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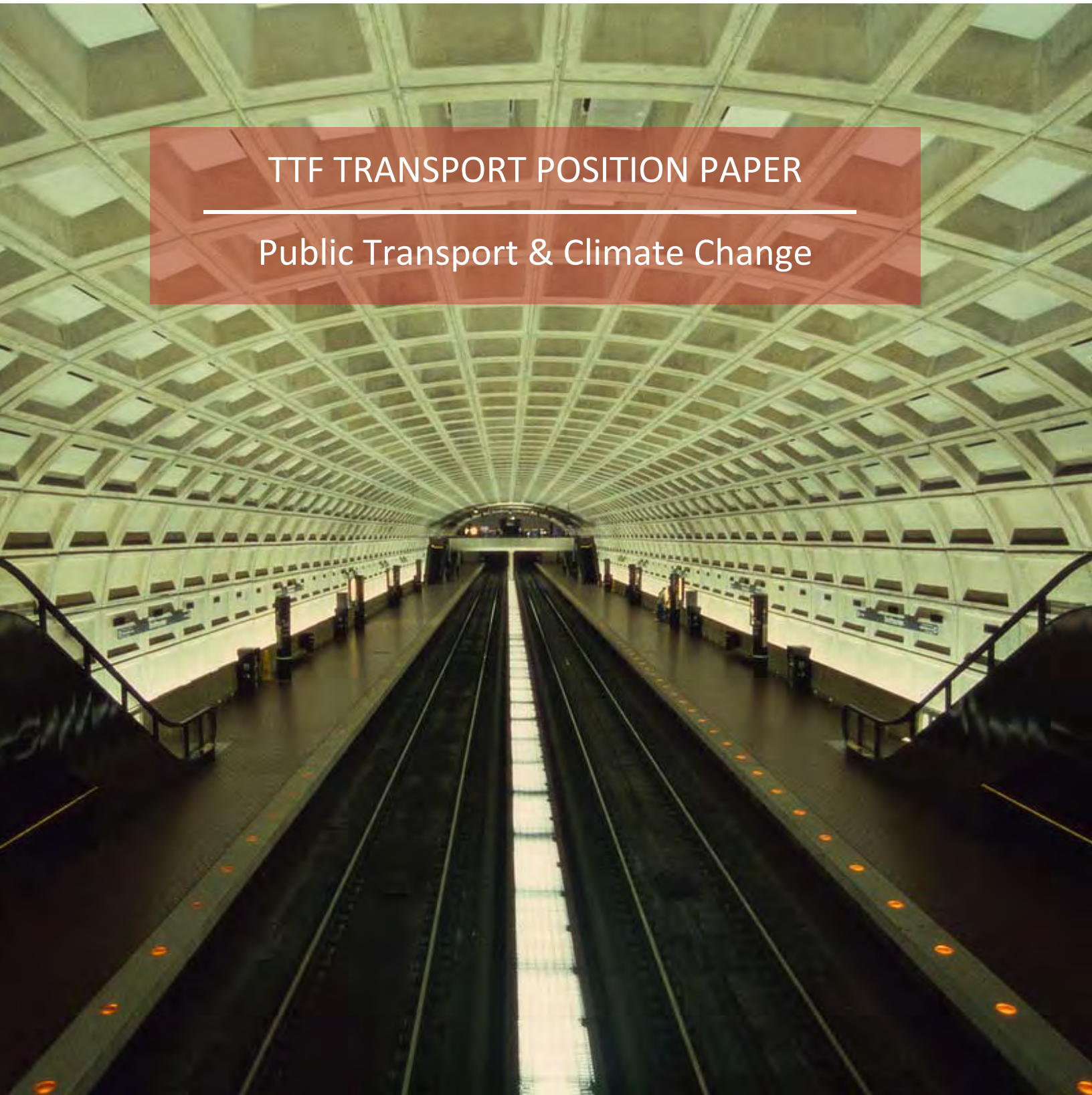

TTF TRANSPORT POSITION PAPER

Public Transport & Climate Change

TTF AUSTRALIA
Tourism & Transport Forum

CONTENTS

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In Short:

- Transport accounts for 14.6 per cent of Australia's greenhouse gas emissions.
- Public transport has an important role to play in reducing Australia's transport-related greenhouse gas emissions.
- The Carbon Pollution Reduction Scheme and fringe benefits tax exemptions create a set of policy conditions that clearly advantage the use of private vehicles.
- Continued investment in new infrastructure and integrated land-use and transport planning are critical elements in reducing transport emissions.
- Improving the service quality of public transport is critical if public transport is to take up a greater proportion of the transport task.

