2	6.0
Industrial processes	29.5	5.6
Agriculture	87.9	16.8
Land use, land use change and forestry	-3.2	-0.6
Waste	17	3.3
Total net national emissions	522.2	100

Source: Australian Greenhouse Office, *National Inventory Report 2005 - The Australian Government Submission to the UN Framework Convention on Climate Change*. April 2007

http://www.epa.vic.gov.au/greenhouse/greenhouse_pilot/greenhouse_aust_emissions.asp

⁷ Direct (fuel) emissions represent 1.22 Mt CO₂-e and indirect emissions 5.8 Mt CO₂-e (Lenzen 1997) cited by King & Hensher (1998), *How are Urban Bus Fleets Performing in Reducing Greenhouse Gas Emissions? The Australian Experience* http://www.itls.usyd.edu.au/bus_and_coach_themes/King&Hensher_ArticleDec981.pdf

The WBSCD Protocol includes as indirect emissions, emissions from transport by people traveling to work/entertainment etc ('trip generators').

Human settlements, encompassing buildings and transport facilities (airports, roads, car parking, docks, and rail corridors), seal the Earth's surface. Sealing of the Earth's surface affects the water cycle and the heating of the artificial surface with road pavements, such as asphalt and concrete. As I recall, NSW Department of Planning estimated a high proportion (40%) of the public domain having being sealed for roads and car parking; similar data has been calculated by Sydney local governments (available on request).

Materials used for road pavements tend to have high levels of embedded energy and also absorb heat from the sun and release heat during the night (the 'heat island effect'). The heat released at night may elevate urban air temperatures by several degrees and such conditions lead to the further consumption of energy to run domestic air conditioners.

Therefore, I **recommend** the draft Review's report, for public understanding of the demands made by land passenger transport on our total greenhouse emissions, discuss these relationships. These relationships bear upon government policy, for all Federal, State and Local governments, because for environmental sustainability reasoning it should be imperative to limit, or preferably reduce, the land surface covered by impermeable, heat-absorbing/releasing materials.

2 Co-benefits

With respect to Terms of Reference 4 for the Garnaut Climate Change Review, a major opportunity exists for reducing the costs of adjustment to climate change and shifting to more carbon-efficient transport in urban settlements. This opportunity is omitted from Issues Paper 5. What is it?

While appreciating that transport activity is coupled with growth in economies, nonetheless the problems associated with increased reliance on car travel are very great. In the 2007 *Synthesis Report on Transport and Its Infrastructure*, the Working Group III to the Fourth Assessment Report of the IPCC stated:

For most policymakers, the most pressing problems associated with this increasing transport activity are traffic fatalities and injuries, congestion, air pollution and petroleum dependence⁸.

In developed countries, like Australia, Canada, USA and the UK, for example, car reliance is also strong associated with:

- illness and premature death from motor vehicle-related air pollution, outstripping the years lost to life from collisions
- the reduction of physical activity⁹ and

⁸ Ribeiro & others (2007) Executive Summary p.325.

- the growth of urban sprawl (Frumkin) .

Medibank Private (2007) reported an estimated cost of \$1.5 billion for 2006-07 direct health care costs of adult Australians (18-75 years) for the major seven chronic conditions for the 17% of the total health care costs attributed to physical inactivity.

Given the policy concerns and costs, a compelling case should be made for reducing the proportion of car trips by more healthy, active travel and by employing other communication technologies. It would be inspirational for greenhouse policy to be the catalyst for human-centred policy, crossing traditional sectors and disciplines. I **strongly recommend** that the draft Review's report discuss mitigating emissions among these other transport-health priorities¹⁰, as observed in the *Synthesis Report*, 'by emphasising synergies and co-benefits (*high agreement, much evidence*).'¹¹

Interactions between policy areas are evident but traditional portfolio divisions have not been able to respond¹². For example, during the Howard Government, the federal government and the NSW Government reduced the problem of physical inactivity across the population to one of children's obesity. Typically, the NSW Health Department [concerned with health care] did not accept any of the recommendations made by the workshop on transport and urban planning in its Action Plan for Young People, 2003-7.

Senate

8.97 It should be remembered that measures to reduce demand for oil-fuelled transport also have other benefits - reducing greenhouse gas emissions; promoting the environmental and social benefits of less car-dependent cities - which the alternative fuels do not have, or have to a lesser degree. In the cost/benefit comparison these extra benefits should count to the credit of the demand management measures [emphasis added].

3 Peak oil

I **recommend** that the concept of peak oil - a prediction that a peak in conventional oil producing occurring before 2030 will be followed by declining production will cause serious hardship if mitigating action is not started soon enough¹³ be included as a further co-benefit of measures to reduce the use of inefficient, high emission modes of transport.

⁹ British Medical Association, *Road transport and health*.

¹⁰ McMichael (2003)

¹¹ Ribeiro cited above.

¹² Hence the opportunity for greenhouse-driven public policy to assist in facilitating better joined-up governance across the separate portfolios and across the three tiers of government.

¹³ See Executive Summary paras 3.3, 3.88, Senate Standing Committee on Rural and Regional Affairs and Transport (2007), Final Report Executive Summary *Australia's future oil supply and alternative transport fuels*
http://www.aph.gov.au/SENATE/COMMITTEE/rrat_ctte/oil_supply/report/index.htm

4 Recreational travel and tourism

I note that the Issues Paper appears to presume that travel is for utilitarian purposes whereas the people often travel for pleasure of moving around and visiting places, stimulated by the tourism and travel industries.

5 Inclusion of transport sector in an Emissions Trading Scheme

I recommend this issue be discussed in the Review's draft report.

