Designing a more efficient, equitable and sustainable motor vehicle tax system

Response to Australia's Future Tax System Consultation Paper

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PTUA

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1 Efficiency of tax arrangements

1.1 Transport demand

Motor vehicle use is often described as a derived demand. That is, it results from a desire to access a location or activity - such as employment, education or recreation - rather than a desire to use the motor vehicle *per se*. The decision to use a motor vehicle is simply a reflection of the generalised cost of motor vehicle use relative to substitute forms of access such as location decisions, combining trips, walking, cycling, public transport, rail freight and ICT. In many cases, road users would readily shift to an alternative form of access if the generalised cost advantage was reversed.

Motor vehicle use and the provision of facilities for motor vehicle use impose high external costs on society (Section 1.3). These social costs are higher than those attributable to many other forms of consumption. If these social costs are not recouped through taxes and charges on road users, the generalised cost of motor vehicle use will be artificially low compared to substitute forms of access, motor vehicle traffic and associated social costs will be excessively high, and use of walking, cycling and public transport use will be lower than is economically, socially and environmentally optimal. Current taxes and charges fall well short of recouping these costs.

Internalising the social costs of motor vehicle use would encourage more economically efficient travel choices and reduce negative impacts on productivity and liveability resulting from motor vehicle traffic (Gärling & Steg 2007).

1.2 Opportunity cost

Of particular relevance to the *Review of Australia's Future Tax System*, it should be noted that improved recovery of social costs could also provide revenue to fund reductions in taxes that are known to be economically inefficient, such as stamp duties, or fund reform of other aspects of the tax-transfer system that currently result in very high Effective Marginal Tax Rates.

Maintaining motor vehicle tax at low levels by OECD standards means that other taxes must be higher than they would otherwise be, and/or that funding must be reined in for services such as health, education and policing.

1.3 Costs to be recovered

1.3.1 Road Construction and Maintenance

Road expenditure by Australian governments has risen to over $11 billion per annum and has been growing faster than population and inflation in recent years (BITRE 2008). Recently announced "Nation Building" projects are likely to send this expenditure significantly higher.

Table 1.1: Government road expenditure 2006-07

Tier of government	*Expenditure*
Local government	$2,512 million
State government	$6,112.1 million
Federal government	$2,771.9 million
Total public expenditure	**$11,396 million**

Source: BITRE 2008

In the context of growing public sector debt to finance infrastructure-heavy stimulus packages, it is also appropriate to consider financing costs. The cost of capital to Australian governments is around 5%, meaning each year's road spending at 2006-07 levels adds an additional $570 million per annum to public debt service costs.

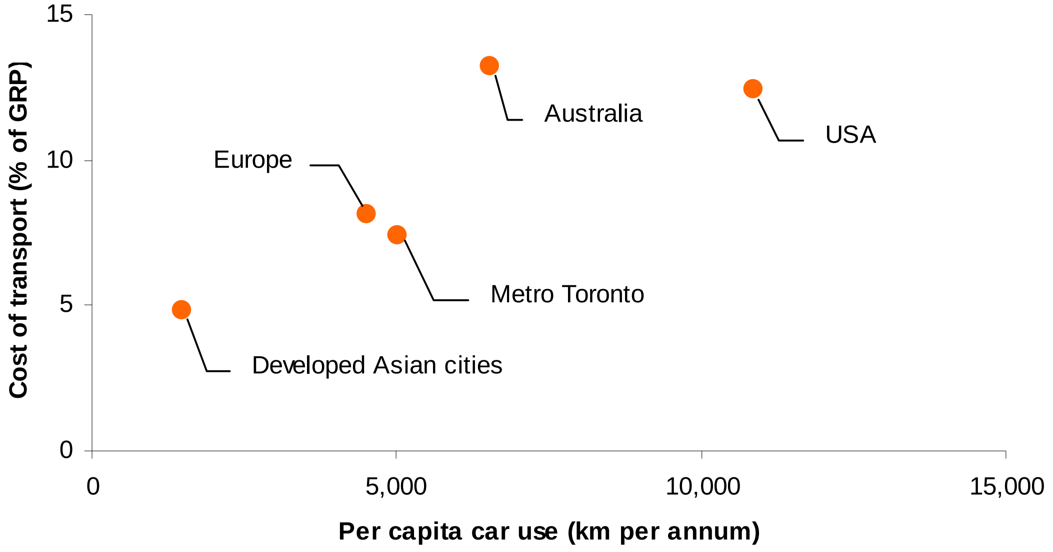
Road capacity expansion is proven to encourage additional road traffic, often at the cost of more sustainable or socially-inclusive forms of access (PTUA 2008a, pp.16-19). This can result in a costly and self-defeating cycle of road expansion, which generates additional traffic, which creates pressure for further road expansion, which generates even more traffic, and so on.

The cost of transport is significantly higher in cities pursuing road-supply-led "solutions" to transport needs than it is in cities pursuing more balanced transport policies (Figure 1.1). This diverts resources away from other priorities such as health and education or away from economic activities that contribute more to local employment and prosperity (Litman 2009a).

The safety and amenity of cycling on public roads is primarily compromised by the presence of motor vehicle traffic. It is therefore appropriate for the cost of dedicated walking and cycling facilities (e.g. separate bike paths) to be recovered from motorists (Domergue & Quinet 2007, p.135; VTPI 2009c, p.9).

> "The cost of transport for the community varies from 5% in dense cities with high public transport use to over 12% in sprawling cities where the car is virtually the only mode of transport." (Vivier *et al* 2005, p.9)

Figure 1.1: Car use and regional transport costs



As car use increases, a greater proportion of Gross Regional Product (GRP) must be spent on transport. Source: Newman 2000

1.3.2 Land Use Cost

As much as one third of our urban areas are given over to cars in the form of roads and parking. As the number of journeys made by motor vehicle increases, the proportion of urban land consumed by transport infrastructure also increases (Litman 1995). This leads to more extensive urban sprawl encroaching on natural habitat and farmland, and loss of public open space. Non-motorised transport and public transport are more space-efficient, as shown in Figure 1.2, and can provide access (see Section 1.1) without consuming so much land.