Overview

With the science of climate change indicating that global emissions must peak and then decline over the coming decade, the next five years will require radical changes in our energy and transport systems.

The transport sector provides one of the keys to reducing our carbon footprint given Australia is almost entirely dependant on oil as our transportation fuel. Australia is 99.9 per cent dependant on fossil fuels for private transport and despite a move towards smaller vehicles and a greater awareness of the need for energy conservation and energy efficiency, total fuel consumption is rising[1].

Private motor vehicles currently account for 90 per cent of the passenger transport task in Australia. Measures to address vehicle emissions through the development and commercialisation of sustainable alternative fuels will therefore be critical in delivering significant carbon abatement from the transport sector. Sustainable transport biofuels are particularly important given they would reduce the need for structural adjustment, delivering much faster market penetration.

There is also a very important abatement role for the public transport sector through take up of a proportion of road passenger traffic, both within and between our urban centres. This will depend upon improving existing public transport infrastructure and services and developing new infrastructure, including new integrated public transport systems and multi-modal transport interchanges that enable efficient transfer of passengers.

[1] A Roadmap for Alternative Fuels in Australia, *Report of the Jamison Group to NRMA Motoring & Services*, page 11.

Furthermore, the ability of public transport, particularly urban passenger rail, to reduce transport emissions will improve as more renewable energy is supplied to the national electricity grid. Similarly, the benefits from electric vehicles will rise in line with the availability of renewable energy.

This paper focuses on increased public transport usage as one of the strategies necessary for Australia to realise its emission reduction targets. Importantly, it builds on a major Tourism and Transport Forum (TTF) paper released in September 2009, titled *Responding to Climate Change: A Tourism and Transport Sector Position.*[2]

Integrated strategies are required to provide new transport links and better manage existing links for the efficient movement of freight and passengers within and between Australia's major urban centres. Expansion of integrated rapid transit networks and sustainable transport infrastructure, using the latest low emission transport technologies, would reduce emissions, ease congestion and make our cities more attractive propositions for international investment and visitation.

Given Australia's reliance on private vehicles, shifting a proportion of private vehicle use to public transport has the potential to deliver benefits, not only with respect to reducing Australia's overall greenhouse gas emissions, but also across issues relating to congestion, safety, noise and air pollution, liveability and health.

Setting the Context: Australia's Transport Emissions

Australia's 2007 National Greenhouse Accounts[3] show that transport (78.8 Mt CO_2-e[4]) accounts for 14.6 per cent of Australia's total emissions, making it our third largest source of greenhouse gas emissions after stationary energy (54 per cent) and agriculture (16.3 per cent).

Within the transport sector[5] 87 per cent of emissions are generated by road transport, with passenger cars the largest transport source, accounting for 53 per cent (41.9 Mt CO_2-e). In the context of Australia's total annual emissions, passenger cars represent 7.7 per cent.

Emissions from the transport sector have risen over the last 18 years[6], with total transport emissions up by 26.9 per cent since 1990. Road transport emissions have also increased,