Transport and planning and emissions (sections 2 and 3.1)

3 Transport and planning

Transportation energy use and the adverse environmental impacts associated with that energy use are huge and growing at a **faster rate** than the use of stationary energy.

3.1 Transport and emissions

I **recommend** that the Review's Draft Report acknowledges the indirect emissions and adverse environmental effects, e.g. the sealing of the Earth's surface for roads and parking space and that these sealed areas create costs for stormwater management and contribute to higher temperatures in urban areas.

For mobility of people/passenger land transport, I **recommend** that the Review's Draft Report address the spatial urban forms in which emissions are lower per capita/household in the inner rings of metropolitan areas, compared to the middle and outer rings, noting as well the public transport provision (& level of service) aspect researched by Dodson & Sipes, cited in section 3.3.3.

“Passenger land transport”- emissions and barriers (section 3.1.1)

Passenger transport emissions

For the Review's Draft Report, I **recommend** the inclusion of a diagram showing the relative emissions of greenhouse gases by mode, e.g. Pears Alan (second edition), *Global Warming. Cool It!* Transport - How can I save? Published by Dept Climate Change. <http://www.greenhouse.gov.au/gwci/transport.html>

Opportunities: in constraining high emission modes

This section of Issues Paper 5 canvasses two alternative approaches:

- I. reducing emissions from road vehicles without limiting vehicle usage
- II. using lower-emission modes of transport.

Rather than being canvassed as alternatives, I **recommend** both approaches together with the most important third approach:

- III. constraining demand for high emission modes of transport.

To do less would be reprehensible in light of the outstanding co-benefits and synergies with greenhouse mitigation.

Also I **recommend** that the Review's Draft Report be less tentative about the potential for reducing emissions per kilometre of travel by achieving modal shift. From the international and Australian literature and unreported experience, I believe there is 'high agreement, high evidence' for achieving emissions reduction for modal shift, particularly with reforms to the perverse subsidies and perverse government policies.

In the USA, the Department of Energy (1997) reported that savings of greenhouse emissions in one year were attributable to programs for alternative fuels (50%), reduced private motor vehicle use (38%) and more efficient road vehicles (12%).

In 2004, the NSW Environmental Trust funded the City of Sydney to conduct and evaluate a pilot program for Ride2Work with employing organisations and employees. This hugely successful capacity-building program, a recipient of a Heart Foundation award, resulted in mode shifts from public transport to bicycle, on most days. An evaluation calculated the greenhouse gases saved and the number of seats saved on Sydney's overcrowded public transport system.

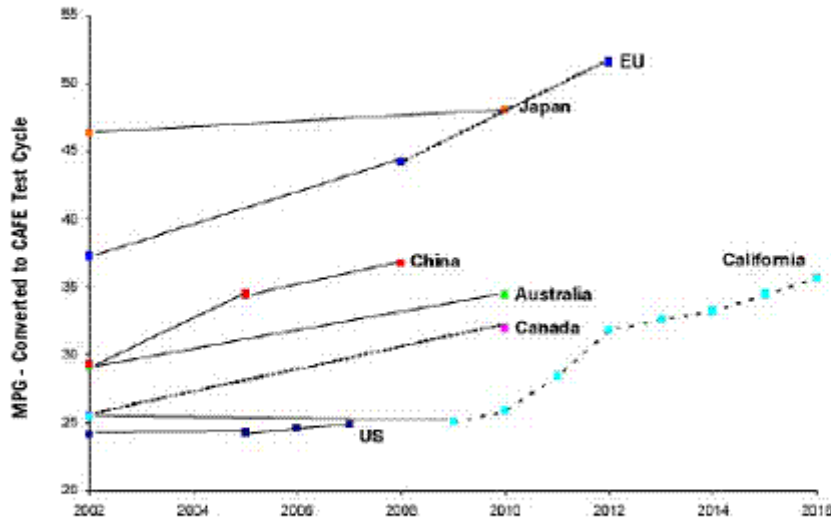
<http://www.sydneymedia.com.au/html/3028-city-of-sydney-cycling-in-the-city-program-huge-success.asp?orig=Home>

Consider the recommendations of any number of Federal Parliamentary inquiries and State and local government plans!

For illustration, see the chart below:

Comparison of fuel economy standards for new passenger vehicles.

Comparison of fuel economy and GHG emission standards normalized by CAFE-converted



Notes: (1) dotted lines denote proposed standards
(2) MPG = miles per gallon

Source: Pew Centre on Global Climate Change, *Comparison of Passenger Vehicle Fuel Economy and Greenhouse Gas Emission Standards Around the World*, 2004.

Source: Senate Rural and Regional Affairs and Transport Committee (2007), *Australia's future oil supply and alternative transport fuels*. Chapter 8 - Demand side responses, figure 8.4. www.aph.gov.au/SENATE/COMMITTEE/rrat_ctte/oil_supply/report/c08.htm

Further opportunities available

The Issues Paper misses opportunities for emission reductions from the transport and building sectors because of its framework and order of presentation. This framework can be described as mode-based and by dealing with transport as if separate from urban planning and buildings shortchanges public policy potential. While this comment is harsh, I **recommend** the draft Review report re-consider presentation. It could provide a synopsis with the leading determinants (economic/taxation, landuse-transport planning etc ..) and where opportunities lie for policy and social change rather than in how inventories are reported. This approach is well considered in much Australian literature and in three useful recent Australian federal parliamentary inquiries - on sustainable cities, on Australia's future oil supply, and on climate change.