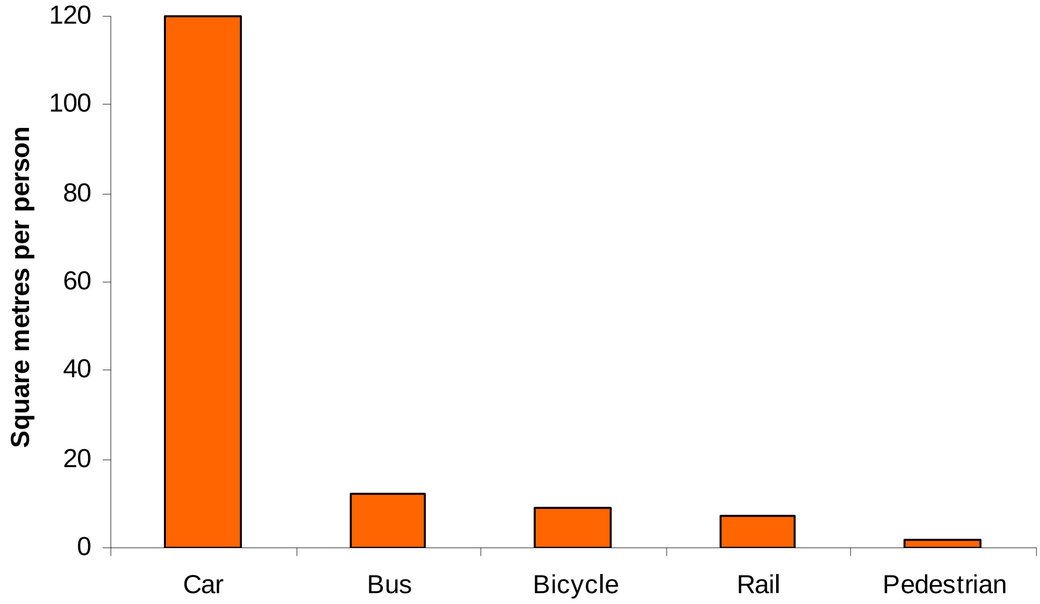
Over a decade ago, the value of land under roads was estimated at between $100 and $120 billion (NIEIR 1996). Adjusted for inflation, this suggests a current value in the range of $145 - $186 billion. Indexing in line with average capital city house prices would suggest a value between $290 billion and $380 billion. These indexed values ignore the value of land upon which roads have been built since the early 1990s. Applying the same methodology used by NIEIR (*ibid.*) to 2006-07 non-rural land values (CGC 2009) suggests that land under roads is now valued at around $490 billion.

This substantial allocation of resources to roads carries significant opportunity cost. Table 1.2 demonstrates the magnitude of this cost given various land valuations and rates of return.

Not only is there no mechanism to explicitly recoup some sort of return on this allocation of resources, other forms of cost recovery are also forgone. In Victoria, land tax exemptions are granted to the statutory Roads Corporation (VicRoads) and to the Citylink and Eastlink toll-roads. Roads are also singled out as the only economic asset exempted from the Capital Assets Charge (CAC) in Victoria. Rail assets and land under railways are not exempted from the CAC or land tax, establishing a distortion that favours road transport over rail transport.

Transport planning dominated by motor vehicle use also encourages sprawling, low density land use that increases the size of urban areas and diverts land from agriculture and natural eco-systems. Servicing this form of urban development is much more expensive for governments. Trubka *et al* (2008) estimate that the present value of economic costs over 50 years attributable to fringe development are about $360 million higher per 1,000 dwellings than for inner-city development.

Figure 1.2: Road space requirements by mode



Source: Teufel 1989

Table 1.2: Annual opportunity cost of land under roads

Land value	*5% rate of return*	*8% rate of return*	*10% rate of return*
$100 billion	$5 billion	$8 billion	$10 billion
$120 billion	$6 billion	$9.6 billion	$12 billion
$145 billion	$7.25 billion	$11.6 billion	$14.5 billion
$186 billion	$9.3 billion	$14.88 billion	$18.6 billion
$290 billion	$14.5 billion	$23.2 billion	$29 billion
$380 billion	$19 billion	$30.4 billion	$38 billion
$490 billion	$24.5 billion	$39.2 billion	$49 billion

Note: Yield on 10 year government bonds (i.e. risk-free return) has been in the region of 5-6% for much of this decade, falling below 5% at the time of writing. The Capital Assets Charge imposed on public sector assets (excluding roads) by the Victorian Government is set at 8%. Secured finance for small businesses currently costs as much as 10%.

1.3.3 Tax Concessions for Car Use and Infrastructure

The statutory formula for valuing motor vehicle fringe benefits has been shown to encourage excessive driving (Kraal, Yapa & Harvey 2008) at a cost to Australian taxpayers approaching $2 billion per annum (Treasury 2009, p.163). Motor vehicles are also offered a range of smaller concessions including exemptions for small business employee car parking ($5 million per annum) and discounted valuation for car parking fringe benefits ($13 million per annum). No comparable concessions are offered to public transport users or cyclists.

Private tollroad operators also receive tax concessions including land tax exemptions from the Victorian government worth about $27 million per annum, and Commonwealth schemes including the Commonwealth Infrastructure Bonds Scheme and Land Transport Infrastructure Borrowings Tax Offset Scheme offered concessions valued at around $20 million per annum. These concessions represent a subsidy paid by Australian taxpayers for the provision of road infrastructure that competes with more sustainable forms of access (Section 1.1).

Motor vehicle expenses are also a major tax deduction for Australian individuals and businesses (Table 1.3). Despite strong growth over the last decade in motor vehicle deductions, there is virtually no compliance activity to ensure vehicle use is for legitimate business purposes, or that motor vehicle purchases themselves are not overly extravagant given the needs of the business.

Table 1.3: Motor vehicle expenses 2006-07

Entity type	*Deductions ($ million)*
Individuals	5,680
Companies	9,800
Partnerships	2,143
Trusts	2,541
Total	**20,166**

Source: Australian Taxation Office

1.3.4 State Fuel Subsidies

As a legacy of now-abolished state-based fuel taxation, most states subsidise the consumption of petrol and diesel. These subsidies cost taxpayers over $600 million per annum and discourage greater energy efficiency in the transport sector.

In view of the looming peak in global oil production (ASPO 2008) and the urgent need to reduce carbon emissions, fuel subsidies are no longer tenable and should be abolished with the funds redirected towards transport alternatives - such as public transport - that reduce oil vulnerability.

Table 1.4: State petroleum subsidies ($ million p.a.)

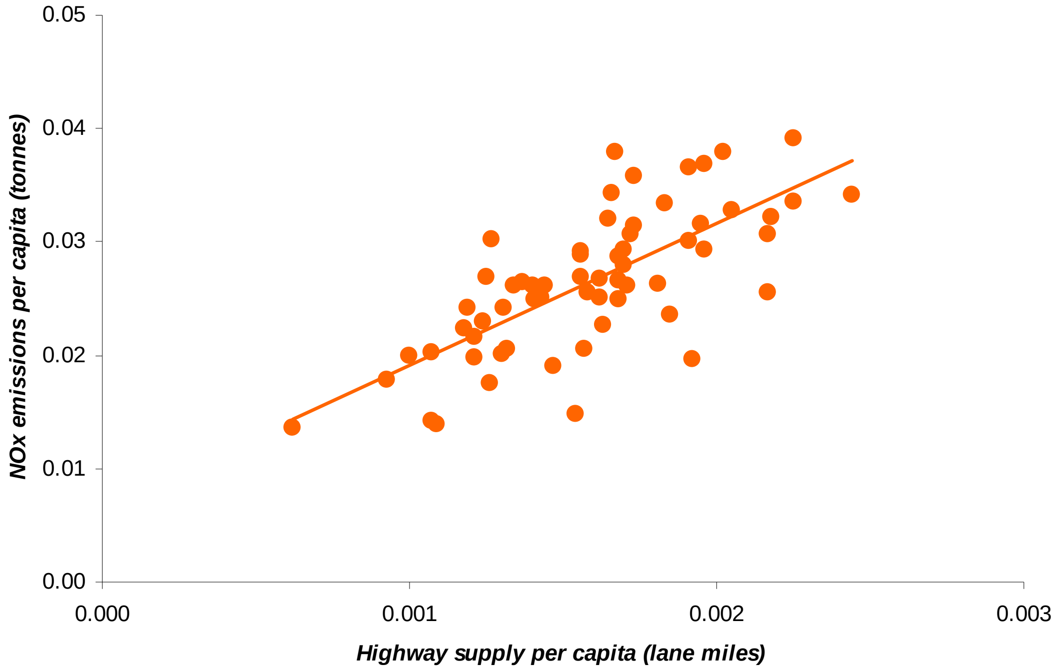
	2006-07	*2007-08*
NSW	40.964	42.395
Victoria	37.484	2.969
Queensland	528.524	551.472
WA	8.4	8.47
SA	13.766	14.295
Tasmania	13.757	4.393
NT	3.059	3.647
Total	**645.95**	**627.64**

