



The role of rail

David Hill

Australasian Railway Association Inc

Abstract

Investment in the Australian rail industry is a 21st century transport solution to the nation's increasing transport task. Rail links the nation, creates sustainable jobs in regional Australia and improves the environment by reducing the land use and energy requirements, greenhouse gas emissions, air pollution, accidents and noise costs of transport as well as improving road safety and reducing road damage.

According to the Australian Greenhouse Office, transport contributes 16% of Australia's total greenhouse gas emissions, an increase of 20% over 1990 levels. Transport is one of the fastest growing sectors of greenhouse gas emissions.

This is primarily because of Australia's excessive reliance on road transport. Australia has the highest volume of road freight carried per capita in the world and over 90% of urban passenger travel is by car.

Rail freight is more energy efficient than road even when the complexity of the transport task is considered taking into account fuel use from all aspects of the 'full fuel' cycle including line haul, pickup and delivery and energy production and distribution, according to ARRB Transport Research.

Increased use of rail to absorb the growth in passenger and freight demand over the next 20 years will reduce Australia's transport energy consumption, reducing transport greenhouse gas emissions.

At the same time, road safety will be improved and road damage significantly reduced.

The Australian Rail Track's Interstate Rail Network Audit showed that an investment of \$507 million in the interstate rail network will return \$1.5 billion in benefits in reduced transport costs, less road wear and tear, improved road safety and reduced pollution and greenhouse gas emissions.

The ARA's presentation will expand on the significant economic, social and environmental benefits of investment in rail.

Contact author

Mr David Hill

Australasian Railway Association Inc

PO Box 266, Collins St West

MELBOURNE VIC 8007

Email: Davidhill@Ara.Net.Au

Introduction

Australia's railways are vital to the nation's economy.

Rail freight services keep thousands of trucks off the nation's roads each year, providing significant savings in fuel use, greenhouse gas emissions, road maintenance and construction costs and reducing the number of road accidents.

The 630 million passengers carried on Australia's urban rail networks each year keep over 500 million car journeys off our city streets, reducing congestion and pollution in our urban areas.

Whether it's transporting freight across our nation or delivering people to work on time, rail is the safest and most energy efficient transport option we have. As the nation's transport task grows, increased investment in rail is vital to keeping Australia on the move.

AusLink

The federal government's proposed overhaul of rail and road funding through the creation of AusLink is a long overdue reform.

AusLink embodies the transport policy principles that the ARA has been advocating for quite some time: a national, integrated approach to transport planning and funding; transparent decision-making processes that use the same criteria for all modes; and transport funding based on benefits to the economy, the environment and the community.

The government's intention to move beyond full funding of the National Highway System to joint federal and state funding of a broader national land transport network recognises that governments have a responsibility to invest in all transport infrastructure not just roads.

AusLink provides the opportunity for governments, the private sector and the community to start addressing the nation's transport infrastructure requirements in a rational, logical and consistent way.

Crucial to the success of AusLink is having the institutional arrangements in place to support it and the amendment of Section 51AD and Division 16D of the Tax Act is vital to increased private sector investment in rail infrastructure.

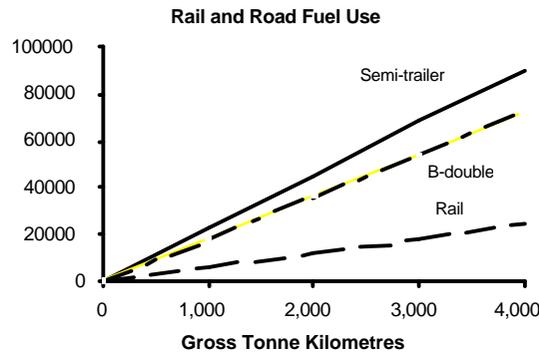
AusLink is a major step towards making our land transport system "safer and more efficient, with less impact on the environment".