Owing to the framework, the Issues Paper has not touched on

- international experience with integrated, multi-modal landuse transport models and legislation, as used in the USA (daughters of ISTEA) and parts of the EU (e.g. UK's NATA system)

- Integrated transport policy - ‘integrated’ in the defined sense given in the UK White Paper 1999
- ‘active travel’ for health (sometimes healthy, active travel or transport)¹⁴ - the conscious reframing of mobility by coining a new term, a collective noun, for human-powered mobility as distinct from sedentary driving in private cars. It covers walking, cycling and in combination with public transport (use of public transport generally entails at least 10 minutes of human-powered mobility) and skates, skate boards etc. It arose to highlight the health benefits (30 minutes of physical activity for adults on most days) and to displace the older terms ‘alternative modes’ and ‘non-motorised transport’. Since the introduction of this English innovation in our language, Brisbane City Council staff amended the term to ‘active travel’ because, they said, that’s what people do whereas transport is what some vehicle does! Hence the growing preference for ‘active travel’ around Australia.
- The discourse on sustainable development and its impact on sectors such as transport. Hajer & Kesselring (1999) attribute the emergence of the discourse of sustainable development on the ‘the rethinking of transport policy and spatial organisation in the Munich region’ (and elsewhere) to discussion of sustainable mobility and the vision for a ‘new mobility culture’.
- How the service of car sharing¹⁵ can enable people or households to generally rely on walking, cycling and public transport (‘active travel’) and to fill the ‘mobility gap’ by occasional access to a car. Membership of a car sharing organization helps to serve as a cap on emissions from transport use. Such ‘car-free’ households/people have more affordable mobility/transport services than households/people owning a car and paying the fixed costs (if they drive less than 11,000 km per year).

There is ample scope for some substitution of car travel by travel by lower-emissions modes, particularly human-powered modes. Again, for short trips particularly, mode shift would improve air quality as well as lower emissions per kilometre of travel. The NSW Transport Data Centre’s findings show: about one quarter of motor vehicle trips in Sydney metropolitan area are less than 3 kilometres, and almost half of all motor vehicles trips are less than 5 kilometres. It is often faster to cycle than to drive for these trip distances.

This confident claim to achieve modal shifts is based also on my experience as the Foundation Manager of the University of New South Wales (UNSW) Transport Program, that grew out of the UNSW 1998 Greenhouse Strategy. The program, in conjunction with service providers, was effective in managing a modal shift from car use by people attracted to the UNSW campus in Kensington, Sydney.

¹⁴ Mason MJA

¹⁵ AGO

Barriers (section 3.2)

Price and information (section 3.1.1)

It is **recommended** that for the Review's Draft Report this section be revised to remove an apparent double-negative; in other words, price factors can encourage car use at the expense of using other, lower-emission modes. The text would be easier to read if it were about the possible and likely effects of price factors rather than the lack of price factors.

Apart from plainer English, such revision helps to convey the domination of the urban area by cars. Thus:

- The externalization of transport costs - or, the lack of a carbon price - favours the higher emission forms of transport, e.g. Hummers, SUVs, private cars over public transport over cycling and walking.
- Congestion pricing - whether by cordon (inland London) or tolled highways/tunnels (coastal, riverine Sydney) - can constrain vehicle usage but rationing time by pricing parking spaces is probably a more efficient method to deter people from driving.
- **Tax arrangements.** I very strongly recommend the Review's Draft Report to remove this misleading sentence as it would detract from the credibility and confidence of the Review. In addition to the references to the FBT concession, on the first page of this submission, evidence-based peer reviewed papers and technical reports and public inquiries have recommended this and other tax arrangements be phased out (as they have in other countries, many years ago). Since about 1999, with the beginning of media coverage of the perverse effects of this subsidy, public expectations for reform have grown considerably. I urge the Review not to pussy-foot around on this topic!

Discussion of variable and fixed costs for car and public transport travel occurred extensively throughout the NRMA's Clean Air 2000 campaign, and the NSW Government's AQMP. Policy implications have also been canvassed by visiting international speakers such as Don Chen, brought out to Australia (by the AGO) from the USA for a speaking tour.

Regarding the paragraph on information, the more graphic concern - in this current era of interest rate hikes and affordability - is the high cost of car ownership.

Uptake of more efficient vehicles (section 3.3.2)

Consumer preferences for large vehicles have apparently grown such that 1 in 5 new vehicles is a SUV whereas in Japan young people are tending to defer purchasing a vehicle at all.

These preferences result in large, inefficient vehicles on the road. The calculus is not merely between efficient and inefficient vehicles because of the limited road space in places. Therefore, the presence of large inefficient vehicles has

significant **spillover effects** on other road users all of whom are travelling more efficiently, whether in smaller, compact cars or by 'active travel'. The adverse effects are excessive consumption of road space, contributing to congestion and inefficient use of space for car parking. Worse still are the adverse effects on people riding a bicycle as unseparated road space is squeezed by large, wide vehicles.

Infrastructure and services (section 3.3.3)

The information in this section gives a useful understanding of the entrenched primacy of roads funding within the transport sector on the presumption of the universality of car travel - a state that is 'killing our cities' and has to change to achieve the essential 'deep cuts' to avoid dangerous climate change.

The provision of road infrastructure (incl parking) induces car use, I concur.

Conversely, provide safe cycling conditions and the level of cycling not only increases but a successful modal shift is achieved.

Technical tools and processes used by State and Local Government road authorities for decision making are also indirectly prejudiced in favour of cars when dealing with competing claims for road space¹⁶. In NSW the RTA has tried to move away from a rigid warrant system, to give greater consideration of the local context, but often times local traffic managers and NSW Traffic Committees find the older rigid system easier. For example, if a narrow lane without footpaths (so people must walk on the carriageway) is used as a rat run (making the number of vehicles per day exceed the maximum of 300) then the RTA does not allow the laneway to be a shared zone where people have priority. And though the primary purpose of a road should be for traffic flow, the storage of unused motor vehicles (parking) nearly always takes priority over the need for bicycle traffic to travel safely.