Source: Commonwealth Grants Commission

1.3.5 Air pollution

Motor vehicles are the dominant source of a range of air pollutants including ozone, oxides of nitrogen (NOx), fine particles (PM) and carbon monoxide (CO). International research has shown a clear positive correlation between roadway supply and vehicle emissions (Figure 1.3). Air pollution is linked with respiratory disease, asthma and cardiovascular disease. There is also evidence of a link between vehicle emissions and childhood leukaemia.

Figure 1.3: Road supply and transport emissions



Source: Cassady et al 2004

Despite supposed improvements in vehicle technology, there is recognition that rising motor vehicle traffic volumes are defeating reductions in per kilometre emissions (Litman 2006, p.10; Cubby & Besser 2009). There is also evidence that climate change will lead to increased levels of ozone created from tailpipe emissions of precursor gases including oxides of nitrogen (NOx), carbon monoxide (CO) and volatile organic compounds (VOC) (Jacobson 2008; Engelhaupt 2008). The impact of air pollution from motor vehicles could therefore be greater in the future than it is now.

The health-related cost to Australians of air pollution from motor vehicles (excluding greenhouse impacts) is between $1.6 billion and $3.8 billion each year, with a central estimate of $2.7 billion per annum (BTRE 2005).

In addition, air pollution such as NOx, VOC and SO_2 also causes damage to buildings, crops and forests (Loya *et al* 2003; Domergue & Quinet 2007; Hopkin 2007). Unlike the cost estimates of the BTRE (2005), per kilometre costs estimated by the VTPI (2009b) also incorporate some non-health-related costs, and suggest a total cost of air pollution in Australia of over US$9 billion per annum based on vehicle travel reported by the ABS (2008).

1.3.6 Noise pollution

Motor vehicles produce noise in several ways including engine and drive-train noise, tyre and road noise, aerodynamic noise, braking, horns and alarms (VTPI 2009a).

Road traffic is the dominant source of noise in urban areas (Newton *et al* 2001) and about one third of houses experience significant traffic noise (Brown & Lam 1994). The impacts of noise pollution include sleep disturbance, cardiovascular disorders such as high blood pressure and heart disease, hearing loss, cognitive impairment in children, general fatigue through sleep loss and reduced work efficiency (Miedema 2007). Traffic and roads also have a negative impact on nearby property values (Bagby 1980; Segal 1981; Bateman *et al* 2001).

Lubulwa *et al* (1992) estimated the cost of noise pollution in Australia to be 0.16% of GDP, or 0.43 cents per vehicle kilometre (1993 dollars). This is consistent with the cost of transport noise pollution in OECD countries which is estimated to be around 0.15% of GDP on average, with costs in several countries exceeding 0.2% of GDP, including the UK where it reaches 0.5% of GDP (BTCE & EPA 1994). Applying this OECD average cost estimate in terms of GDP to Australia would equate to a cost of about A$1.6 billion per annum (2008 dollars).

The VTPI (2009a) notes that noise can have a higher marginal cost in rural areas (as well as impacting wildlife) and that noise on lower volume roads can sometimes be overlooked in cost estimates. Applying the more comprehensive per vehicle kilometre noise cost estimates proposed by the VTPI (2009a) to the quantity of vehicle travel reported by the ABS (2008) equates to a cost in Australia of about US$3 billion per annum.

1.3.7 Water pollution

Motor vehicles contribute to water pollution as a result of petrol, brake fluid and oil leaks, and degradation of tyres and brake pads. Roads are responsible for up to 50% of suspended solids, 16% of hydrocarbons and 75% of metals flowing into streams. Oil spills from transporting petroleum also have major impacts on marine and coastal environments, such as the devastating Exxon Valdez oil spill and numerous smaller incidents.

Roads also increase the coverage of impervious surfaces that accelerate and concentrate water flows leading to erosion, flooding and damage to aquatic ecosystems. Private motor vehicles require much more road space than other forms of transport (Figure 1.2).

Based on VTPI (2009f) cost estimates and Australian vehicle travel (ABS 2008), water pollution resulting from motor vehicle use in Australia costs over US$1.8 billion per annum.

1.3.8 Climate Change

Climate science is now highlighting the serious risk of abrupt and catastrophic climate disruption if crucial "tipping points" in the climate system are passed. Probable impacts of emissions continuing to follow current trends include complete melting of the Greenland ice sheet (adding about 7 metres to sea levels), loss of the West Antarctic Ice Sheet (adding a further 4-6 metres to sea levels), die-back of the Amazon rainforest releasing huge quantities of stored carbon and leading to further climate change, melting of high latitude permafrost releasing huge quantities of methane and triggering further climate change, acidification of the oceans leading to extensive marine species loss, and increased frequency and severity of extreme weather events such as droughts, bushfires, floods and storms (Lynas 2008; Pearce 2008; Pearce 2009; Spratt & Sutton 2008; Lenton 2009; Smith *et al* 2009).

Traditional Cost-Benefit Analysis appears unable to deal with the extreme severity of "low probability, high impact" outcomes (Weitzman 2009) or with the fundamentally non-linear nature of tipping points which cause climate systems to abruptly "flip" from one state to another very different state as greenhouse gas concentrations rise (Hansen *et al* 2008). The only possible conclusion is that carbon emissions are grossly under-priced and will continue to be so under the proposed Carbon Pollution Reduction Scheme (CPRS).

The transport sector is one of the largest and fastest growing sources of carbon emissions in Australia (PTUA 2008b, pp.3-5). When full life-cycle analysis is performed which includes the upstream energy industry, the impacts of road construction and maintenance, and emissions from motor vehicle manufacture and distribution, the contribution of transport is even greater than Kyoto accounting suggests (PTUA 2008b, pp.6-7). Depletion of relatively clean and easily-accessible conventional oil reserves also raises the risk of switching to more carbon-intensive energy sources such as tar sands, oil shale and coal-to-liquids (PTUA 2008b, pp.8-

10). In many cases, biofuels may also cause greater harm to the environment than the conventional fuels they replace due to impacts such as deforestation and water pollution (PTUA 2008b, pp.19-21; T&E 2008; Howarth & Bringezu 2009).