Rail – the green alternative

Rail is the safest and most environmentally friendly form of land transport. Per tonne of freight hauled, rail requires less than 1/3 of the fuel of road transport.¹

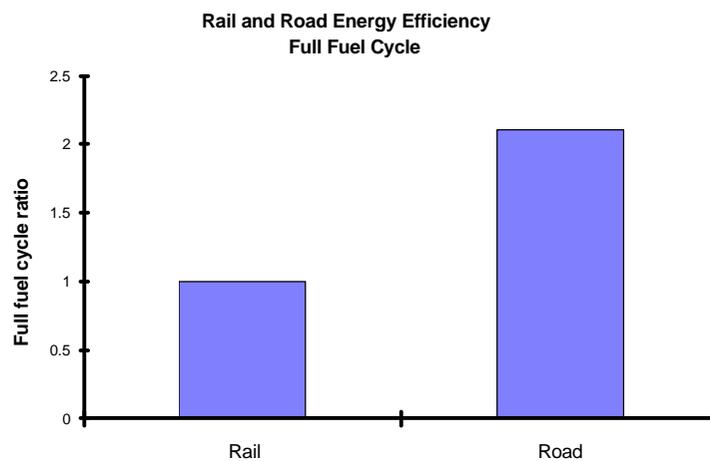
Every fully laden freight train travelling the 960 kilometres between Sydney and

¹ *Australian Transport Facts 1998*, Apelbaum Consulting Group, pp55&73



Melbourne replaces 150 semi-trailers and saves over 45,000 litres and 130 tonnes less of greenhouse gas emissions of fuel compared to road transport including road pickup and delivery.²

Rail is still more energy efficient than road even when the 'full fuel' cycle is considered taking into account fuel use from all aspects of the transport task including line haul, pickup and delivery and energy production and distribution.³ Even the biggest and heaviest trucks – triple road trains weighing 124.5 tonnes – are nearly 50% more energy intensive than rail on a full fuel cycle basis.⁴

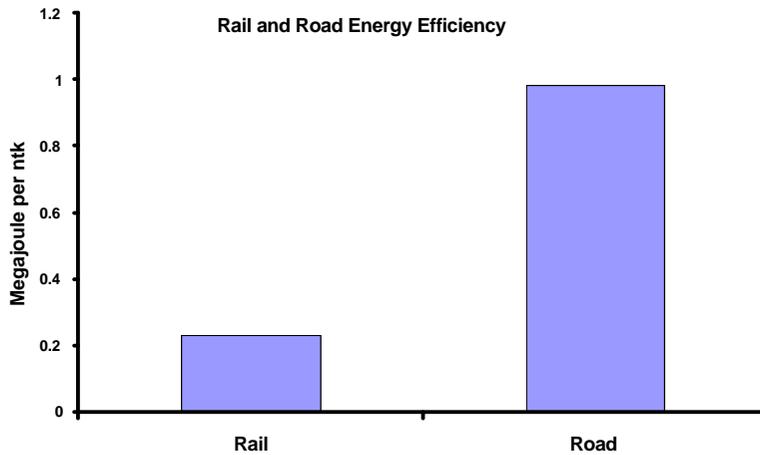


No matter what improvements in fuel efficiency and reductions in greenhouse gas emissions occur in road freight transport, it will never be as energy efficient as rail because a steel wheel on a steel rail has just one seventh of the friction of a rubber tyre on a road. A 1991 Australian Senate Standing Committee on Industry Science and Technology found that increased use of rail could result in "...significant reductions in carbon dioxide emissions and large savings in Australian consumption of liquid fuels for transport services.

² Rail fuel consumption of 4 litres per 1,000 gross tonne kilometre; road fuel consumption of 49.3 litres per 100 kilometres (*Updating Heavy Vehicle Charges – Technical Report*, National Road Transport Commission 1998, p76); assumes road pick up and delivery of 20 km

³ ARRB Transport Research, *Research Report ARR 318*, 1998, p50

⁴ Ibid, p50



Moving large and heavy loads off our already stretched road system and on to the nation's railways will mean safer driving conditions for all Australians, reduced wear and tear on our road network and significant benefits for our environment.