Although the text acknowledges that 'sharing the same space can lead to one mode negatively affecting another', this statement does not acknowledge that:

- Private motor vehicles take up a lot more space than people walking or cycling
- The space available within a road reservations, boundary to boundary, is allocated to motor vehicle use
- Traffic managers see their prime responsibility as managing the road asset and building more roads. They are excessively averse to

¹⁶ A an outstanding example of vehicle-planning of the road network (with scant regard to 'all road users) is the intersection at Redfern station, Gibbons St and Redfern St (apparently named Lawson Square). The city inbound buses are prevented from dropping hundreds of interchanging passengers at the station entrance in Gibbons St because it would "block" the left-hand lane of Gibbons St, delaying "traffic". Instead, buses must turn right into Lawson Square before stopping for passengers. Interchanging passengers must then cross two streets and wait for two sets of traffic lights to change to access the station, resulting in a pedestrian black spot.!

reallocating road space to improve the share for lower emission modes (walking, cycling and buses), and specifically:

- to adopt schemes that use 'road diets' (shrinking the width),
- narrow-neck roads at intersections reducing the width of exposure to harm for people crossing,
- install contra-flow lanes for cycling on one-way road systems (designed with the motor vehicles in mind) - noteworthy exceptions Milsons Point village, North Sydney Council; Bourke Street separated contra-flow bicycle lane, Surry Hills, City of Sydney Council (installed by former South Sydney Council).

Spatial inequalities in the provision of public transport, and indeed for cycling and walking, are strongly associated with other spatial correlates as the work by Dodson & Sipe most recently highlights. The equity and distributional implications go much further - time spent driving, sedentary time, is also associated with less physical activity - and physical inactivity results in huge indications for chronic disease and major costs to the health sector as documented by the Access Economics for Diabetes Australia, and others.

Urban form and land-use planning (section 3.3.4)

The interactive relations between place, urban form and travel also mean that transport infrastructure is a determinant of locational decisions by firms. Economic geography studies show these relations well. For this reason, policymakers keen to reduce reliance on cars have urged new developments to provide public transport early in the development. An example is the transformation of the market gardening area of North Ryde to a new university, Macquarie, and commercial IT/pharma parks. In 1971, as a member of the students association, we urged the State government to invest in a rail extension, linking the northern line to the north shore rail lines. This rail line is now being built to service an area with massive car parks, with major roads and the M2 motorway. At least the potential exists to win over car travellers to rail.

The above example is another illustration of Brueckner's countervailing factors.

The designers of major motorways, in Sydney at least, have a history of hostility to bus use and resisted the inclusion of bus ramps until "demand warrants". Good illustrations of these problems are the history of buses on the M2 and the cancelling of bicycle lanes or installation of absurd bicycle lanes. Now the patronage of buses on the M2 to the Sydney CBD indicates that there is potential even for lower density areas to support lower emission transport patterns - but the services have to be there!

The EU *White Paper on European Transport Policy* expressed the issue:

"The big problem that urban authorities will have to resolve, sooner than might be thought, is that of traffic management, and in particular the role of the private car in large urban centres... The lack of an integrated policy approach to town planning and transport is allowing the private car an almost total monopoly".

Issues Paper Questions on land passenger transport - Q3, Q2, and Q 1

These questions are more easily considered in reverse order, as explained above.

Q3 How can land-use planning and the built environment be managed more effectively to lower reliance on high emission patterns of transport behaviour?

This third question should be pre-eminent for addressing how to achieve emissions reduction in the transport and buildings sectors.

- By promoting high-density and high quality urbanisation in areas with a good mix of working facilities and residence or in areas with high-capacity urban public transport.
- Ongoing investment in public transport infrastructure and long term policies such as Melbourne 2030 will deliver some of the outcomes sought through such programs.
- Provision of public transport services with urban development, not built with long lag times after development, e.g. the Epping-Chatswood link will be open in 2008-2009 yet it was proposed to government in 1971 prior to the planned greenfields conversion to commercial and major retail development of North Ryde near Macquarie University; or the promised rail line to the NW sector.
- Transit-oriented development.

Q2 Policy to achieve greater proportion of fuel-efficient cars

What policies would be suitable to address barriers to the uptake of more fuel efficient passenger vehicles?

International cities, such as Rome, introduced small car parking spaces reducing the number of spaces available to vehicles of excessive size. Several Sydney councils have wished to adopt this practice but are restricted by State Government regulations¹⁷.

The current Bracks review of Australia's **automotive industry** for the new Department of Innovation, Industry, Science and Research should be encouraged by the Garnaut Climate Change Review to address innovations in manufacturing and servicing for big leaps to gain deep cuts in emissions.

The Howard Government appeared to subsidise Mitsubishi year after year without requiring any improvements in fuel efficiency.

Aside from parking regulation and the automotive industry, the fleet management industry would be key stakeholder. I am aware of considerable gains in recent years (e.g. SSROC program; fleet management by Sydney South West Area Health Service), and initiatives by car sharing organisations. It would be useful for the Review's draft report to recommend government policy to support broad programs for fleet management.

¹⁷ E.g. NSW Road Transport (Safety and Traffic Management) (Road Rules) Regulation 1999

I note a new EU program for fleet management and logistics optimization practice, with nine participating countries, commenced this year.¹⁸

Q1 Barriers and solutions by government policy to enable a modal shift from car dependence to healthy, active travel

As described above, it would be a serious mistake for the Review's draft report to follow the Issues Paper in focussing on low emission modes without first discussing how to reform the supports for high emission modes.

