



# **Reducing Road Transport Carbon Emissions: Options for Government Policy**

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# 1. Introduction

Worldwide, carbon emissions from fossil fuel use in the transport sector are increasing faster than carbon emissions from any other sector. The transport modes responsible for most of this carbon emission growth are car travel, road freight and air transport (IPCC 2001). New Zealand statistics reflect this trend and show that New Zealand transport sector carbon emissions grew by 42% between 1990 and 2001 (MfE 2006). The growth in New Zealand transport sector carbon emissions is linked to growth in road transport use, which is projected to increase further in the near future (WRC 1999; NZGovt 2002; WCC 2004; WCC 2006). However, carbon emissions (including those from road transport) are playing an increasing role in climate forcing and global climate change (IPCC 2001), and road transport use is increasingly recognised as a contributing factor in a number of local environmental and social challenges (NZGovt 2002; Ray 2006).

## 1.1 Environmental and Social Issues

### 1.1.1 Global Climate Change

Most governments now take the threat of global climate change seriously. By ratifying the Kyoto Protocol, New Zealand has committed to reducing its greenhouse gas emissions to 1990 levels by 2012 (MfE 2006).

However, to-date there has been little action taken by the New Zealand government to significantly reduce greenhouse gas emissions. In 2001 New Zealand's total greenhouse gas emissions had increased by 17% from 1990 levels and it is estimated that by 2012 New Zealand may be as much as 24% over its greenhouse gas emission target (MfE 2006), unless action is taken. This compares poorly with progress made in the EU. Many EU countries have committed to cut their greenhouse gas emissions by between 50% and 80% over the next 50 years - targets that are much higher than those set by the Kyoto Protocol. In addition, it seems likely that many of these countries will actually meet their targets (Barnett 2006).

Of New Zealand's greenhouse gas emissions energy sector emissions are growing the fastest. In particular (as stated above), transport sector emissions grew by 42% between 1990 and 2001 (MfE 2006) and the Energy Efficiency and Conservation Authority (EECA) state that in New Zealand "private motor vehicles account for almost 90% of total passenger transport energy use", while road freight and fleet cars also use large proportions of land transport energy (EECA 2006). It is apparent that considerable reductions in road transport carbon emissions could significantly assist New Zealand towards meeting its Kyoto Protocol emission reduction targets.

### **1.1.2 Other Environmental and Social Issues**

Although this paper specifically focuses on climate change as the most pressing reason to reduce road transport carbon emissions, other environmental and social issues may also be addressed while addressing road transport carbon emission problems. Depending on what solutions are implemented, secondary benefits to addressing road transport carbon emissions may include reductions in toxic waste, water pollution, noise pollution, traffic accidents and protection from the effects of possible peak oil production. Some of these issues (and more) were highlighted recently in an assessment report of public health impacts of the proposed \$3.1 billion, 10 year Wellington Regional Transport Strategy (a significant part which involves building more roads around the Wellington region) (Ray 2006).

The above establishes that there is a need to significantly reduce road transport carbon emissions in New Zealand and that there may be several benefits to be gained by doing so. Using Wellington, New Zealand as a case study, this study compares current central, regional and local government transport policy with what transport experts believe governments should be doing to address this problem. This comparison highlights what is missing from current central, regional and local government transport policy frameworks. These areas are then investigated further and discussed as possible additions to New Zealand's central, regional and local transport policies.

It should also be noted that this study focuses primarily on individual and private road vehicle use because government policies and research focus on this. Himanen, Lee-Gosselin et al. (2004) note that there has been little research into sustainable freight transport, and little government focus on sustainable freight transport policies. They attribute this to the fact that to do so would involve incursions into trade and economic policy, which currently seems unacceptable to both governments and the public (Himanen, Lee-Gosselin et al. 2004).

## **2. Current Government Transport Policy and Strategy**

### **2.1 Central Government Transport Strategy**

The New Zealand Transport Strategy is the first central government transport strategy to recognise all types of transport modes and their users, as well as recognising the wider issue of transports impact on social, economic and environmental needs. In response to New Zealand's need to cut carbon emissions, this strategy focuses on technological, urban form and public transport solutions. (A good example of central government's push to implement technical solutions to reduce carbon emissions is it's recent introduction of minimum bio-fuel sales targets that must be attained by fuel companies within the next two years(RNZ 2006)). Taxes and levies to reduce congestion and emissions are mentioned in the New Zealand Transport Strategy, but only as a possible solution "in the future" (NZGovt 2002).