In light of the required speed and scale of emissions reductions, and the substantial contribution to emissions from transport, the fuel tax credits compensation proposed under the CPRS is perverse and unjustified. Fuel tax in Australia is already among the lowest in the world (see Figure 3.1), and the fuel tax credits under the CPRS will take net excise even further below international levels. Further, this exemption will mean that road transport emissions do not even face the initial low carbon price under the CPRS, while electrified rail transport will be hit from the outset by carbon pricing on stationary energy, providing the exact opposite of the incentives needed to drive down transport emissions. There is therefore no basis for claiming that transport emissions will be appropriately priced under the CPRS.

INFRAS-IWW (2004) recommended the value of €140 per tonne be used for costing carbon emissions. Stern (2006, p.287) suggested that the social cost of carbon is about US$85 per tonne (2000 prices) under a business as usual scenario, and rising over time. Stern has subsequently expressed increased concern regarding the seriousness of global warming (Adam 2008; Adam 2009) which implies the cost of carbon is significantly higher than earlier estimates.

Litman (2009b) draws on a wide range of emissions valuation estimates and recent climate science to identify US$300 per tonne as a suitable valuation for damage resulting from carbon emissions. At such a level, the social cost of emissions from Australia's road transport sector (68,853,970 tonnes in 2006 under Kyoto accounting) is over US$20 billion per annum. Fuel tax revenue already falls well short of this social cost, and CPRS compensation would further reduce the internalisation of the external costs of transport emissions.

1.3.9 Congestion

The valuation of congestion is subject to debate, with some estimates of the cost comparing congested traffic speeds against free-flow traffic speeds that are neither economically nor physically practical, and many estimates ignoring patterns in per-capita costs that vary according to the quality of non-motorised access options (VTPI 2009d, pp.6-10). Current estimates of the "avoidable" cost of congestion in Australia are in the region of $10 billion per annum, potentially rising to over $20 billion by 2020 (BTRE 2007). This equates to a national metropolitan average of around 7 cents per kilometre in 2005, rising to about 11 cents per kilometre by 2020 (*ibid*. p.16).

Shifting journeys from private vehicles to public transport has positive social benefits as it is more space-efficient (see Figure 1.2) and frees up road space for remaining road users. Modeshift to public transport also has positive benefits to *other* public transport users due to the Mohring effect which improves service levels in response to rising demand (Mohring 1972; Domergue & Quinet 2007, p.135). The corollary of this, however, is that shifting journeys to motor vehicles (e.g. in response to increased road capacity) imposes external costs on remaining public transport users due to reduced service levels, as well as adding to congestion costs for other road users (PTUA 2008a, pp.16-19).

The quality of public transport has been demonstrated to influence the level of road congestion by offering an alternative to low-occupancy private vehicles. The higher the quality of the public transport network, the less likely commuters will be to add to private motor vehicle traffic on the road network.

Unfortunately public transport is often susceptible to delays caused by private vehicles. For example, travel speeds of trams in Melbourne have deteriorated in recent years due to rising motor vehicle traffic. Similarly, trams can spend as much as one third of their time waiting unnecessarily at traffic lights (Morton 2007). These delays to public transport - caused largely by private motor vehicles - penalise public transport users who are contributing to congestion minimisation by not driving a private motor vehicle, harm the attractiveness of public transport, increase the likelihood of commuters adding to private motor vehicle traffic, and limit the extent of positive social benefits arising from mode shift to public transport. It is therefore entirely appropriate that the costs of congestion be recovered from motorists in such a way that encourages mode shift to alternative forms of transport.

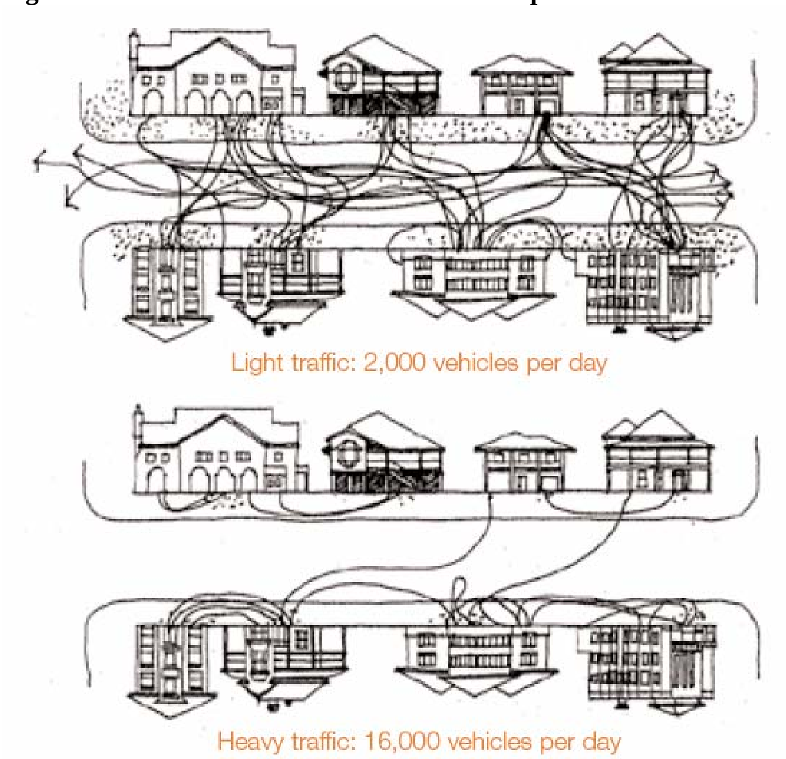
1.3.10 Severance

Roads and traffic act as a barrier to the movement of pedestrians and cyclists and cause community severance which encompasses impacts such as noise pollution, safety concerns, physical barriers and inhibition of social interaction (James, Millington & Tomlinson 2005). Roads that deter people from crossing due to noise, air pollution, safety concerns or delays caused by traffic have been shown to reduce the amount of walking in the area (PBQD 1993). On the other hand, communities that rate well in terms of “walkability” tend to have higher levels of social capital (Baum & Palmer 2002) and residents are more likely to know their neighbours, trust others and participate actively in their community (Leyden 2003). Traffic also detracts from local retail vitality (Sustrans 2003; Lautso 2004).

Based on VTPI (2009e, pp.7) and ABS (2008), the cost of severance in Australia is over US$1.8 billion each year. The barrier effect is highly inequitable as it disproportionately impacts low income, transport disadvantaged individuals that rely heavily on walking for mobility.

Roads also fragment animal and plant habitat which leads to isolated and more vulnerable subpopulations (Vos & Chardon 1998; Develey & Stouffer 2001; Marsh *et al* 2004; Epps *et al* 2005; Fahrig & Rytwinski 2009). In some species it is the existence of the road itself rather than the volume of traffic that limits distribution (Ford & Fahrig 2008; Laurance *et al* 2004; McGregor *et al* 2008; Shepard *et al* 2008). This fragmentation may present a significant barrier to adaptation of natural systems to climate change. In addition, collisions with motor vehicles can be a major cause of death for wildlife and domestic animals.