I **recommend** that the Review reframe the problem embedded in this Question - not as one of increasing the use of low emission modes without examining some of the many reasons that the use of high emission modes (aka private cars) is so high. Such discussion and reform actions are essential pre-requisites to significantly greater uptake of low emission modes of transport, as needed for the deep cuts.

Over the last ten years we have had struggled to achieve uptake of low emission modes in the face of overwhelming deluge of support for high emission modes - it's like swimming upstream! A group of council practitioners, at a meeting in Sydney, convened by the AGO, urged some reforms particularly to the FBT concession.

In this context, low emission modes are often invisible to decision-makers and our information sources contain the presumption of car use, e.g. so-called street directories are really car directories - for contrast see the invaluable bicycle street maps for Sydney - *Bike It!* (second edition).

Therefore, I **recommend** the Review's Draft Report discuss ways of reducing the 'driving forces' (sic) that prop-up and maintain the dominance of cars in our society and economy.

While it is of great importance to identify solutions for a modal shift to healthy, active travel, it is necessary to appreciate the extensive barriers e.g. experienced by practitioners who were well supported by senior management and resourced (Black, Mason & Stanley 1999). Further, it is also necessary to adopt an appropriate conceptual model for change.

I have listed barriers below.

Solutions: TDM, TravelSmart, Mobility Management - what's in a name?

These models are distinctive in ways that are relevant to the Reviews Terms of Reference for policy.

Here I wish to raise solutions such as Travel Demand Management (TDM), TravelSmart © funded by the Howard Government, and other models that combine

¹⁸ *RECODRIVE* "Rewarding and Recognition Schemes for Energy COnserving DRiving, First newsletter March 2008 www.recodrive.eu. Project leader: Partner Gerfried Cebat, FGM-AMOR, Graz, Austria.
www.fgm.amor.at/fgm.phtml/?id=13&sprache=en

activities for addressing the actual physical environment/levels of service with education, social marketing, and social change and organisational development.

TDM as a traditional demand-side intervention used in traffic management to reduce traffic congestion and air pollution. Its concern is primarily with reducing the need to travel to enable the efficient use of the road network. Techniques are confined to 'soft' rather than 'hard' measures. Bannister is a leading TDM international exponent who visited Australia in the early 2000. In this model, substitution of motor vehicle trips by making use of telecommunications and improved transport logistics are uppermost considerations. Some curious quirks can occur in applying technically-rational solutions such as teleworking. Although teleworking reduces motor trips during peaks - a road asset management objective - research has shown that teleworking may lead to an increase in short motor trips (nipping out in the car for coffee & a chat, available to pick kids up after school), and even an increased in total distance travelled.

TravelSmart was devised as a voluntary, behavioural model using social marketing techniques to overcome the 'information deficit' and other soft measures to increase patronage on under-used public transport services and to encourage individuals to walk or cycle instead of driving. Its aim was to achieve approximately a 10% reduction in motor vehicle trips by these methods. By these methods alone, its proponents (e.g. Ampt) initially claimed that change could be achieved and thus institutional, economic and taxation policy changes were not needed. Perhaps this conservative view resulted from experience in working predominantly at the household level, rather than working at the workplace level where the import of perverse subsidies and prestige is very evident.

Unfortunately, all AGO funding (with the States under NGGAP) for such programs was channelled to this model, consistent with the individualism of Howard's public policies that averted attention from the lack of capacity on public transport in the big cities of Melbourne, Sydney and Brisbane, and the lack of cycling facilities in the biggest city of Sydney.

Nonetheless, some recipients of grant funding for TravelSmart projects achieved great results, other grants were wasted (e.g. bus promotion posters in Townsville).

For many Australians, TravelSmart has become synonymous with programs encouraging modal shift away from car reliance.

Other programs and models are used in North America and Europe. In my view, **Mobility Management** is particularly interesting because as a model it is place-based and people-centric. While it generally relies on 'soft measures' it works through any fine-grained changes to the quality and level of services that may include 'hard measures' its primary stakeholder is the city/local government, together with transport service providers, working with trip generators (workplaces, health services, educational institutions, entertainment centres etc) and with groups of people in communities with special mobility needs. The addition of trip generators to the model is significant in engaging their capacity for influencing travel of their clients/customers and can be part of their Environmental Management system for reducing indirect greenhouse emissions (WBSCD protocol). While this model also seeks changes at the individual level, people are supported not only by information but also by gaining support from relevant organisations, such as the workplace. This model was used in the City of Sydney's Ride2Work

Program. It also informed the RTA's promotion and publication *Producing and Using Transport Access Guides* for trip generators.

In addition to these models, partnerships with local government are made by two non-government organisations: ICLEI's Cities for Climate Protection (funded by AGO)'s Sustainable Transport Program, and the NSW Nature Conversation's Climate Challenge. These are pre-packaged programs that tend to be grafted onto Council's mainstream activities of traffic and transport.

It would be preferable and more effective to work out ways of integrating sustainable transport. It would be desirable for the Federal government's forthcoming transport policy to seek alignment between the States and Local governments for the long-term shift towards more sustainable transport.

I **recommend** that the Review's draft report discuss options for:

- a clearinghouse for information and source of skilled advice to the many practitioners now beginning to work to make transport practices more sustainable through local government
- a multi-disciplinary, modular learning and development program for people working in the transport field and to use existing guidance materials, often produced by State authorities and not fully used, e.g. in NSW Pedestrian Access and Mobility Plans and their implementation.