## **2.2 Regional and Local Government Transport Policy in Wellington**

Even though Wellington is reputed to have the best public transport system of any city in New Zealand and public transport ridership rates are the highest in New Zealand, 48% of commuters still travel by car. It is predicted that car use in the Wellington region will increase into the near future (WRC 1999; WCC 2004; WCC 2006).

Although Wellington's streets and motorways are not congested when compared to other cities in New Zealand and internationally, increases in motor vehicle traffic could see congestion becoming a major problem. As a result, both the Wellington Regional Council's Transport Strategy and the Wellington City Council's Transport Policy are very focused on congestion avoidance as opposed to environmental issues. Therefore, these strategies and policies tend to suggest solutions focused on the provision of adequate roading, the provision of adequate public transport, the provision of appropriate facilities for cyclists and walkers, and the manipulation of urban form to encourage transport modes other than the car to be used (WRC 1999; WCC 2004; WCC 2006).

While at first glance these central, regional and local government policies appear to be quite focussed on "sustainable" transport solutions, the fact remains that road transport and therefore carbon emissions (and other environmental impacts) from road transport are increasing. Possibly this is because these strategies have only come into force in the last five years and as a result have had little time to create an impact, or possibly, as research suggests, these policies need to address a wider range of solutions than they do presently.

## **3. Transport Research**

Research suggests that while technological solutions, public and other transport mode supply solutions, and urban form solutions are necessary to reduce road transport carbon emissions (and other environmental impacts), they are not sufficient in themselves. Particularly if carbon emissions are to be reduced as quickly as required and to the levels required to seriously mitigate global climate change (Nederveen, Konings et al. 2003; Himanen, Lee-Gosselin et al. 2004; Schwanen, Dijst et al. 2004; Rajan 2006).

Although researchers frame it in various ways, there does seem to be general consensus that governments need to address reducing demand for road transport, rather than merely trying to contain road transport growth. Only then will significant reductions in carbon emissions be seen. They suggest that, to date, there has been little progress in this area because governments perceive that to try to reduce road vehicle use would be very unpopular, particularly as road transport is seen as being economically important and it is linked to "individual freedom" (Michaelis 1997; IPCC 2001; Hillman 2002; Himanen, Lee-Gosselin et al. 2004; Lyons 2004; Rajan 2006).

### 3.1 Road Transport Demand

At first glance, road transport demand would appear to be a simple problem only requiring a little change of behaviour by those who demand the road transport i.e. the people. However, Barr (2004) states that despite the fact that approximately half of the population in the USA and UK understand and are concerned about anthropogenic impacts on the environment, there is a gap between their understanding and their actual behaviour.

This suggests that reductions in road transport demand are unlikely to eventuate if left to the individual and governments must take the lead (Lyons 2004), a view shared by Michaelis (1997) who suggests that individuals look to government to regulate everyone because individual regulation can be disadvantageous to that individual. Therefore, they will not self regulate. For example, if few individuals catch public transport the service is likely to be poor, but if larger numbers of people use public transport (because the government has regulated the use of road transport), it has a greater opportunity to be an excellent service – timely, far ranging, good facilities, reliable etc. (Michaelis 1997).

While governments could implement aggressive, radical policies in an attempt to control road transport demand, Rajan (2006) suggests that these will not work unless the public are willing to accept them. Instead, he recommends that governments focus on policy that will influence behaviour change, without demanding it outright. Using a framework first developed by Steg and Tertoolen (1999), Rajan (2006) presented a summary of these influences which can be seen in Table 1 below.

Table 1. Road Transport Behaviour Influences

<b>Structural/situational Influences</b>	<b>Cognitive-motivational Influences</b>
<u>Push factors</u> <ul style="list-style-type: none"> <li>• Increase costs</li> <li>• Decrease availability</li> </ul> <u>Pull factors</u> <ul style="list-style-type: none"> <li>• Financial incentives</li> <li>• Attractive alternatives</li> </ul>	<ul style="list-style-type: none"> <li>• Cognitive</li> <li>• Social</li> </ul>

(adapted from Rajan 2006)

Structural/situational influences focus on extrinsic means of reducing road transport demand. Rajan (2006) identifies push factors and pull factors within this category. Push factors include increasing the cost of road vehicle use (e.g. taxes, tolls, priced parking) and decreasing the availability of space for cars (e.g. less parking, car free zones). Pull factors include financial incentives for reducing car use (e.g. tax breaks, “pay as you drive” insurance) and attractive alternatives (e.g. improved public transport, improved accessibility through manipulation of urban form).