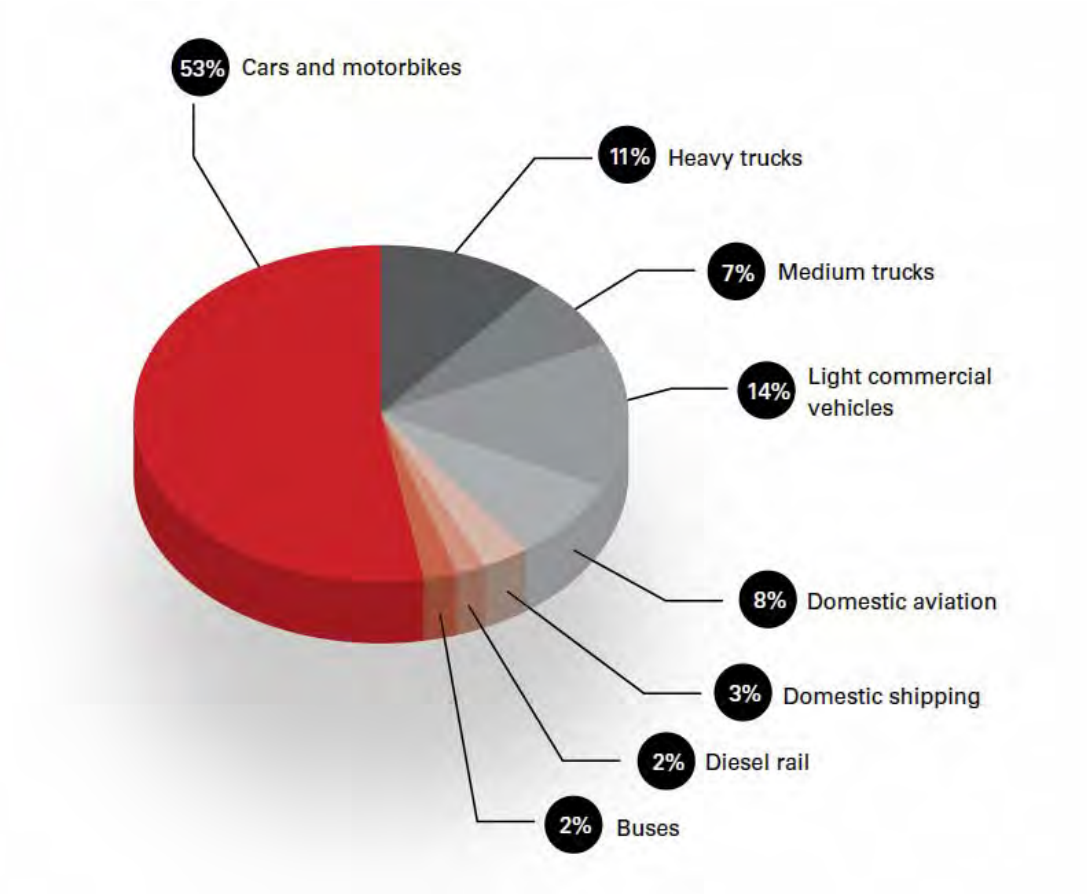
[2] This paper can be downloaded at www.ttf.org.au
[3] National Greenhouse Gas Inventory 2007, Australian Government, Department of Climate Change
[4] Million tonnes of carbon dioxide equivalent
[5] There are a number of key considerations to note in relation to the transport sector's emissions:
- Emissions estimates for the rail sector focus on diesel emissions and do not include emissions from electricity consumed to provide power for electric rail systems.
- Emissions from shipping are for coastal freight and passenger ferry activities. They exclude emissions from fuel used for importing or exporting bulk raw materials, manufactured products and other cargo to and from Australia, as well as fuel uplifted by international cruise ships overseas but used for voyages which include Australia in the itinerary.

[6] Growth over the past 18 years is compared because 1990 is the base year of Kyoto Protocol accounting and national greenhouse gas inventories.

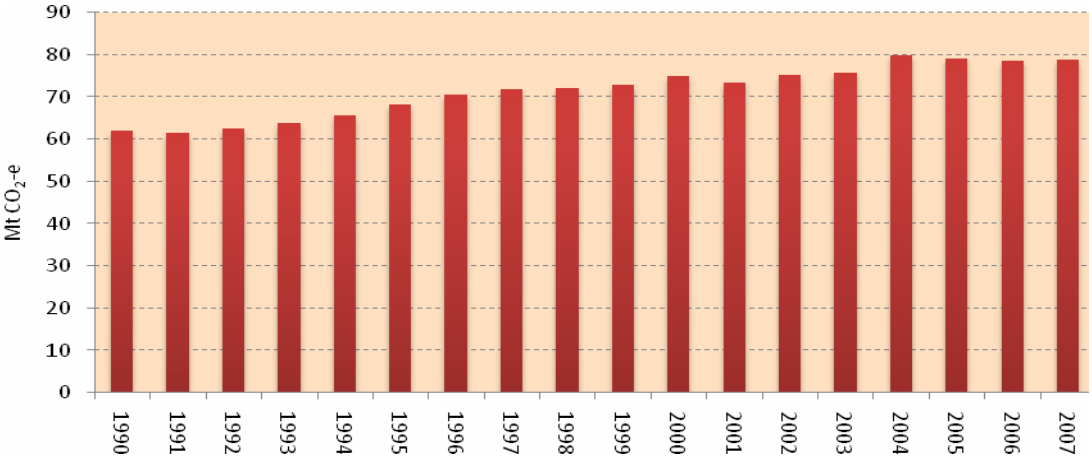
rising by 26.1 per cent, while passenger car emissions have increased 18.8 per cent over the same period.

By comparison Australia's total greenhouse gas emissions (541.2 Mt CO_2-e) increased 30 per cent between 1990 and 2007, while emissions from stationary energy increased 49.5 per cent.