Barriers The key barriers are:

- the funding, support and prestige attached to private car ownership and use, including hidden subsidies via the taxation system, subsidies to the car and car-parts industries, subsidies for car parking (eg shopping, even State funded art galleries!)
- the presumption in much public policy of omitting to address access and mobility/transport, e.g. housing and location of health services such as the centralisation of out-patient services
- the concomitant expectation of land development for housing in being low density in outer areas of metropolitan areas (preventing places being walkable or cyclable)
- the lack of inter-sectoral policy ('joined-up' thinking in the third way) - the necessity for people to undertake physical activity on most days of the week and implications for substituting car trips by active travel trips
- the institutional arrangements and governance of transport by the States with local governments picking up/not picking up the pieces
- the dominance of car-centric thinking and decision-making in traffic engineering and ancillary fields such as road safety and such thinking informs the institutions of local governments, the police, and Traffic Committees; conversely, the lack of interest or commitment by transport agencies, including the State agencies and former DOTARS, to sustainable transport
- the limited education available on environmentally sustainable transport and few opportunities to practice, although this is slowly changing

- the lack of apparent discussion of the skills needed for modern transport practice and that much policy work does not required engineering skills
- the disinterest of the transport professions in gender equity.

Freight- emissions, barriers/solutions - (ss3.1.2,3.4)

I agree that freight transport gets relatively little attention with respect to greenhouse gas emissions and the rate of growth of road transport for freight.

A community response to this issue, decried by specialists on international trade, is encouraging consumers to 'buy local' and consider 'food miles'.

Q4 What policies could support cost-effective emissions reductions in the freight sector?

Better rail infrastructure, continuing removal of the subsidies for long-distance road freight, and internalizing the costs of pollution on human health.

I note that the Canadian Government has developed a range of eco-transport, including an 'ecoFreight Program' that overtly aims to reduce the adverse environmental and health effects of freight transport.

The EU has considerable experience in increasing the transfer of shipped freight to rail, and this should be one of the achievements of the redevelopment of the Port of Melbourne.

Such policies would be reversing the direction of long-standing practices in the industry and professions and, therefore, the Review's Draft Report would do well to discuss, or at least raise, institutional arrangements that foster innovations - perhaps an arm of the NTC.

It is in the freight sub-sector that the merit of a carbon tax becomes readily apparent.

More research is needed to find ways of reducing deliveries particularly by 'light vehicles' in urban areas.

Shipping & aviation - emissions, barriers/solutions - (ss 3.1.3. 3.5)

Despite the low contribution of domestic aviation to Australia's transport emissions, the energy intensity of aviation is very high. On a personal or household carbon footprint basis, aviation needs to be discussed in the Review's Draft Report.

Q5 What policies could support cost-effective emissions reductions in aviation and shipping?

Flying is cheap in comparison to its external costs. In Australia, there is little alternative such as fast inter-capital passenger rail services. The very long distances between capital cities makes our situation remarkably different from the European approach to substituting one third of flights Paris-Brussels by fast rail.

It is noteworthy that aviation was omitted from the Kyoto Protocol, so changes in this sub-sector of transport will be needed. Again, there is a case for considering multi-modality with aviation - for freight and for passenger services. In Sydney, for example, the Federal Government has developed Sydney Airport and then privatised it without regard to its major impact on road traffic in the metropolitan area. Opportunities may exist for the new Federal Government to negotiate ways of increasing rail use and decrease parking areas.

Buildings sector: Q&As

Q6 What are the key barriers to cost-effective low emission opportunities in the building sector?

- subsidies and building standards for proper insulation (roofs, walls)
- promotion of solar power and water supply (rain water tanks)
- promotion of air-conditioning without a prior trial of ceiling fans or other technologies
- upfront costs and delays in processing rebates

Q7 What policies could be used to address the low uptake of energy efficiency opportunities, given that many of these opportunities already provide financial benefits for firms and households?

- Increase of energy costs and use of this money to improve maintenance and efficiency of water supply systems, power
- Ensure solar power sold to grid is priced at peak prices
- Overcoming upfront costs
- Retrofitting - lighting fittings and low-energy globes - products and knowledge in lighting shops is poor
- Policies could fund regional demonstration house retrofitted with energy, water and waste efficient systems (& transport info), e.g. Barrett House project funded by NSW DECC Regional Ecological Footprint Grant to Randwick, Woollahra and Waverley Councils in Sydney.

Q8 What policies would be appropriate to overcome barriers to low emission opportunities in the building sector, such as split incentives and information gaps?

- Policies to assist plugging Information gaps in retail sector for light fittings and low-energy globes.
- Regulation gaps.

Q9 Are additional policies necessary to address barriers to low emission opportunities in existing buildings?

Yes, see article by James Woodford SMH.

Governance

Discussion of governance was an outstanding, unexpected strength of the bipartisan *Sustainable Cities* that was followed up by an inquiry and report into a Sustainability Charter. Another strength was an evident understanding of the differences between managing emissions reduction from water cycle management, energy (stationary), and urban living (landuse and transport planning, management and retrofitting). The later (2007) report discussed the establishment of a statutory commission.

For changes in transport-urban sectors, I **recommend** the Review’s draft report address leadership and governance for change, innovation, and for bringing up the rear.

Governments will require **unwithering political commitment** and a robust institutional framework and policy-making structure to ensure that the less-popular (pricing policies) but nonetheless essential parts of the policy package are implemented¹⁹.

Owing to the speed, depth and ongoing need for change to avoid dangerous climate change, I **recommend** that the Review’s draft report also discuss joint federal-state actions, through COAG, for example, and better inclusion of local government (bearing in mind the aberrant, wasteful situation in Sydney with 42 local governments).