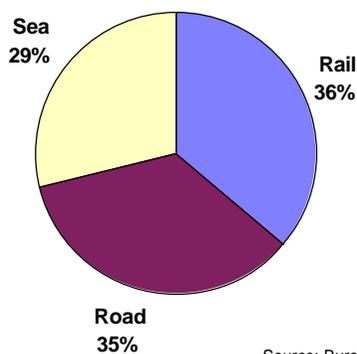
Importance of Rail Freight

Australia's rail systems haul over one-third of the nation's rail, road and domestic sea freight task.

Rail freight services are an integral part of the distribution process for intrastate and interstate freight and a range of regional produce and bulk export commodities. These products are hauled safely and efficiently from inland production areas to warehouses, stores, processing plants and ports hundreds of kilometres away.

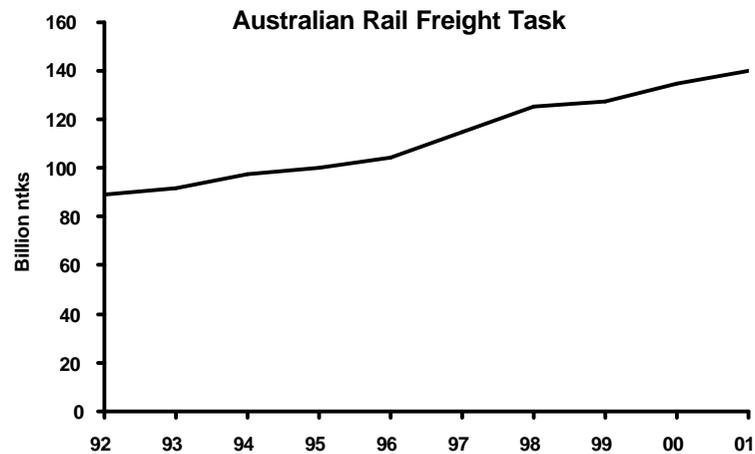
Rail freight keeps thousands of truck trips off the nation's roads each year. Road construction and maintenance costs are reduced, road safety is significantly improved and rail provides substantial savings in fuel use and greenhouse gas emissions compared with road freight haulage.

Net tonne kilometres by mode
1999/00

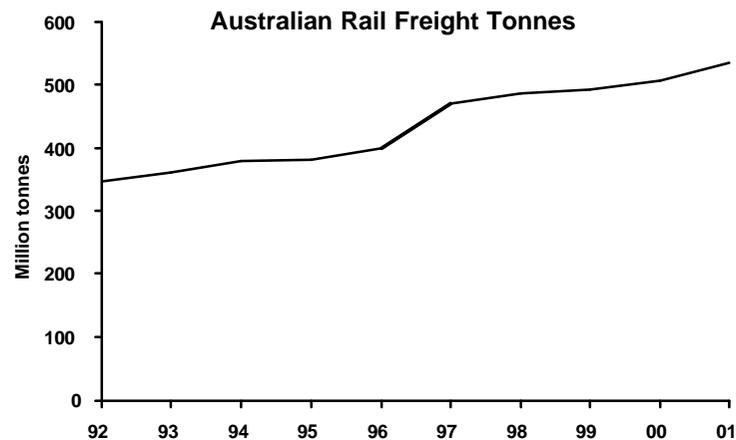


Source: Bureau of Transport and Regional Economics

The rail task has increased 54% in the last ten years from 89.3 billion net tonne kilometres (ntks) in 1991/92 to 137.7 billion ntk in 2000/01.