Cognitive-motivational approaches focus on intrinsic means of reducing road transport demand by improving individual's understanding of the problem in an attempt to change their behaviour. The two broad approaches Rajan identifies within this category include cognitive and social influences (Rajan 2006).

Using this framework, it can be seen that current central, regional and local government policies in Wellington address decreasing availability and attractive alternative solutions reasonably well. However, increasing the cost of using a road vehicle use or financial incentives to reduce road vehicle use have not been implemented and the underlying message found in these transport policies regarding this, is one of reluctance. In addition, cognitive-motivational approaches do not appear to feature at all.

Accordingly, this study will explore the financial and cognitive-motivational influences on reducing road transport demand (and in turn road transport emissions), and how they are currently used in other countries or are recommended by transport researchers. These "best practice" solutions will then be discussed in relation to current central, regional and local government transport policy in Wellington, New Zealand.

## 4. Aim and Objectives

The aim of this report is to answer the following question: *What information is currently available on financial and cognitive-motivational influences that could be incorporated into government transport policy, as a means of reducing road transport demand and thereby, reducing road transport emissions?*

This study uses information available to any policy researcher/analyst with access to on-line research databases.

The aim was broken into two objectives – each being information targets subject to a database search using the ISI Web of Knowledge (available at: <http://www.isiwebofknowledge.com/>)

Objective 1 sought to answer the following: *What financial instruments are available to central, regional and local government policy-makers to encourage significant reductions in road transport demand and thereby, significant reductions in road transport emissions?*

Key words: transport, policy, subsidies, levies, taxes, climate change

Objective 2 sought to answer the following: *What cognitive-motivational influences could be incorporated into central, regional and local government policy-makers to encourage significant reductions in road transport demand and thereby, significant reductions in road transport emissions?*

Key words: transport, policy, behaviour, motivation, climate change

## 5. Results

### 5.1 Financial Instruments

One reason that private road vehicle use has become so popular is because the full costs of road transport are not borne by the individual. Instead road transport is implicitly subsidized (e.g. taxes, that are often in no way related to car use, are used for road construction or maintenance) and the external costs of road transport fail to be internalised (e.g. pollution and travel time increases). Instead these costs are borne by society collectively. For individuals, this decreases the costs and increases the benefits of motor vehicle transport. Accordingly, Tietenberg (2002) argues that increasing the cost of road transport to reflect its true cost may bring about a reduction in demand for road transport.

#### 5.1.1 Central Government

To implement a true cost situation that involves “numerous, small polluters,” Richardson and Chanwai (2003) maintain that taxes are the best method governments can use. These taxes could take the form of an extra charge to pollute or they could encompass a tax break for avoiding a polluting activity or purchase. Alternatively a combination of both could be used (Tietenberg 2002).

Potter, Enoch et al. (2006) identify three major categories of transport tax:

- Purchase of vehicles
- Ownership of vehicles
- Use of vehicles

The first two tax categories are used to encourage a more environmentally friendly vehicle fleet. Tax methods encouraging this are many and varied. In Europe taxes imposed to “green the fleet” include flat taxes on all vehicles purchased, graded taxes encouraging the purchase of “environmentally friendly vehicles” and registration or licensing taxes based on the amount of carbon dioxide emitted or fuel consumed. The success of these taxes has been mixed (although they do not provide specific details about which taxes have been most successful). The third group of tax is used to encourage behavioural changes. The main method of taxing the use of vehicles is through fuel taxes (Potter, Enoch et al. 2006).

There is some debate, however, as to whether these “environmental” vehicle taxes should be additional to other already imposed taxes (e.g. income tax) or if other taxes should be decreased while tax on vehicles and vehicle use is increased. According to Richardson and Chanwai (2003) these taxes should be additional to other taxes and the revenue collected should be used to improve public transport supply. Hatfield-Dodds (2003) argues that any such taxes should be routinely hypothecated as a means of recycling any revenue gained into financial incentives to further support desired behaviour change. He also states that the “pains and gains” from such taxes need to be better connected in the



public mind if they are to be accepted politically, and that environmental tax incentives should be used to raise revenue where it is a necessary part of the overall policy strategy (ibid.).