Figure 1.4: Traffic levels and social relationships



Top: *2,000 vehicles per day: at relatively low traffic levels, residents engage freely with their neighbours, having on average 3 friends and 6.3 acquaintances in the street.*
Bottom: *16,000 vehicles per day: with high traffic levels, social engagement is limited and residents have only 0.9 friends and 3.1 acquaintances in the street.*
Source: Engwicht 1992

1.3.11 Health costs

Car-dependent transport and landuse patterns are strongly associated with higher incidence of obesity and other health problems (Jackson & Kochtitzky 2001; Litman 2006). Research has indicated that each additional hour of daily driving leads to a 6% increase in the likelihood of obesity (Wen *et al* 2006). In contrast, use of active and public transport can contribute to prevention of obesity and associated health problems (Cavill 2001; Besser 2005; Weinstein & Schimek 2005; PTUA 2007, pp.9-12; Wener & Evans 2007; Ming Wen & Rissel 2008). High traffic levels and urban environments that are hostile to pedestrians and cyclists are major impediments to levels of physical activity that could reduce the incidence of obesity (Jackson & Kochtitzky 2001; Giles-Corti 2006; PTUA 2008a, pp.37-38).

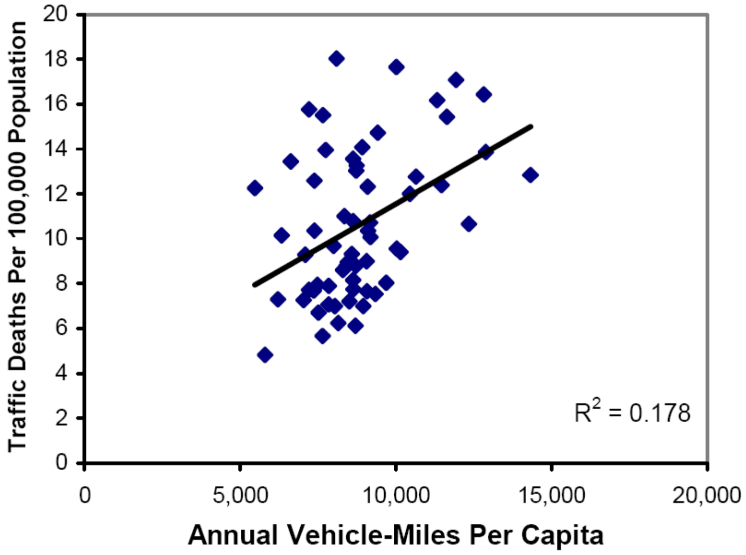
The economic cost of overweight and obesity - for example direct health system costs, lost productivity and carer costs - is estimated at about $58 billion per annum (Access Economics 2008). Since transport choices are an important contributor to this cost, it is appropriate for motorists to contribute to meeting the costs of obesity and associated health problems, and for mode shift to walking, cycling and public transport to be encouraged through the tax system.

1.3.12 Road Trauma

More than 1,500 people are killed on Australian roads each year and around 30,000 people are seriously injured in road traffic crashes. A significant number of these casualties are pedestrians and cyclists who have been struck by motor vehicles (Berry & Harrison 2008, p.10) and who do not benefit from vehicle safety technology like air bags.

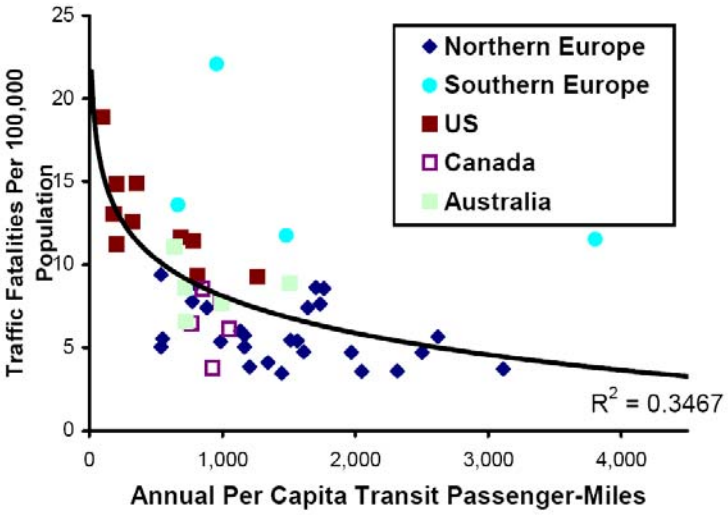
The frequency of crashes increases with the amount of driving undertaken (Litman 2008b). A reduction in vehicle use can be expected to lead to a reduction in road trauma. Consistent with this, fatality rates tend to be lower in cities where a larger share of journeys is made by public transport (Figure 1.6).

Figure 1.5: Vehicle mileage and traffic fatality rates for U.S. cities



Source: Litman & Fitzroy 2009

Figure 1.6: Public transport usage and traffic fatality rates internationally



Source: Litman & Fitzroy 2009

Road trauma in Australia is estimated to cost over $17 billion per annum (Connelly *et al* 2006). This estimate exceeds the value of insurance premiums paid by motorists (including comprehensive policies covering property damage) by about $7 billion per annum. In the context of an aging population and rising demands on the health system, there is a strong case for motorists to more fully pay for the cost of road trauma and for a larger share of journeys to be encouraged onto public transport.

2 Redesigning motor vehicle-related taxes

The total ***level*** of motor vehicle taxes falls well short of the full social costs of motor vehicle use. This under-recovery of social costs denies government of revenue that could fund reductions in less efficient taxes (such as stamp duty) or fund improvements to services such as health, education and public transport. Under-pricing also means that the private costs of motor vehicle use are much lower than the social cost which results in excessive traffic. The shortfall is not surprising given the low levels of motor vehicle tax in Australia relative to many other countries (see Figure 3.1).

This element of existing inefficiency can be rectified by increasing the level of cost recovery from road users. The magnitude of costs to be recouped is outlined in Section 1.3.

Secondly, the ***structure*** of some taxes, as distinct from the level of revenue, creates inefficiencies.

A prime example is the statutory formula for valuing motor vehicle benefits which lowers private costs to taxpayers at the same time as those taxpayers are imposing higher social costs on other citizens. This $2 billion tax expenditure is totally indefensible in an era of climate change, peak oil and scarce resources for infrastructure improvements.

2.1 Sunk versus marginal costs

Although less perverse than the statutory formula, most other motor vehicle taxes contribute little to efficient transport choices. Many of them are transactional or periodical in nature, such as stamp duty on motor vehicle purchases or annual registration fees. Once these have been paid, the marginal private cost of a given motor vehicle journey will often be perceived as negligible relative to the cost of public transport fares, as well as being lower than the marginal social cost (even if it was the case that total social costs were recovered through periodical taxes).

Even periodical charges that are ostensibly intended to address social costs, such as registration fees based on emissions or fuel consumption, will not encourage more efficient transport choices in such circumstances, and may actually exacerbate some problems due to the rebound effect resulting from reduced operating costs (Litman 2008a).