Short term actions:

Roads to Recovery monies for cycling infrastructure and for improving conditions for walking (e.g. funding local government plans to construct physical improvements)

I also **recommend** considering the re-introduction of multiple streams in government (& universities) for professional divisions and administration divisions as a way of retaining experienced people with knowledge and skills in leading greenhouse-friendly programs and organisational development.

For a concise, comprehensive policy framework, I **suggest** that the Review team refer to the European Conference of Minister of Transport, Council of Ministers (ECMT-OECD)(2001) *Implementing Sustainable Urban Transport Policies*²⁰ who observed that:

¹⁹ ECMT & as applicable to Australia’s three tiers of government.

²⁰ Final Report. CEMT/CM (2001)13.

The fact that measures taken to address urban issues, including many air pollution, congestion and traffic management measures...also have an important impact on CO2 does not yet appear to have been assimilated. There is clearly a role for national climate change programmes to make inroads in shaping urban transport policies - or perhaps conversely for national programmes to take fuller account of the actions taken at the local level in urban areas.

Education to facilitate social change²¹

Transport tends to be the poor cousin within the practice of sustainability, relative to water cycle management and conservation, (stationary) energy conservation, and materials management/waste minimisation.

Transport policy and practical action for 'passenger land transport' can be better approached as a communicative, social policy underpinned by technical advice and services. It resembles the situation that existed in the 1960s for hospital and medical services, prior to the impact of the health consumer movement.

I recommend that the Review's draft report discuss options for:

- a clearinghouse for information and sources of skilled advice to the many practitioners now beginning to work to make transport practices more sustainable through local government
- a multi-disciplinary, modular learning and development program for people working in the transport field and to use existing guidance materials, often produced by State authorities and not fully used, e.g. in NSW Pedestrian Access and Mobility Plans and their implementation.

Such educational programs could be run through the Australian Research Institute in Education for Sustainability at Macquarie University.

<http://www.aries.mq.edu.au/> and supported by Federal transport, climate change policy and the Sustainable Schools Network.

²¹ Moser & Dilling (eds)(2007) - simply a 'must read' for practitioners and policymakers!

REFERENCES

Campbell Sally & White Stuart [Institute for Sustainable Futures, UTS](2003), *Our Public Transport. A community view*, An initiative of Labor Council of NSW, Rail Trams & Bus Union, Australian Services Union, Transport Workers Union and other NSW Transport Unions.

EU - "European transport policy for 2010: time to decide", COM(2001) 370

Mobility management programs, e.g. INPHORMM, LEDA, MOSES, SMILE (current: for integration and inter-modality)

MM - people-based, place-based orgs
<http://www.smile-europe.org/frame1.html>

Fletcher T, & McMichael A.J. (eds) (1997), *Health at the crossroads. Transport policy and urban health*. London: John Wiley & sons.

Freebairn, J (2005) 'Income Tax Reform: Base Broadening to Fund Lower Rates' Paper presented to the Sustaining Prosperity Conference, Melbourne Institute and *The Australian*, Melbourne.

Frumkin H., Frank L. & Jackson R. (2004), *Urban sprawl and public health. Designing, planning and building healthy communities*, Washington DC: Island Press.

Hayashi Y. & Roy J. (eds) (1996), *Transport, land-use and the environment*, Dordrecht: Kluwer.

Maarten Hajer & Sven Kesselring (1999), *Democracy in the Risk Society? Learning from the New Politics of Mobility in Munich*, Environmental Politics, 1999, no. 3, pp.1-23

McMichael Anthony J., (2003) Climate Change and Human Health: Risks and Responses

Medibank Private (2007) The cost of physical inactivity. What is the lack of participation in physical activity costing Australia?

www.medibank.com.au/Client/Documents/Pdfs/pyhsical_inactivity.pdf

Susanne C. Moser & Dilling (eds) (2007) *Creating a Climate for Change Communicating Climate Change and Facilitating Social Change*, Cambridge University Press.

PEARSE GUY HIGH AND Dry

Cycling in the Netherlands

Published by:
Ministry of Transport, Public Works and Water Management

Directorate-General for Passenger Transport

<http://www.fietsberaad.nl/library/repository/bestanden/Cycling%20in%20the%20Netherlands%20VenW.pdf>

NSW Legislative Council (2006) *Health impacts of air pollution in the Sydney basin*, Report 22 - November 2006, General Purpose Standing Committee No. 2.

NSW Government - RTA package:

TAG

Ride to Work - employer/employee

How to

Bicycle Design Guidelines

RTA-DoP, Planning Guidelines for Walking and Cycling.

RTA Mobility Management

Mobility management

Mobility management is emerging internationally as an effective method of managing the growth of car use. Mobility management actively supports and encourages people to use sustainable, 'active transport' (walking, cycling, public transport).

Transport access guides

Transport Access Guides provide customised travel information for people travelling to and from a particular site or venue using low energy forms of transport - walking, cycling, public transport.

<http://www.rta.nsw.gov.au/doingbusinesswithus/managingtraveldemand/mobilitymanagement/index.html>

Knight T., Dixon J., Warrener M, & Webster S. (2007), *Understanding the travel needs, behaviour and aspirations of people in later life*, UK Department for Transport

Ribeiro S., Koboayashi S. & others (2007), *Transport and its infrastructure*. In *Climate Change 2007: Mitigation*. Contribution of Working Group III to the Fourth Assessment Report of the IPCC (B. Metz & others (eds), Cambridge University Press).

Shoup Donald, *The High Cost Of Free Parking*

UK London School Economics *Cycling and social inclusion*

US Dept Energy (1997) *Mitigating Greenhouse Gas Emissions Voluntary Reporting* Doe/EIA - 0608(96) US Distribution Category UC- 950.