How much to charge in taxes is also debated. Fuel tax rates in most countries need to increase by between 25 - 60% if they are to reflect the true costs of car use (Tietenberg 2002). However, Steg and Tertoolen (1999) note that imposing sudden high and aggressive tax increases is unlikely to be politically sustainable and is not recommended if long term changes and support are the goal. The 2001 Third Assessment Report (TAR) of the Intergovernmental Panel on Climate Change (IPCC) supports this view by stating that fuel taxes at low levels will be tolerated, but as tax levels increase social costs increase and these taxes are less likely to be supported at higher levels (IPCC 2001). Imposing the appropriate level of tax may be a matter of trial and error and it may need to be adjusted as circumstances change (Richardson and Chanwai 2003). Such circumstances may include external influences such as inflation, exchange rates, and technological changes for example (IPCC 2001).

### **5.1.2 Regional and Local Government**

Methods of increasing the cost of road vehicle use at a regional and local level could include the implementation of congestion levies, tolls, and parking fees (Steg and Tertoolen 1999; Lyons 2004; Rajan 2006). In Central London a congestion charge was implemented in February, 2003. It is deemed to have successfully reduced congestion problems and despite predictions of a “motorists uprising”, it has been generally accepted by the public (Lyons 2004).

## **5.2 Cognitive-Motivational Influences**

### **5.2.1 Influences**

Although rational, functional reasons for using personal road transport are apparent (e.g. to save time, convenience, cheap), many people are motivated to drive for habitual, symbolic, and emotional reasons (Steg 2005). Therefore, attempts to manage behavioural aspects of road transport demand must address such intangible influences as social norms, social status, emotions, habit, attitude and values (IPCC 2001; Lyons 2004; Steg 2005; Rajan 2006).

#### *Social Norms*

Social norms tell individuals what is “normal” and how they ought to behave. For example, social norms surrounding car use indicate that it is normal to use a car (no matter how far the journey), that it is normal to feel that travel time is “wasted” time, that it is normal to be constantly “busy” requiring the use of a car, that it is normal to own more than one car, and (increasingly) that it is normal to own an SUV. Individuals tend

to comply with social norms for a variety of reasons (e.g. to fit in, to gain or maintain a certain sense of self identity, to be respected, fear of ridicule). Messages about what constitutes “normal behaviour” are received through many avenues of socialisation including peer esteem, mass media, family, and the workplace (Lyons 2004).

### *Social Status*

Social status and aspirations are closely linked to social norms. Generally, current social norms dictate that it is normal to aspire to increased social status. One way to indicate that you occupy a certain place in society is through the accumulation of symbolically charged consumer goods, including motor vehicles (IPCC 2001). Steg (2005) notes that many people are motivated to drive for symbolic reasons. It is common for people to view their car as a status symbol and a way of expressing themselves (Steg 2005).

### *Emotions*

Many people are also motivated to drive because the act of driving invokes feelings of power, superiority and arousal. Many car advertisements tap into (and amplify) these emotional associations with depictions of control, class, power, increased self-esteem, sex appeal, freedom, and adventure (Steg 2005). Advertisements also play on individual’s fear that they might not be these things - unless they own the vehicle advertised.

The symbolic underpinnings of motor vehicle use also play a significant role in the underlying motivations behind teenage “boy-racer” sub-culture, as well as many other expressions of sub-culture or class identity (a BMW as a sign of class membership, convertibles, classic cars, sports cars, and SUVs – many of which are more important to the owner for their symbolic rather than their utility value).

### *Habit*

Habitual behaviour also appears to play an important role in transport demand. Generally, individuals will use different modes of transport for different purposes (e.g. bus for commuting to work and car for shopping in the weekend). If the preferred mode of transport is not available, there is generally a “default” mode that will be used. Often decisions about which mode of transport to use are a matter of habit rather than rational thinking. Research suggests that this habitual behaviour may be difficult to change, but that individuals often review their habits during “life changes” such as moving house, having a baby, changing job, changing a personal relationship, or retiring (Lyons 2004).