Graph 1: Australian Transport Emissions, 2007



Graph 2: Australian Transport Emissions 1990-2007



Source: National Greenhouse Gas Inventory 2007, Department of Climate Change

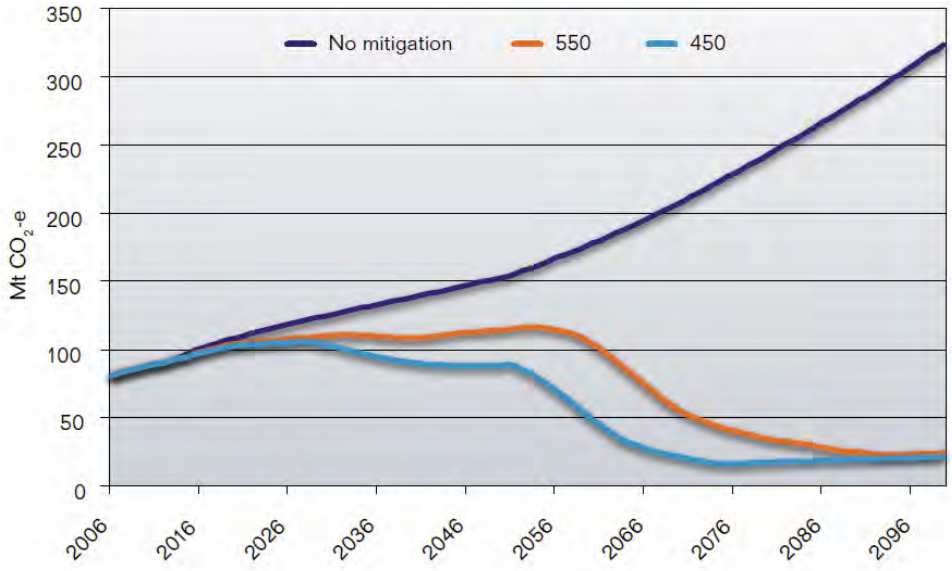
According to the Bureau of Infrastructure, Transport and Regional Economic (BITRE) and the CSIRO[7], a range of factors influences growth in road passenger transport demand and consequential transport energy consumption and emissions.

Historically this has been driven by increases in population and per capita daily travel. The growth in daily travel has largely been the result of rising incomes, allowing greater flexibility in residential location, mode choice, trip selection and higher potential travel speeds, as road networks have developed over time.

Demographic effects (including changes to land-use, urban form and density) can also be important, with respect to how much daily travel increases. The tendency for urban sprawl in Australian cities has increased both average trip lengths and overall passenger travel.

Looking at future growth, modelling conducted by Garnaut[8] suggests that with no carbon price in place, Australian transport emissions under a non-mitigation scenario will quadruple by 2100. Under a "550 scenario"[9], transport emissions will be around 70 per cent below their 2006 levels by 2100.

Graph 3: Projected emissions from the domestic transport sector, 2006–2100



Source: The Garnaut Climate Change Review, page 512.

[7] Modelling the Road Transport Sector, Appendix to Australia's Low Pollution Future: The Economics of Climate Change Mitigation, Prepared by BITRE and CSIRO, for Treasury, October 2008, page 7

[8] The Garnaut Climate Change Review, Page 512

[9] A "550 scenario" refers to a mitigation scenario (and subsequent emissions trajectory) which stabilises atmospheric concentrations of greenhouse gases (carbon dioxide equivalent - CO2-e) at 550 parts per million. Current concentrations are estimated at 455ppm, however when the warming that would result from this is offset by the cooling effects of aerosols and land-use changes, the concentration reduces to a central estimate of 375ppm. See Garnaut, page 38

Profile of Urban Passenger Transport

The public transport share of total urban travel (passenger kilometres) has remained relatively stable since the 1980s, with patronage increasing proportionate to population growth. However, demand for public transport in most Australian cities has been increasing at above trend rates in recent years.

In 2008 private vehicles represented approximately 90 per cent of motorised passenger transport in Australian capital cities, while urban public transport (UPT) represented approximately 10 per cent. However, when commuting travel is considered, the share of UPT is considerably higher — approximately 16 per cent nationally.