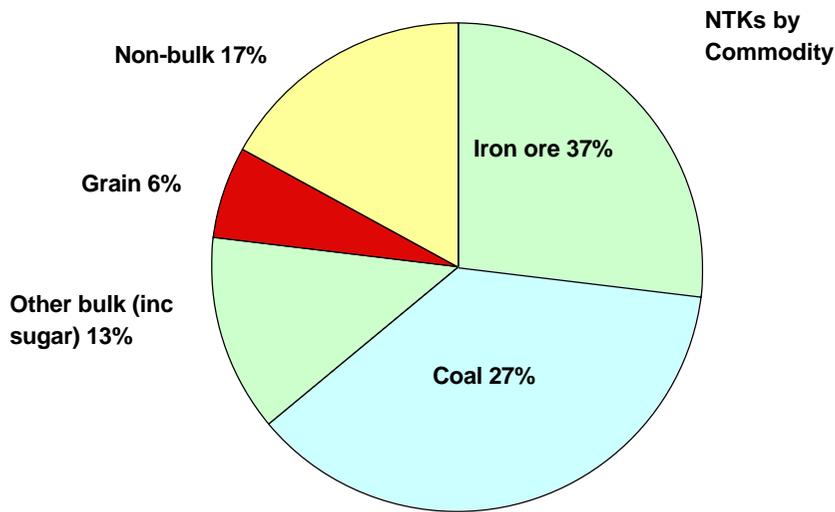
Tonnes hauled have increased 55% over the past decade from 346 million tonnes in 1991/92 to 535 million tonnes in 2000/01. This reflects business growth in all sectors of the Australian rail freight industry from general freight to bulk commodities.



The Australian rail freight task varies from short haul urban container shuttles to long haul transport of bulk commodities. The average length of haul of Australian rail freight operators is 257 kilometres. Rail freight is much more than the transport of bulk commodities over long distances. It varies from short haul port shuttles in Sydney to 4,000 kilometre cross country freight services.

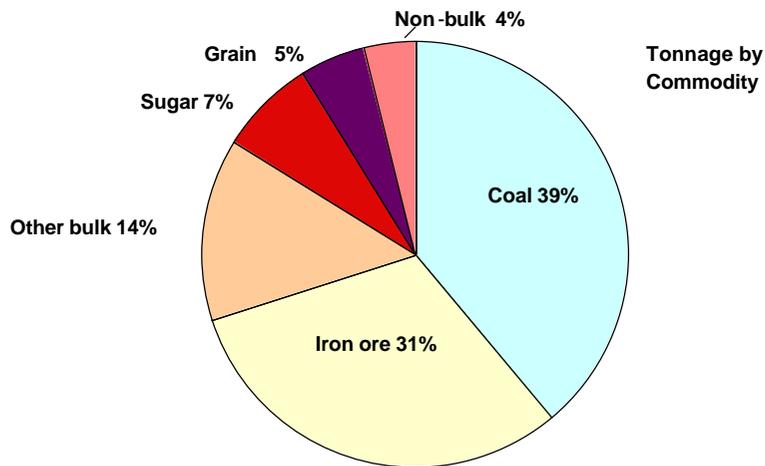
Composition of Australian Rail Freight

The Australian rail freight task varies considerably from high value, time sensitive commodities such as food products, cars or parcel post being transported across the continent to haulage of bulk commodities from mines to ports.



Transport of bulk commodities by rail operators is essential to Australia's economic development. Rail operators are a critical link in the transport and distribution process for iron ore, coal, agricultural and forestry products and a wide range of other commodities.

All iron ore, 80% of coal and 70% of grain comprising 20% of Australia's exports worth \$15 billion per year is carried by rail.



Bulk rail freight principally comprises coal (39% of tonnes carried) and iron ore (31% of tonnes carried). Other bulk commodities hauled include forest products, ores and minerals, cement, limestone and petroleum products.