### *Attitude*

There are two broad attitudes apparent in contemporary (particularly “western”) society. Those with “weak sustainability” attitudes believe that most natural functions can be substituted either by nature or with human assistance. In contrast, those who adhere to “strong sustainability” attitudes believe that there is a limit to the carrying capacity of the Earth and its systems, and that overshooting those limits may irreparably damage the

environment in unacceptable ways. The “weak sustainability” model fits best with the dominant norm of economic and trade systems views. According to this attitude, sustainable transport policy is not actually necessary (is a luxury we cannot afford) and may even be detrimental to continued growth in economic and trade systems (Himanen, Lee-Gosselin et al. 2004).

### **5.2.2 Cognitive Approach**

The cognitive approach involves increasing the public’s knowledge and awareness of the problem. There are many ways that information could be provided to the public (e.g. advertising campaigns, footprint calculators, leaflet drops (Rajan 2006)).

This information dissemination could be initiated directly by central government to the general public or specifically targeted groups. However, there is evidence to suggest that attempts by governments to change personal behaviour are often regarded with scepticism and sometimes regarded as propaganda (Barr 2004; Lyons 2004). Lorenzoni and Pidgeon (2006) also note that in the UK, central government polls as one of the least trusted sources of information about climate change (oil companies and car manufacturers being the least trusted). Local government polls somewhat better, while environmental groups and scientists poll as the most trusted sources of information (ibid.).

However, the cognitive approach does assume the public’s decision to drive is a rational one and that the provision of information is sufficient to change behaviour. From the discussion above though, it is apparent that the decision to drive is not always rational. Therefore, this approach alone may encourage some to change their behaviour, but probably not a majority (Steg and Tertoolen 1999).

### **5.2.3 Social Approach**

Research does suggest however, by providing the information in a manner that takes advantage of social influences, more individuals can be motivated to change their behaviour.

In particular, significant others are often able to influence individual behaviour more affectively than general advertising and information programmes, and relating environmental problems to personal, family and community impacts is particularly potent (Steg and Tertoolen 1999; IPCC 2001; Barr 2004). Supporting this, Lorenzoni and Pidgeon’s 2006 research show that family and friends are a trusted source of information about climate change (second only to environmental groups and scientists) (Lorenzoni and Pidgeon 2006).

This suggests that information provision may be more effective if tailored for and targeted at smaller, specific groups within the community (Steg and Tertoolen 1999; Barr

2004) and can be enhanced by using role models and experts that will appeal to that group, if appropriate (Rajan 2006).

A further advantage of tailoring information to specific smaller groups is that a feeling of inclusiveness and ownership of the problem can occur. Lorenzoni and Pidgeon (2006) note that although the public in the US and Europe are concerned about climate change, other more immediate, personal concerns take precedent. This suggests a sense of powerlessness amongst individuals regarding climate change issues. Michaelis (1997) also alludes to this feeling and he further suggests that innovation in behaviour amongst individuals, groups and institutions might encourage real changes.

In addition, by targeting smaller groups, conformity pressure from within the group may be an additional motivator, once key members (leaders and role models) take the message on board. In this way, norms, values and attitudes within the group can begin to change and these attitude changes can translate into changes in behaviour (Rajan 2006).

However, the IPCC notes that government has a central role to play in helping to set the context within which society can change. It suggests that this can be done by providing appropriate societal goals, removing bureaucratic and regulatory barriers and supporting behavioural innovation (IPCC 2001).

Bulkeley and Betsill (2005) go further by suggesting that while sustainable transport policy (and climate change policy in general) remains secondary to economic policy, there will be little more than token reductions in transport demand and transport carbon emissions. This view is supported by Himanen, Lee-Gosselin et al. (2004) who suggest this is the main reason why “sustainable transport” research findings commonly fail to be translated into policy or be implemented in government programmes.

## **6. Analysis and Discussion**

### **6.1 Central Government**

#### **6.1.1 Taxes**

Succinct information regarding all taxes on vehicles and vehicle use in New Zealand does not appear to be readily available to the general public. Current petrol taxes amount to approximately 0.50c/per litre of petrol, which is divided amongst the National Land Transport Fund, the General Crown Account, the ACC Motor Account, Local Authority Petroleum Tax and Petroleum Fuels Monitoring Tax. Some of these taxes are used to improve roads, road transport and public transport, however almost half is used to generate general taxes for the government and towards ACC to help pay for the consequences of road accidents (AA 2006).

This information, combined with the literature discussed above, suggests that taxes on road vehicle purchase and use should be reviewed and amended. Taxes on vehicle

purchase, such as those discussed by Potter, Enoch et al, (2006) could be implemented to encourage a greening of the fleet or to discourage vehicle purchase outright. Taxes could be charged for both licensing and registration of cars depending on their fuel efficiency, and taxes on fuel should probably be simplified.