Table 1: Commute and all-day mode share of urban public transport, 2006

	Sydney	Melb.	Brisbane	Adelaide	Perth	Hobart	Canberra	Darwin	Average
UPT commute share (% of all motorised trips)	22.7	14.8	14.7	10.6	11.0	7.1	8.6	5.1	16.1
UPT all-day share (% of all pax kilometres travelled)	13.3	8.4	9.0	5.7	6.5	4.3	5.7	7.2	9.5

Source: BITRE Information Sheet 31

Within Australian cities there is also significant variation in mode share between suburbs. For example, public transport, walking and cycling make up almost 50 per cent of trips to work in some local government areas of inner Melbourne, but less than 10 per cent in many outer suburbs, where recent population growth is concentrated.[10]

Focusing on the commute to and from the CBD, the use of public transport is even greater. For example, 72 per cent of journeys to work in the Sydney CBD are made by public transport. With cycling and walking included, this figure increases to 85 per cent.[11]

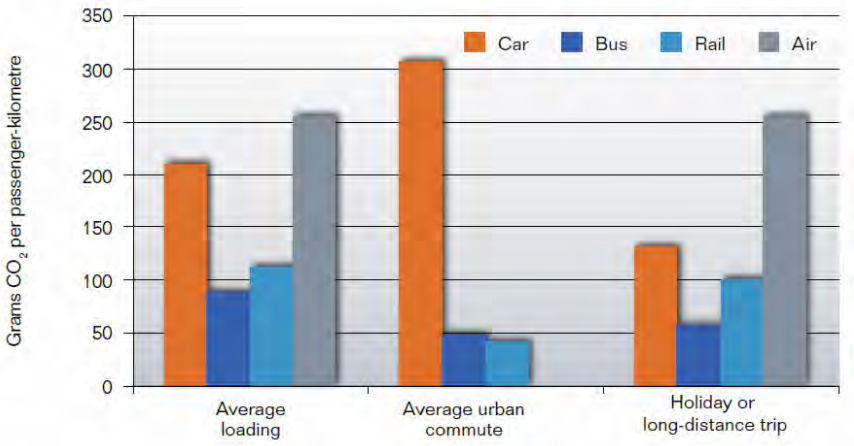
With appropriate planning and investment by governments, there are substantial opportunities for mode shift in local passenger transport, particularly in outer-urban areas. Over the last two decades, approximately 20 per cent of commuters in Australian capital cities travelled to work by public transport, walking and cycling. [12] In contrast, in many European and Asian cities this figure is closer to 50 per cent of trips.[13]

[10] The Garnaut Climate Change Review, Page 519.
[11] Lord Mayor Clover Moore, City of Sydney, City Talks Lecture, 16 September 2009.
[12] Public Transport alone represents around 16% or the mode share when commuting to work, see Table 1.
[13] See Garnaut Climate Change Review, Figure 21.8, page 520. TTF does not suggest Australian and European cities are directly comparable. A comparison is provided to show what is possible. It is important to recognise that the use of public transport in different cities is dependant on many factors such as city size, density, degree of centralisation and traffic and parking situations. While these

The emissions intensity of different passenger transport modes further highlights the potential for tangible carbon abatement. The graph below illustrates how, with current technology and average occupancy, bus and rail are far more efficient transport modes from an emissions perspective than private vehicles, even when averaged out over an entire day. During peak periods, public transport (bus and rail) is up to six times less emissions intensive per passenger kilometre than private vehicles.

Shifting more of the passenger transport task from private vehicles to public transport could deliver significant carbon abatement for the transport sector.

Graph 4: Emissions intensity of passenger modes, 2007



Source: The Garnaut Climate Change Review, page 509.

Comparative Analysis – Car vs. Rail

Using the emissions intensities provided in Graph 4 it is possible to estimate the potential carbon abatement which would be delivered with rail services taking up a proportion of road transport.

TTF estimates that if a rail link to Sydney's north west were in place, every person who switched from driving to and from work to catching the train between Castle Hill and the Sydney CBD would deliver emissions savings in the order of 3.5 tonnes of carbon dioxide per person per year.[14]

Similarly, Victoria's Regional Rail Link, including two new stations at Wyndham Vale and Tarneit in Melbourne's west, will deliver capacity for an extra 9,000 regional and suburban passengers every hour. Every person who switched from driving to and from work to catching the train between Wyndham Vale and the CBD (Southern Cross Station) would deliver emissions savings in the order of 4.7 tonnes of carbon dioxide per person per year.[15]