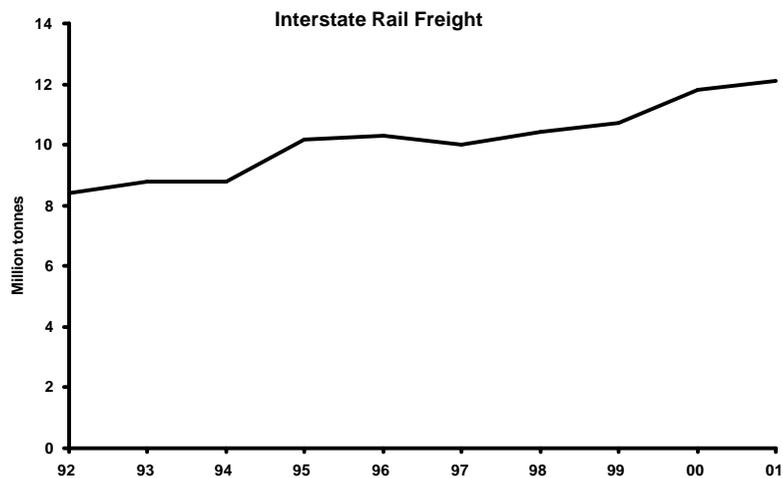
Non-bulk freight has a higher proportion of net tonne kilometres than it does in tonnes because much of it is transported more than 3,500 kilometres across the country between the east coast and Perth.

Rail operators in the Pilbara region in north west Western Australia continue to lead the world in heavy haul rail technology, regularly operating 25,000 tonne iron ore trains that are amongst the longest and heaviest in the world.

In May 1996, the Mount Newman Railroad operated the world's longest and heaviest train to test operating thresholds. Comprising 10 locomotives and 540 wagons, the train was 5.9 km long and carried 56,500 tonnes of iron ore.

Interstate Rail Freight

Interstate rail freight tonnage has increased 44% in the last decade from 8.4 million tonnes in 1991/92 to 12.1 million tonnes in 2000/01.



The main interstate rail freight operator is Pacific National Ltd carrying around 9 million tonnes of freight per year. Other interstate rail freight operators are SCT, CRT Group and Australia Southern Railroad.

Interstate rail operators have an overall share of about 35% of the interstate land freight task including an 80% market share of land freight between the east coast and Perth. Unfortunately, for a wide range of reasons, rail's market share between Sydney and Melbourne is just over 10%. This situation must be redressed quickly if rail freight is to avoid becoming irrelevant between Australia's two largest cities.

Interstate rail services haul a wide variety of commodities. These range from time-sensitive, high value products such as parcel post, glass, refrigerated foods, groceries, automotive spare parts and furniture to manufactured and industrial products such as coiled steel, chemicals, cars, paper products, refined sugar, grain and a wide range of other goods.

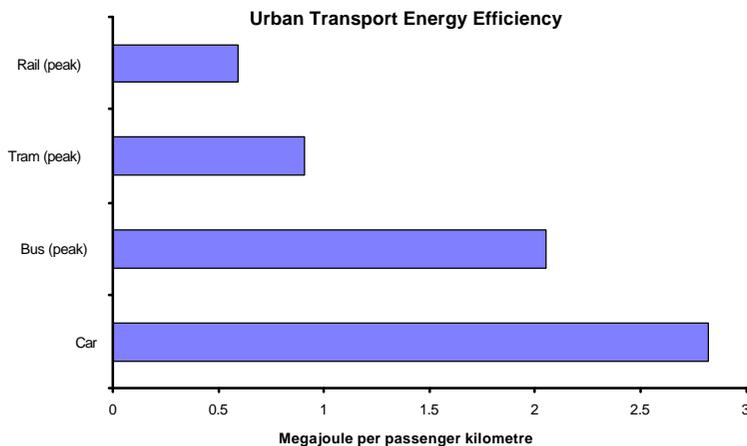
The Australian rail freight task has grown significantly over the past decade. Rail freight operators will continue to play a major role in the nation's economic prosperity while providing an economically and environmentally sustainable alternative to road transport.