As Hatfield-Dodds (2003) suggests, the public should be encouraged to make the connection between their behaviour and how this affects the environment. Therefore, these taxes should be named in such way that encourages that connection and the revenue collected from these taxes should be used to improve and subsidise alternatives to road vehicle use. In this way the pain of more expense involved with car use will be offset by the gain in better, possibly cheaper, public transport and the knowledge by tax-payers that they are funding an outcome that they value.

A wider look at how road vehicle use is taxed and subsidised in New Zealand also needs to take place. For example, business vehicle expenses are tax deductible, thereby essentially reducing the cost of running those vehicles and providing an incentive to provide vehicles for employees as a benefit.

In reality, though, a review of road transport taxes and subsidies is unlikely to occur unless environmental and climate change policies take a more prominent role in current government policy, as Bulkeley and Betsill (2005) suggest they should. If this were to happen then it is likely that a review of New Zealand's entire tax regime, and indeed the government's whole economic outlook, would take place. Included within this would be a review and amendment of transport taxes and subsidies.

Possible steps towards this are being made. At the 2006 Climate Change Policy Symposium in Wellington the climate change minister, David Parker, stated that "the Government does recognise price-based measures applied broadly across the economy are likely to form part of the [climate change] policy mix for the period after 2012" (Torbit 2006). However, at this point that seems unlikely to include any form of across the board carbon tax, as this proposal was shelved by the government in 2005 (Parker 2005). In addition, many feel that waiting until after 2012 to implement policies aimed at reducing greenhouse gas emissions is waiting far too long to address an urgent problem (RNZ 2006). This slow start will also come at a significant cost to the tax payer who has to cover the cost of offsetting the national emissions liability from overshooting our emissions reductions target under the Kyoto Protocol (currently running at about \$500 million). Furthermore, research internationally suggests that delaying action on climate change mitigation will end up costing far more than early action (Kallbekken and Rive 2006).

### **6.1.2 Communication**

A focus on climate change issues (including sustainable transport) and changes in tax regimes are unlikely to be accepted however, unless the public accept the need for

change. Therefore, communication and consultation with the public about climate change and climate change issues needs to be upgraded.

However, as is suggested by Barr (2004), Lyons (2004), and Lorenzoni and Pidgeon (2006), this communication should not merely be disseminated by central government to the public. Rather, central government should work through (and fund) other organisations to work with the public and this communication should be targeted and tailored to small, specific groups within the community and communicated from a wide spectrum of groups. These other organisations should include NGOs, consumer organisations and community groups (where friends and family come together) as well as scientific organisations (e.g. The Royal Society), universities, and business networks (e.g. the Sustainable Business Network, and the NZ Business Council for Sustainable Development).

More specifically, examples of target groups (and which, in turn, could play an important role in communication efforts) include schools, churches and religious organisations, work places, neighbourhoods and communities, specific industries, those going through life changes (e.g. immigrants, retirees, new parents). In some cases it may also be appropriate to use role models, patrons, or experts in association with these communication initiatives.

By targeting smaller groups to communicate with it is more likely that a sense of inclusiveness, interaction and innovation will be encouraged. In this way the group (and individuals) will feel that they have some control and ownership of the problem and its solutions. In addition, effective communication theory suggests that feedback to central government must be able to take place and central government must listen to that feedback (Pinner 1988). This is particularly important if individuals and communities are to feel that they have ownership of the problem and can really do something to address it.

As well as direct communication initiatives with the public, central government must also lead by example. In the case of travel and transport, central government (including the public service) should review their practises towards moving to a carbon neutral economy, as signalled by the Prime Minister in late 2006 and Green Party Co-Leader Jeanette Fitzsimons when she questioned the fuel efficiency of central government owned cars (Barnett 2006). Climate Change Minister David Parker recently decreed that government departments must “walk the talk on climate change by ensuring they are as clean and green as possible”(NZPA 2006). It is unlikely that the rest of the country will take climate change mitigation seriously unless central government leads by example. Modelling desired behaviour change itself forms a powerful component of any public communication and education strategy.