More efficient transport choices, and a reduction in the social costs of motor vehicle use, would result from restructuring taxes so that they vary according to the amount of motor vehicle use, as is being pursued in the likes of Oregon, the Netherlands and New Zealand.

2.2 Efficient allocation of funds

Since the social costs of motor vehicle use are so high and largely fall on other sectors such as health, environment and social services, there is clearly no justification for the revenue obtained from pricing such social costs to be spent on roads. In fact, hypothecation of motor vehicle charges to road spending could increase social costs as has been recognised by the OECD:

> "road-pricing that funds additional highway capacity can increase total automobile travel through rebound effects and so may increase downstream traffic congestion, parking costs, crashes, pollution, and sprawl."
> (OECD 2006, p.73)

As noted above (Section 1.1), road use is a derived demand reflecting an underlying demand for access which can be provided – often at lower social cost – by other means such as public transport. Hypothecation of revenue to roads at the cost of these substitute forms of access would entrench inefficiencies and constrain the development of more efficient and equitable forms of access. Road pricing and motor vehicle tax revenue should instead be directed to consolidated revenue and/or used to complement the demand management objectives of pricing by enhancing substitutes (see also Section 4.4).

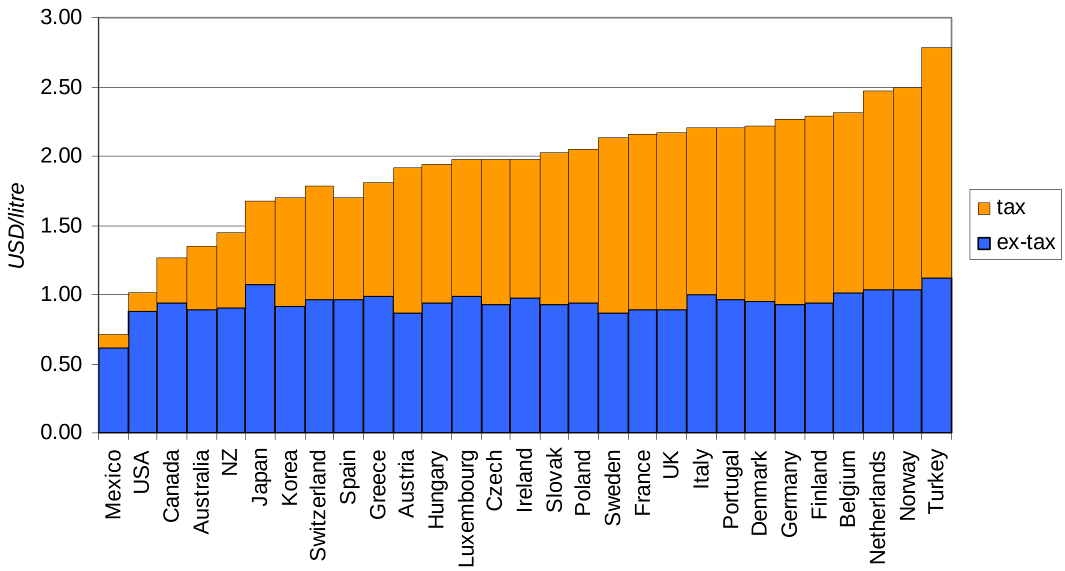
Linking revenue to road spending would also squander revenue that could instead be used to fund reductions in inefficient taxes (e.g. stamp duty) or eliminate high Effective Marginal Tax Rates.

3 Fuel tax

3.1 Excise rate

Fuel excise in Australia is low by international standards, was reduced significantly upon introduction of the GST, has been falling in real terms since indexation was abandoned in 2001, and is expected to fall in nominal terms under the CPRS. This is regrettable since declining real and nominal excise rates will further reduce the already low level of recovery of social costs outlined in Section 1.3, and fuel tax is one of very few charges that vary according to road use rather than being applied periodically (see also Section 2.1).

Figure 3.1: Petrol prices and taxation internationally



Source: International Energy Agency

Fuel tax is very simple to administer, difficult to evade, and a viable instrument for addressing a range of social costs (Table 3.1).

Fuel tax is widely recognised as an effective means of reducing transport emissions (Timilsina & Dulal 2008, pp.11-17; Future Fuels Forum 2008, pp.22-23) which is especially relevant given the huge discrepancy between the social cost of carbon (see Section 1.3.8) and the expected cost of permits under the CPRS. Fuel consumption, and therefore the incidence of fuel tax, is also positively correlated with the level of congestion, aggressive (and potentially dangerous and/or noisy) driving styles, poor vehicle maintenance and, most obviously, with the amount of road use. The coverage of fuel tax should therefore be as broad as possible and the real value maintained by reintroducing automatic indexation.

In contrast, abolition of fuel tax in favour of road pricing could result in an increase in total emissions (particularly related to the cost of off-peak travel), so care must be taken in tax design not to encourage additional motor vehicle use.

Table 3.1: Preferences for instruments to charge marginal social costs in traffic & transport

Cost Item	*1st preference*	*2nd preference*	*3rd preference*
Marginal infrastructure costs	Differentiated charge per kilometre	**Excise duty**	Ownership tax
Safety	Through insurance premiums	Differentiated charge per kilometre	**Excise duty**
Greenhouse effect	**Excise duty**	Differentiated charge per kilometre	
Atmospheric pollution	Differentiated charge per kilometre	**Excise duty**	Ownership tax
Noise	Differentiated charge per kilometre	**Excise duty**	Ownership tax
Congestion	Congestion charge	Differentiated charge per kilometre	

Source: EEA 2004, p.46

3.2 Alternative fuels

Net fuel tax revenue is also reduced by concessions for biofuels which are of dubious value. A recent report from 75 scientists (Howarth & Bringezu 2009) highlighted a range of risks from biofuel production including:

- competition for scarce water supplies;
- pollution of water supplies;
- greenhouse emissions resulting from land clearing for biofuel crop plantations, and from other stages of the biofuel production process;
- displacement of food production; and
- displacement of small farmers and vulnerable communities.

Encouragement of biofuels can therefore lead to greater environmental damage and may come at the expense of more cost-effective and sustainable alternatives. Rather than favourable tax treatment or blending mandates for alternative fuels, Australia should adopt California's Low Carbon Fuel Standard as a technology-neutral benchmark. Fuels not complying with this standard should be withdrawn from the market, and remaining fuels subject to the full rate of excise.