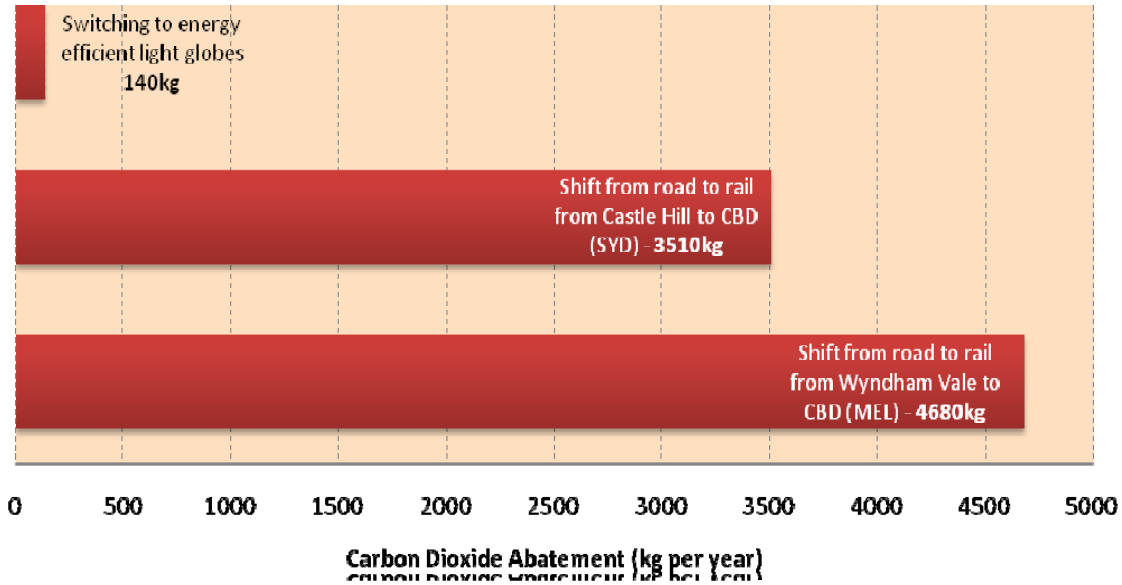
differences are not beyond the control of Australian governments, they are generally circumstances which take long-term planning and investment to rectify.

[14] This estimate is based on an average two trips per day, five days per week for 45 weeks over a year; a trip length of 30kms; and emission intensity of 305 g CO2/passenger kilometre for private vehicles and 45 g CO2/passenger kilometre for rail.

[15] This estimate is based on the same assumptions as above, but over a trip length of approximately 40km each way.

To put this in perspective, installing energy-saving light globes in an average home saves 140 kilograms of carbon dioxide per year. This is well worthwhile, however, it will take 25 years to save as much CO_2 as one commuter in Sydney's northwest switching from road to rail. Similarly, the CO_2 abatement from one commuter in Melbourne's west switching from road to rail will take more than 33 years to achieve by a household changing to energy efficient light globes.

Graph 5: Carbon Abatement Comparison



Carbon Pollution Reduction Scheme

The Commonwealth Government has taken a step in the right direction by including transport, Australia's third largest source of greenhouse gas emissions, in the proposed Carbon Pollution Reduction Scheme (CPRS).

TTF appreciates that the CPRS will place a cost on carbon, providing a price signal for Australian consumers and industry to change behaviour and encourage, where possible, investment in low emissions technology.

Nevertheless, TTF is concerned that the CPRS will do little to reduce transport emissions, and in some cases actually serve to increase them, because of a combination of conflicting policy and market failure.

A key feature of the CPRS is the provision of fuel offsets[16] to private road transport, reviewed after three years, and heavy on-road transport businesses, reviewed after one

[16] It is important to note that of the 38 cents/litre fuel excise, only 11 cents/litre is returned funding for road infrastructure.

year. These offsets essentially shield road users, in the short term and potentially beyond, from any additional fuel price increases resulting from the CPRS.

At the same time, the electricity expenditure of Australia's urban rail and light rail operators will increase once the CPRS commences by virtue of extra carbon cost in electricity and diesel. These costs will inevitably be passed on to passengers through higher fares. The Commonwealth Government expects the initial increase in the price of electricity to be in the order of 17-24 per cent.[17]

Table 2: CPRS Impact on Transport Modes

Mode	Fuel Type	CPRS Impact
Car	Petrol/Diesel/LPG	Road users shielded from the CPRS by a fuel tax offset for three years.
Bus	Diesel/Natural Gas	Heavy on-road transport business will receive a CPRS fuel credit payment for one year. The amount of the CPRS fuel credit will be equal to the fuel tax cut.
Ferry	Diesel	Increase in the price of diesel from the scheme's commencement.
Rail	Electricity	Increased electricty prices from the scheme's commencement.
Rail	Diesel	Increase in the price of diesel from the scheme's commencement.