## **6.2 Regional and Local Government**

In Wellington City itself, commuter public transport ridership rates are good, while commuters from outer lying areas (e.g. Hutt Valley, Porirua and Kapiti) tend to rely fairly

heavily on cars to get to work. In addition, non work trips around Wellington tend to be by car (WCC 2004; WCC 2006). Therefore, Wellington's regional and local governments should focus on reducing car use for these groups. As part of this improvement effort the supply of public transport will need to be improved - there is already widespread concern about the state of Wellington's rail services (Ray 2006). The simplistic solution of the construction of further high speed roads to outer lying areas should not be contemplated at least until more effective and efficient public transport solutions have been developed and implemented. These issues, however, are beyond the scope of this study.

### **6.2.1 Financial approaches**

At the regional and local level the cost of driving individual road transport around Wellington could easily be increased as a means of signalling desired behaviour change whilst generating revenue that could be recycled into behaviour change incentives (including suburban "park-and-ride" infrastructures). Charges could include higher parking prices (including in the weekend), payment required for parking in a wider area around the city, congestion charges, strategically located road tolls. While Wellington City Council has recently implemented higher parking fees, congestion levies and tolls are not currently used in Wellington (WCC 2004; WCC 2006).

If central government were to change the tax regime surrounding car use (as suggested above), regional and local government would also have an important role to play in deciding how to spend the tax revenue collected on alternatives to road vehicle use. This revenue could be used to improve and subsidise the rail system to outer lying areas and be used to improve and subsidise weekend public transport services (e.g. by ensuring recreational spots are accessible by public transport; by subsidising weekend travel on public transport; by subsidising train travel).

### **6.2.2 Communication**

Regional and local government have an important role to play in this area as they are in closer contact with the local population. They are in an excellent position to be able to disseminate information, to interact with and support groups wishing to know about and act on climate change issues (such as transport). Greater Wellington's (the Regional Council) "Be the Difference" campaign (WRC 2006) as well as its partnership with the Sustainability Trust to lower short trips in private cars, are excellent examples of how the council can access and motivate smaller interest groups.

It should be noted however, that although regional and local government could implement some of these strategies themselves, ultimately the overall direction and goals for reductions in transport carbon emissions in Wellington (and other major urban centres) rests on central government implementing an overall strategy for the country.

## 7. Conclusion

In recognition of the need to help mitigate global climate change, New Zealand has committed to significant greenhouse gas emission reductions by ratifying the Kyoto Protocol. To date, little progress has been made to achieve these reductions and in fact the trend is that emissions are increasing. This is particularly evident with road transport carbon emissions. Decreasing these emissions significantly could go some way towards helping New Zealand achieve its emission reduction targets and lower the cost to the taxpayer for meeting our Kyoto obligations. By implementing financial policy instruments closely linked with key emissions sectors such as road transport, any climate change taxpayer burden will be born more accurately and equitably by those sectors generating the emissions. At the moment our \$500 million Kyoto overshoot bill will be born by all New Zealanders – including those whose emissions footprint is negligible or negative.

However, while current central, regional and local government policies do focus on some important aspects of road transport emissions reduction (e.g. improving public transport, manipulation of urban design and technical solutions), these are not sufficient in themselves to achieve the sort of reductions that are required. To achieve further, significant road transport emissions reductions, these policies also need to encourage and enable a decrease in road transport demand by focusing on behavioural influences. Two influences that are currently not addressed, and that should be added to the policy mix, are financial incentives/disincentives and more effective communication with the public about climate change (and transport emissions) in a way that allows individuals and communities to take ownership of the problem.

Ultimately, however, none of this is likely to take place unless the New Zealand government make climate change mitigation a priority. If the New Zealand government is serious about New Zealand's commitment to the UN Framework for Climate Change and the Kyoto Protocol, then climate change policy must take a more central and more prominent role in governance. The ideal would be that environmental policies and goals (which include climate change and sustainable transport) be integral to social and economic policies and goals in an integrated whole of government approach. Once central government takes the lead, regional and local government will be more able to follow. Although there is no reason why local government needs to sit on its hands and wait for initiatives from on high. Ideally, a partnership between national level strategic direction intermeshing with local level realities would be the most effective way forward.

So, is the framework of current Government policy capable of significantly reducing road transport emissions? This analysis suggests that the answer is currently “no.” There are significant policy and conceptual barriers that first need to be overcome. Significantly reducing road transport carbon emissions requires Government to focus considerably more attention on road vehicle use behaviour change, whilst providing the structural capacity for this to be possible.



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