Urban Rail Investment

Increasing funding, development and utilisation of public transport must be central to a national effort to reduce emissions from transport

*The Heat Is On: Australia's Greenhouse Future*⁵

Urban rail is the most efficient form of mass transport. It is over twice as energy efficient as buses, five times as energy efficient as cars⁶ and can move thousands of people quickly and safely using just 25% of the land of a freeway.



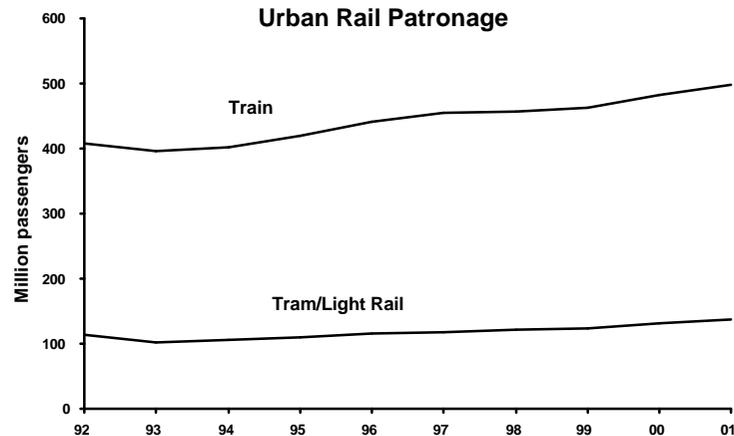
Just one peak hour train replaces a line of cars over 5 kilometres long.

Sydney's CityRail services, for example, provide the equivalent capacity of 30 lanes of freeway to the Sydney CBD each peak period. This removes 120,000 car journeys from Sydney's CBD each peak period. This significantly reduces congestion and pollution caused by motor cars and the amount of land needed for car parks.

Australia's urban rail systems have delivered an increase in passengers carried of 20% since 1990. This is almost double the rate of population growth over that period despite large parts of our cities extending beyond the reach of urban rail systems because of inadequate investment in the networks over the past forty years.

⁵ The Heat is On, Report of the Senate Environment, Communications, Information Technology and the Arts Reference Committee 2000, p241

⁶ ARRB Transport Research, *op cit*, p56



In fact, in the last forty years over 400 kilometres of urban freeways have been constructed in our cities compared with just 80 kilometres of new urban rail lines, 30 kilometres of which was in Perth.

Continuing to build freeways to outer urban areas where public transport options are limited perpetuates car-based urban sprawl and reinforces the cycle of car dependency in these areas. This dependency now costs Australians 17% of their household incomes, similar to the amount spent on housing and food.⁷ In car dependent outer suburban areas, car related costs comprise up to 25% of household income.

Residents on the fringes of our cities are becoming increasingly marginalised because of poor public transport infrastructure.

Greenhouse Gas Emissions

The Kyoto protocol requires Australia's greenhouse gas emissions to be no more than 8% above its 1990 levels by 2012. However, Australia's greenhouse gas emissions are already 17% above its 1990 levels. Transport now comprises 16% of Australia's greenhouse gas emissions – an increase of 20% over its 1990 level.

Australia ranks sixteenth among major greenhouse gas producing nations, but our transport emissions are twice the OECD average⁸. Transport is one of the fastest growing sectors of greenhouse gas emissions because of Australia's excessive reliance on road transport. We have the highest volume of road freight per capita in the world and 90% of urban passenger travel is by car⁹.

Based on present trends, the BTRE¹⁰ predicts that greenhouse gas emissions from transport will increase nearly 50% between 1990 and 2015, with emissions from road transport increasing 45%.