This perverse outcome of the CPRS, as it stands, will be a financial disincentive for people to use public transport by making it more expensive and therefore less attractive when compared to road motor transport, which will benefit from the fuel excise offset.

At the very least, the CPRS should provide a level playing field between private and public transport, through either an equivalent offset for public transport or the abolition of the fuel excise offset for motorists.

Fringe Benefits Tax

It is also important the CPRS be viewed in the context of other government policies relating to transport. Alongside the current fringe benefits tax (FBT) exemptions on salary-packaged cars, the Commonwealth Government risks creating a set of policy conditions that clearly advantage the use of private cars over more sustainable transport alternatives.

The current FBT system benefits employees who drive salary packaged cars but not those who use public transport. The application of the statutory formula to car fringe benefits cost the Commonwealth Government approximately $1.6 billion in 2007-08 and is one of the largest government tax expenditures. It was suggested by a recent Senate inquiry into

[17] Department of Climate Change, Australia's Low Pollution Future: The Economics of Climate Change Mitigation, Summary Report, Page 34.

investment in public passenger transport that the policy rationale for this tax concession is primarily to support the Australian car industry, which already receives direct government assistance in the order of $480 million per year.[18]

The level of this benefit increases with the number of kilometres the employee drives – providing a financial incentive to drive more, thereby increasing road-related CO_2 emissions. However, no such benefit is available to people who use public transport – resulting in a market distortion which encourages traffic congestion on urban roads and increases transport emissions.

TTF understands that Commonwealth Treasury does not support the application of the FBT regime to provide an incentive for public transport use, as it would create issues around effectively providing a tax deduction for private expenditure. However TTF maintains that the current FBT exemptions for salary packaged cars do just this.

Salary sacrifice arrangements and the statutory formula for FBT exemptions should be both mode and distance neutral. TTF therefore recommends that FBT exemptions on salary packaged vehicles be abolished by the Commonwealth Government.

The Shift to Public Transport

While higher oil prices and a carbon price will no doubt encourage switching to more fuel efficient and lower-emission modes of transport, price alone will not be enough to encourage a significant mode shift. For example, under a "CPRS-5"[19] scenario, demand for road transport would be reduced by only 4.5 per cent by 2050, through increases in vehicle sharing, fewer trips, shorter distances and some substitution to public transport.[20]

Complementary measures are needed to improve the use of both lower emission public and private transport alternatives. Improving the service quality of public transport (ticketing and information, route coverage, frequency, operating hours, speed, comfort and park and ride facilities) will be critical if public transport is to take up a greater proportion of the transport task.

TTF maintains that public transport should be developed as an integrated strategy which provides new transport links and better manages existing links for the efficient movement of passengers within Australia's major urban centres. Expansion of integrated rapid transit networks and sustainable transport infrastructure, using the latest low emission transport technologies, would increase patronage, reduce emissions, ease congestion and make our cities more attractive propositions for international investment and visitation.

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[18] Rural and Regional Affairs and Transport References Committee (2009) *Investment of Commonwealth and State funds in public passenger transport infrastructure and services,* Final Report, page 69.

[19] CPRS-5 scenario refers to the emissions trajectory if Australia adopted targets to reduced emissions by 5 per cent by 2020 (relative to 2000) and 60 per cent by 2050.

[20] Commonwealth Government (2008) Carbon Pollution Reduction Scheme White Paper, Volume One, page 6-10.

Case Study – Perth MetroRail

The MetroRail expansion in Perth represents an example of investment in mass transit infrastructure resulting in a transformation of the patterns of transport in a major Australian city in the last 20 years.

In 2007 the Perth Government completed a $1.66 billion project to effectively double Perth's metropolitan rail network. The project involved the expansion of the Joondalup and Thornlie spur lines and the construction of the new Mandurah Line which links Perth and Mandurah. The new line consists of 72 route kilometres of double-track railway and 11 railway stations. 93 new rail cars were also delivered. The new Mandurah Line is currently carrying 50,000 passengers per day. Previously, the bus service operating between the two cities carried 16,000 passengers per day.

Importantly, the new line provides a genuine alternative transport option for Perth and Mandurah residents. Trains on the new line travel faster on average than road traffic on the same transport corridor, providing a visible example of the benefits of rail to those in their vehicles. Furthermore, both bus and train timetables are integrated and, combined with Perth's smartcard e-ticketing, passengers are able to seamlessly and efficiently transfer between the two modes.