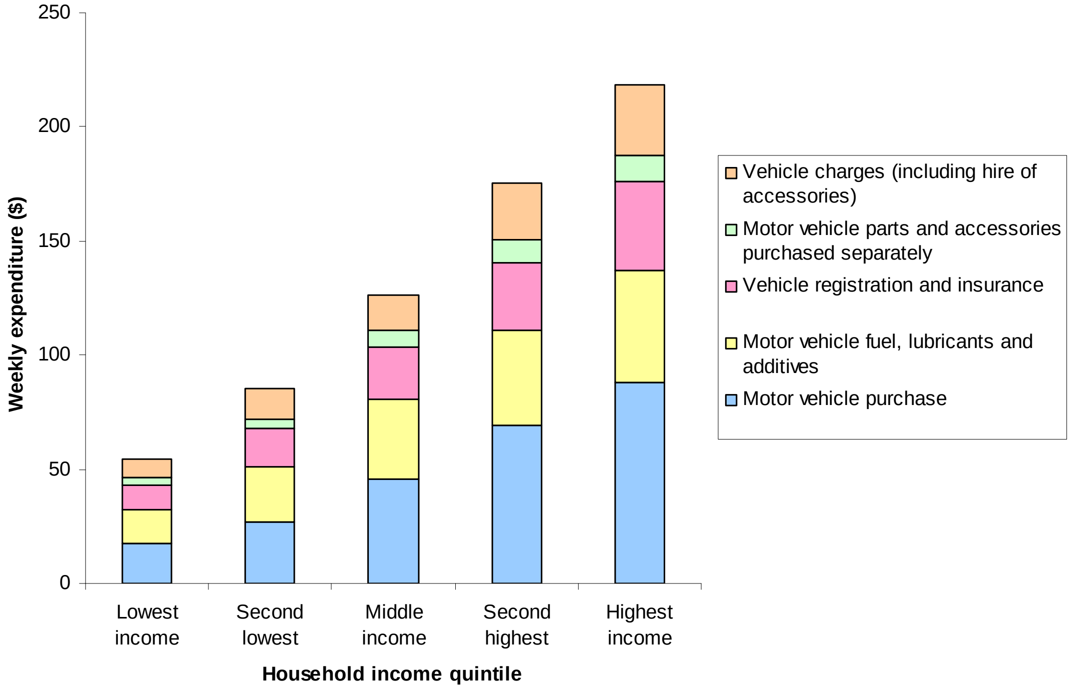
4 Equity

In between lobbying for transport policies that entrench oil vulnerability and that exacerbate social isolation for non-drivers, motoring groups assert that motor vehicle taxes are regressive. It is worth putting these assertions in context.

4.1 Motor vehicle expenditure

Expenditure on motor vehicles is highest in upper income households who therefore pay the majority of motor vehicle taxation.

Figure 4.1: Expenditure on motor vehicles by household income



Source: ABS Household Expenditure Survey 2003-04

4.2 Commuting distances

Regional Australians tend to have shorter commutes than capital city residents and are more likely to not have to commute at all. A significant proportion of trips are within comfortable cycling distance. This helps to mitigate the lower availability of public transport relative to capital cities. We hasten to add however that this is not an excuse for failure to provide adequate rural and regional public transport services.

Table 4.1: Average distance of usual trip to work or study

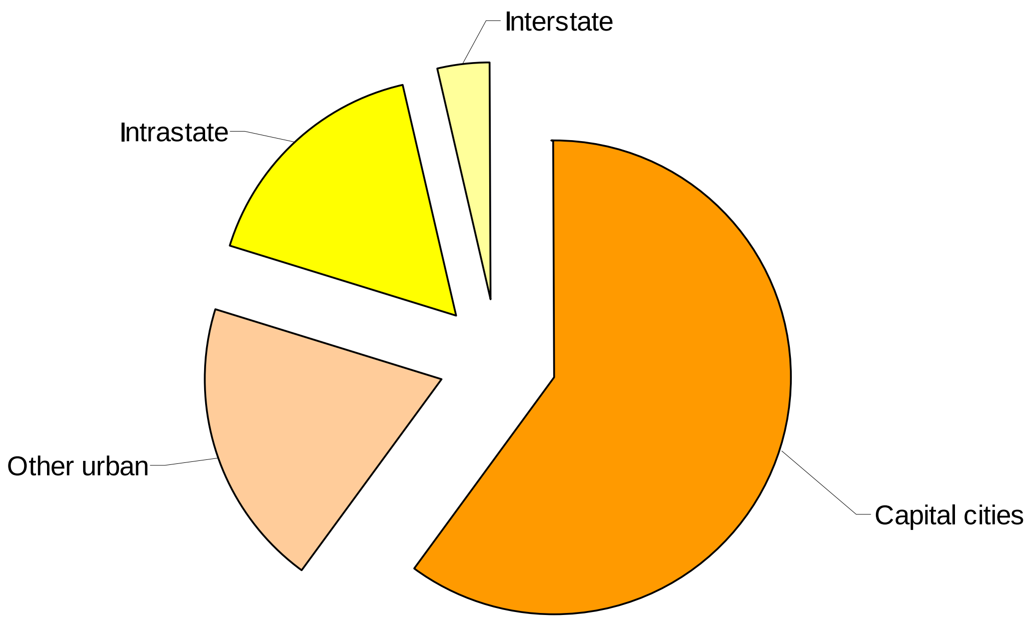
Average Distance	*Capital cities*	*Outside capital cities*
Less than 5km	15.3%	28.6%
5km to less than 10km	20.2%	19.2%
10km to less than 20km	28.8%	20.3%
20km to less than 30km	14.5%	9.0%
30km or more	15.5%	14.7%
Does not travel	5.8%	8.3%

Source: Australian Bureau of Statistics

4.3 Geographic distribution of vehicle use

The majority of passenger car travel takes place in urban areas where there should be an expectation of viable substitute forms of access such as public transport.

Figure 4.2: Share of passenger car travel by area of operation



Source: Australian Bureau of Statistics

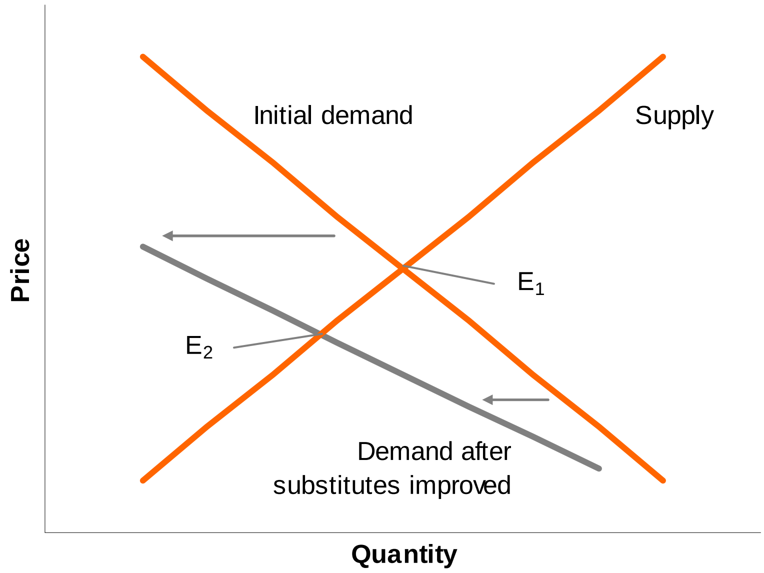
4.4 Sustainable and equitable relief from motoring costs

While the equity impacts of taxation must be carefully considered, it is clear that most motor vehicle tax is paid by middle and upper income households in urban areas. Keeping the general level of motor vehicle taxation low is therefore a very expensive and extremely poorly targeted means of assisting low income and remote households. By undermining transport emissions reductions, low motor vehicle taxation also heightens the risk of dangerous climate change which will disproportionately impact low income groups and rural communities.