USA - integrated landuse-transport legislation - initially Integrated Surface Transport Equity Act and subsequent daughter acts.

Vuchic Vukan R. (1999), *Transportation for Livable Cities*, New Brunswick, NJ: Center for Urban Policy Research, Rutgers University, NJ.

Von Weisacker E., Lovins Amory B., Lovins Hunter L. (1997), *factor 4. doubling wealth - halving resource use*, St Leonards, NSW: Allen & Unwin.

Wilkenfeld (Australia National Greenhouse Gas Inventory 1990, 1995 and 1999. Volume 2, Report to AGO by George Wilkenfeld & Associates Pty Ltd and Energy Strategists,



Mason's Selected Publications, Papers & Conferences

2008 forthcoming, Healthy Active Travel, Address to Healthy Cities Illawarra.

2006 September, Keynote Address 'Active Travel: Local Government and local action', National Conference on Social Determinants of Health, Public Health Association of Australia, Sydney.

2006 submission on proposed Sustainable Cities Charter; 2005 Interviewed as member of a Health Roundtable by [Environment and Heritage Inquiry into Sustainable Cities](#) convened for Parliamentary Committee Report on Sustainable Cities.

2005 - Participant for AGO at conference MOSES: Keys to Car-Sharing, moving the city of tomorrow convened by European Union & UITP, Brussels. www.moses-europe.org

2005 Interviewed by [Environment and Heritage Inquiry into Sustainable Cities 2025](#)
Chloe Mason and the Public Health Association of Australia
www.phaa.net.au/intouch/March04.pdf

2005 - Participant at conference MOSES: Keys to Car-Sharing, moving the city of tomorrow convened by European Union & UITP, Brussels. www.moses-europe.org

2004 Bergmaier R., Mason C., McKenzie M., Campbell S. and Hobson A. (2004), Car Sharing: an overview, Australian Government, Canberra. For the Australian Greenhouse Office.
<http://www.greenhouse.gov.au/tdm/publications/carsharing.html>

2003 - Participant at *Environmental Policy Integration and Sustainable Development* conference convened by The National Europe Centre, ANU with the EU Delegation in Australia.

2003 joint paper with Gabrielle Kuiper for State of Australian Cities Conference, University of Western Sydney.

2003 with Alan Woodward and Gabrielle Kuiper State of the Environment Reporting (with attachments on Legal and conceptual framework, cycling indicators etc) Project Report for the (then) Lower Hunter and Central Coast Regional Environmental Management Strategy (LCCREMS)
http://www.hccrems.com.au/cp_soer.html

2001 - Completed short course on Politics of Public Spaces and Public Transport guest teachers Jan Gehl & Lars Gemzoe, convened by Professor Peter Newman, Murdoch University

2001 - Participant at Walk21, International Walking Conference, Perth

2001 European Conference on Mobility Management (ECOMM) 2001 and Alternative Traffic in Towns (about car-sharing and zones within cities for very low emission vehicles) both in Rome

2001, (December) with Kendall Banfield, 'Submission on draft SEPP 66: Integrating Land Use & Transport' to PlanningNSW, on behalf of the Institute for Sustainable Futures, University of Technology, Sydney.

- 2001, with Steve Bargwanna, 'Urban roads. A health asset', Paper prepared for Royal Australian Planning Institute (NSW) Conference, May 2001.
- 2001, with Rob Lake, Transport access for job seeking: a pilot program, North Parramatta: GROW Employment, Sydney's Area Consultative Committee. ISBN 0 646 40634 5.
- 2000, "Healthy people, places and transport", *Health Promotion Journal of Australia*, Vol 10 No 3, pp190-196.
- 2000, "Transport and Health: en route to a healthier Australia?", *Medical Journal of Australia*, 6 March.
- 2000, "Mobility management in Australia: reflections on programs by trip generators for intra-city accessibility", Conference Proceedings, 4th European Conference on Mobility Management (ECOMM 2000), Mobility Management - Crossing borders and making regions accessible, 17-19 May 2000, Bregenz, Austria, pp.48-52.
- 2000 Submission, as Manager UNSW Transport Program, to the Parliament of Australia: Senate: Committee: Report on The Heat is On: Australia's Greenhouse Future
www.aph.gov.au/SENATE/COMMITTEE/ecita_ctte/.../gobalwarm/report/e02.html
- 1999, with John Black & Kristine Stanley, "Travel Demand Management: policy context and an application by University of New South Wales (USNW) as a large trip generator" (authors: J.Black, C.Mason, K.Stanley), *Transport Engineering in Australia* Vol 5, No., 2, pp. 64-73. UNSW website > Travel Demand Context
<http://notessrv.chan.unsw.edu.au/faciliti.nsf/pages/policy?OpenDocument>
- 1999 Submission to the Productivity Commission's reference [Improving the Future Performance of Buildings - Submissions](#) 11, Dr Chloe Mason, 03/08/1999, 8, PDF 0.1 MB. 12, www.pc.gov.au/study/bperform/subs/sublist.html - 14k
- 1992, Waste minimisation: user pays pricing, report prepared for SSROC.
- 1991, contributor to SSROC Regional Strategy on Climate Change (author: S.Pillora).
- 1991, *Investigating indirect discrimination*, in Occasional Paper No 6, Sex Discrimination Commissioner, Human Rights and Equal Opportunity Commission.
- 1984, *Protective Legislation at Work: a case study of the 'weights limit' on manual handling*, A report of the President of the Anti-Discrimination Board, Sydney: NSW Anti-discrimination Board.