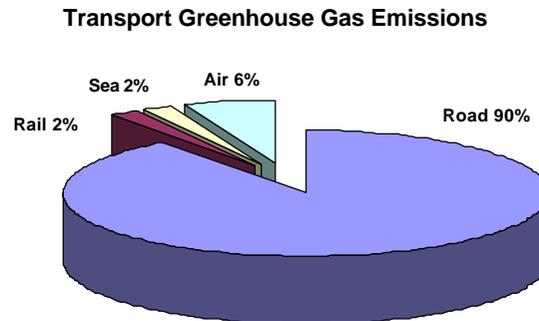
⁷ Household Expenditure Survey, Australian Bureau of Statistics 6530/2000

⁸ Austroads, *Roads in the Community*, 1997, p17

⁹ BTRE, *op cit*

¹⁰ BTRE, *Transport and Greenhouse*, Report 94, 1996, p373

Road transport emissions now comprise 90% of transport emissions, an increase of 22% since 1990..¹¹



Source: Australian Greenhouse Office 1999

In urban areas, motorists cause¹²

- 75% of urban transport greenhouse gas emissions
- 50% of road transport greenhouse gas emissions, and
- 7% of Australia's total greenhouse gas emissions

The contribution of urban rail transport to Australia's transport greenhouse gas emissions is negligible, including power generated for electric services.

The substitution of public transport, walking or cycling for car-based travel reduces greenhouse gas emissions, improves local air quality and reduces traffic congestion, particularly in urban areas

- National Greenhouse Strategy 1998 (p5)

No amount of improved traffic coordination, use of alternative fuels or increased fuel efficiency of motor vehicles will ever achieve the reductions in urban transport pollution and greenhouse gas emissions that an efficient, well used urban rail system can provide.

What does the public think about urban rail?

Increased investment in urban rail instead of more roads has strong public support. An ARA Urban Transport Newspoll undertaken in August 2001 showed:

- 83.7% support for building more rail lines to reduce road congestion compared with just 38.3% supporting construction of more freeways to reduce congestion
- 83.2% support for the federal government funding new urban rail lines as it funds roads

¹¹ FACT Sheet 3, Australian Greenhouse Office 1999

¹² National Greenhouse Gas Inventory 1999 and Apelbaum Consulting Group The Australian Rail Task - Energy Consumed and Greenhouse Gas Emissions, 1997, p38

- 74.8% support for faster, safer, more reliable and accessible urban rail services to reduce car use
- 74.3% support for tax benefits for using public transport to and from work in the same way that there are tax benefits for people with salary packaged cars
- 70.2% support for the GST component of urban rail fares being spent on urban rail systems
- 60% support for giving pedestrians and public transport priority over cars

One of the most interesting results of the survey was this strong support for urban rail even though 89% of respondents used the urban rail system less than three days per week.

These results are supported by research undertaken by the Warren Centre at the University of Sydney as part of its Sustainable Cities project and found:

- 85% were opposed to the idea of spending on roads at the expense of public transport
- 73% felt that not enough money was being invested in Sydney's public transport
- 71% considered that transport planning should focus on public transport rather than toll roads
- 70% favoured public transport improvements being funded from the roads budget
- 64% of respondents favoured road demand management instead of more freeways

The Warren Centre's research also uncovered a significant gap between what decision-makers (politicians and transport planners) thought people wanted and what they actually wanted. The Centre found that 70% of people wanted improved public transport even at the expense of the road budget. In contrast, decision-makers believed that only 56% of people supported this view even though nearly 90% of decision-makers supported this view themselves.

Investment in urban rail is lagging behind people's expectations. Decision-makers have failed to realise that the public's views on public transport are quite close to their own.

Similarly, a 1999 survey undertaken by the Western Australian Department of Transport found that:

- 96% of respondents recognised the need for increased public transport usage over cars; and
- 87% supported diverting funds from new roads to public transport, cycling and walking

The research all points to the same thing: there is strong public support for increased investment in urban rail as a solution to traffic congestion, air pollution and greenhouse gas emissions in our cities.

Hill

Conclusion

The economic and environmental benefits of rail are immense. Rail is safer, less polluting and uses less land and energy than road transport.

Integrated transport planning and funding using transparent and consistent investment criteria across transport modes will ensure the nation can cope with the growing transport task in urban and non-urban areas.

Investment in rail is the key to reducing the pressure on our road network.

Better rail equals better and safer roads.

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