Much better targeted assistance at much lower cost to revenue could be delivered through the tax-transfer system by means of zone or regional rebates, low income tax rebates, pensions, targeted tax cuts or concessions, etc. On the other hand, most of the benefit of low motor vehicle taxation accrues to upper income urban households.

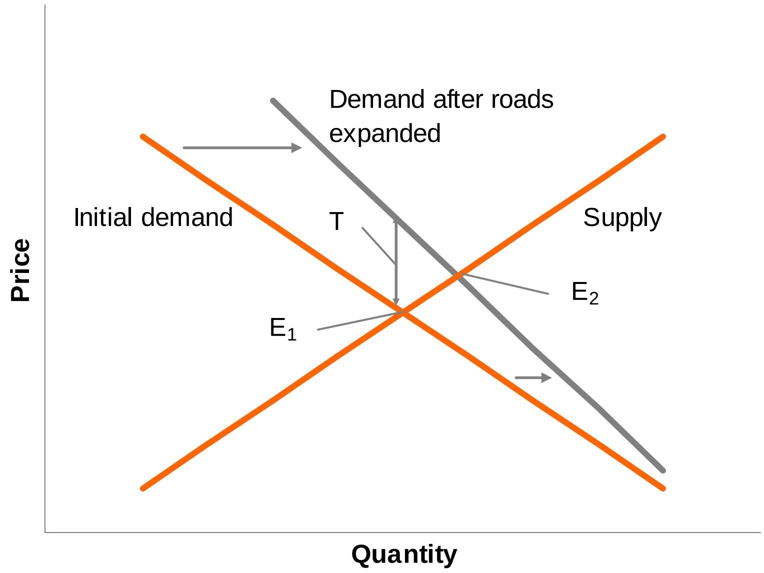
More socially and environmentally sustainable relief from the cost of running motor vehicles can also be provided by improving the availability and quality of alternative transport such as public transport. This not only helps those who are then able to shift to public transport, but can also form part of a strategy to apply downwards pressure on petrol prices (and the cost of emission permits) from the demand side as outlined in Figure 4.3 (PTUA 2008b, pp.43-45).

Figure 4.3: Impact on fuel demand of improving substitutes to car use



Prior to improvements being made to public transport, fuel demand and supply are in equilibrium at E_1. After public transport is improved, the demand curve for fuel becomes more elastic and shifts to the left. A new equilibrium is established at E_2 with lower fuel consumption (and emissions) and lower fuel prices (inclusive of carbon price).

Figure 4.4: Impact on fuel demand of improving roads



Prior to improvements being made to roads, fuel demand and supply are in equilibrium at E_1. After roads (a complement to fuel) are improved, the demand curve for fuel becomes more inelastic and shifts to the right. A new equilibrium is established at E_2 with higher fuel consumption (and emissions) and higher fuel prices. An additional carbon price of T would be required to lower emissions to their initial level at E_1.

5 Conclusion

5.1 Summary

Motor vehicle use imposes higher social costs than many other forms of consumption. These costs include pollution, community severance, congestion and health impacts. Current taxes fail to recoup these costs both in aggregate and at the margins.

Table 5.1: Magnitude of under-recovery of social costs of motor vehicle use

Social costs		***Revenue***	
Road facilities	$11.4 billion	Net fuel excise [e]	$9.9 billion
Land use cost	$24.5 billion	GST	$4 billion
Tax concessions [a]	$2 billion	Registration fees	$3.5 billion
Fuel subsidies	$0.6 billion	Insurance premiums	$10.4 billion
Air pollution [b]	$9.2 billion	Tolls [f]	$0.8 billion
Noise pollution [b]	$2.9 billion	Other revenue	$2.3 billion
Water pollution [b]	$1.8 billion	**Total revenue**	**$30.9 billion (2)**
Climate change [b]	$20 billion		
Congestion	$10 billion		
Severance [b]	$1.8 billion		
Health costs [c]	*Not included*		
Road trauma	$17 billion		
Total costs [d]	**$101.4 billion (1)**	**Unpriced costs**	**$70.5 billion (1-2)**

Notes:
a – does not include taxation revenue forgone as a result of motor vehicle deductions.
b – US$ amounts from Section 1.3 have been treated as A$ to keep cost estimates conservative.
c – a share of $58 billion would be appropriate to include under health costs (Section 1.3.11).
d – does not include industry subsidies such as the $6.2 billion auto industry support package.
e – excise revenue is net of fuel tax credits and other rebates.
f – toll revenue could be excluded since private sector expenditure is excluded from road facilities cost.

Modeshift to public transport, walking and cycling has many social benefits including:

- road infrastructure cost savings;
- reductions in land consumption and habitat fragmentation;
- reductions in carbon emissions and other air pollution;
- reductions in noise pollution and community severance;
- reduced road congestion;
- improved service levels for existing public transport users;
- greater physical activity and reductions in the incidence of obesity and associated diseases; and
- reduced road trauma.

Statutory tax concessions for motor vehicle use and failure to price the above externalities are distorting transport choices away from the most economically efficient, socially equitable and ecologically sustainable optimum. Reform of motor vehicle taxation could go a long way to removing these distortions as well as funding reductions in other areas of taxation.

5.2 Recommendations

The unrecovered social costs identified in this submission point to a very large potential to increase motor vehicle taxation while also increasing economic efficiency. The scale of these unpriced externalities exceeds the total combined tax revenue of Australian states and territories and therefore offers an opportunity to replace existing inefficient taxes with more efficient taxes that also offer environmental and social dividends.

However, we propose a much more modest increase in aggregate motor vehicle taxation by means of revenue-positive reforms to existing taxes such that more efficient transport choices are encouraged. We also recommend that all levels of government raise their commitment to walking, cycling and public transport as lower-cost forms of transport to address equity concerns and reinforce demand management objectives.

5.2.1 Fuel tax

The Commonwealth Government should:

- impose the full rate of excise on all transport fuels including biofuels and gas;
- reintroduce automatic indexation of excise to preserve the real value over time; and
- not include fuel tax credit compensation under the CPRS.

Where applicable, state governments should:

- abolish fuel subsidies.

5.2.2 Motor vehicle registration and insurance

State governments should:

- shift motor vehicle registration to distance-based fees; and
- encourage insurers to offer distance-based insurance.

5.2.3 Fringe benefits tax

The Commonwealth Government should:

- eliminate the concessional nature of the statutory formula for valuing motor vehicle fringe benefits, and/or adopt a methodology that encourages the minimisation of travel (e.g. PTUA 2006, pp.9-10); and
- remove FBT concessions for car parking.

5.2.4 Property tax

Where applicable, state governments should:

- abolish tax concessions for tollroads and roads authorities.

5.2.5 Financial management

Where applicable, state governments should:

- abolish hypothecation of motor vehicle tax revenue where it is currently allocated to road spending; and
- apply the Capital Assets Charge to roads.

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