Investment and Planning

The Commonwealth Government, through Infrastructure Australia (IA), is taking a much more active role in funding public transport infrastructure in our cities. From the first round of Building Australia Fund grants, over $4.6 billion was allocated to urban public transport infrastructure, representing more than 54 per cent of the total funding allocation.

State governments around Australia are also investing heavily in public transport infrastructure; for example, the Victorian Government has a $38 billion transport plan. Investment in new infrastructure for corridors currently under-serviced by public transport must be prioritised, along with the development of cross-suburban routes in the outer suburbs of Australian cities. For example, a car trip between Penrith and Richmond in Sydney's west takes roughly 25 minutes. However, with few direct public transport options, the same trip can take up to an hour and twenty minutes by train or forty minutes by bus.

State governments are also recognising the importance of long-term transport planning and the need for it to be closely integrated with land-use planning. Integrated and whole-of-government transport and land use planning offers the potential to significantly reduce the social and environmental costs of inefficient networks and urban sprawl.

In particular, densities in urban areas need to increase to support transit and enable residents to live and work close to reliable and frequent public transport. Higher urban

density, which makes trips shorter and public transport infrastructure more economically viable, is one of the keys to greater use of public transport. Australian cities have some of the lowest urban densities in the world (after the US) and, as a result, have some of the highest rates of petrol consumption per capita.[21]

However, it is important that increasing urban density is carefully managed, with a strong focus on development along transport corridors. In this context, transit oriented development – medium density mixed-use development around public transport nodes – has emerged as world's best practice in transport and urban planning and is increasingly being applied in Australia. For example, the South East Queensland Regional Plan and the Plan for Greater Adelaide both place a strong emphasis on increasing urban density and transit oriented development.

It is therefore vital that governments maintain appropriate funding for public transport infrastructure in Australia with a strong focus on long-term integrated planning and increasing urban density along transport corridors, including transit oriented developments.

Service Quality

Improving public transport services and increasing patronage, particularly in outer suburbs, is dependent on the development and operation of a complete network. This includes sufficient service frequency, appropriate interchange facilities, integrated timetables and ticketing, and a single transport authority to manage and promote the network.

It is vital that commuters are able to seamlessly transfer between modes through the provision of efficient interchanges, integrated timetables and ticketing as well as a fare structure – like Perth Metrorail's - which does not discourage transfer between modes.

All Australian capitals now have integrated ticketing systems in place or under development. Indeed, the Victorian Government is implementing smartcard integrated ticketing (Myki) for the whole of the state. However in some cases, such as Sydney, they are long overdue.

Beyond this, there are numerous innovative and demand management measures available to governments and public transport operators to encourage mode shift from private to public transport. These include reduced off-peak pricing, travel behaviour programs such as TravelSmart, public transport information systems which provide real-time service and timetable information for commuters, and 'Park & Ride' facilities at train stations, bus and light rail interchanges, and ferry terminals to encourage the transition from private vehicle to public transport for medium and long range journeys into urban centres.

[21] Diesendorf, M (2007) Greenhouse Solutions with Sustainable Energy, UNSW Press, page, 205

However, investment in this area has traditionally taken a back seat to large scale infrastructure projects, despite such measures resulting in clear benefits for network efficiency and the commuter experience.

Conclusion and Recommendations

Over the coming decades public transport will play a key role in reducing Australia's greenhouse gas emissions and helping Australia meet its international climate change obligations.

Reducing the car dependency of Australian cities will also reduce congestion on our roads, boost productivity and lead to positive environmental, social and economic outcomes for our cities.

It is important that both the public and private sector maintain a strong focus on planning for, and delivering, integrated public transport networks for Australian cities, particularly in outer-suburban areas.

For further information on TTF's perspective on climate change and how it will affect tourism and transport, please refer to the TTF climate change paper - *Responding to Climate Change: A Tourism and Transport Sector Position.*[22]

TTF Recommendations
1. Maintain appropriate levels of investment in new infrastructure by all tiers of government.
2. Provide a level playing field for public and private transport with respect to the Carbon Pollution Reduction Scheme.
3. Abolish FBT exemptions on salary packaged vehicles.
4. Develop long term integrated transport and land use planning with a focus on increasing urban density around transport corridors.
5. Increase investment to improve the service and operation of existing public transport infrastructure, through initiatives such as off-peak pricing, travel behaviour programs, public transport information systems, and park and ride facilities.
6. Fast-track the roll out of integrated smart card ticketing in major capital cities (where it has not already occurred) as a priority, particularly for Sydney.

[22] This paper can be downloaded at www.ttf.org.au

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