Senate Select Committee

on Climate Policy

08 April 2009

Summary

Asciano supports the introduction of a Carbon Pollution Reduction Scheme and congratulates the government on the broad design of the Scheme.

Australia needs price signals from a Carbon Pollution Reduction Scheme to commence now, so that long term price effects drive the necessary changes in the transport sector. Price impacts will have only a limited effect in changing transport to low emissions modes and solutions and it will be the complementary policies for transport that will be successful in driving the most significant change in the shorter term. Nevertheless, the long term advantages of a carbon price can only be achieved through early implementation of the Carbon Pollution Reduction Scheme.

Policies, whether price based or otherwise, that support modal shift from road to rail will reduce greenhouse gases in the transport sector and will also significantly reduce the social costs from the transport sector. Social costs (for example, air pollution, accidents, and deaths) to Australia of current transport patterns are immense. The social costs arising from transport are estimated at $52 billion or 5.6% of GDP in Australia in 2005, before including congestion costs. These social costs are mainly due to road transport and rail contributes 9% of these social costs.

Investment and policies that support rail and a cost for carbon from the Carbon Pollution Reduction Scheme will provide high social returns and lower emissions. If implemented, the potential social benefits accruing over 2010 – 2020 are worth $27.4 billion.

The most effective way to reduce emissions in the transport sector is through modal shift from road to rail and sea, for both passenger and freight. The short term protection proposed for road users is not desirable, but disagreement on short term matters is no reason for delaying the Scheme's commencement in July 2010.

On a business as usual case, transport emissions will be approximately 30% above their 2010 levels in 2030. Implementation of the Carbon Pollution Reduction Scheme and the introduction of complementary policies and investment in rail would reduce emissions and slow their growth so they would be just less than 5% above their 2010 level in 2030.

Climate change is impacting physically on operations in the transport industry. In the current financial year Asciano has incurred $11.4m of damage from incidents related to extreme climate events, including flash floods in Western Australia, cyclones in Queensland and extreme heat in Victoria. Costs of damage to the rail network, roads and lost operating revenue are additional to this $11.4m. Action to reduce greenhouse gas emissions, improve infrastructure and support the use of lower emissions transport solutions is required.

Asciano urges the Senate to implement the Carbon Pollution Reduction Scheme in July 2010 to address climate change and consider complementary policies.

Such policies should include:

A Long Term Plan for Rail – is needed to ensure that a long term sustainable vision is achieved by State and Federal governments in the development of the rail network in order to achieve improvement in rail productivity which will decrease the greenhouse gas emissions intensity of rail and transport in Australia.

Access to World Class Technology – to allow the rail operators to quickly purchase the latest international technology that will provide energy and efficiency improvements at significantly reduced cost.

Infrastructure Standards Must Improve – allowing longer trains and double stacking of containers to significantly improve the productivity of freight train services, the amount of energy per net tonne transported and as a result the amount of greenhouse gases produced to move a tonne of freight. This initiative has been highly successful on the rail network between Adelaide to Perth. Providing similar rail network standards to allow longer double stacked trains across all key freight corridors would provide significant greenhouse gas benefits.

Transport Corridors and Land Availability – the release and zoning of land for transport use is needed to provide terminals and corridors in metropolitan areas to grow capacity and provide service quality and a low emissions rail solution.

Remove Conflicts between Passenger and Freight Rail Networks – as this creates a less productive outcome for freight transport and reduces its ability to provide a low emissions solution.

Infrastructure Investment – to improve rail service quality and competitiveness with road that meets market requirements and rail market growth. This must be part of an integrated national transport plan.

Security of Land Tenure – by increasing lease periods of terminals and infrastructure and provide security from third parties seeking access. These will increase investment certainty and encourage increased investment in transport infrastructure.

Asset Depreciation – to encourage early investment in newer low emissions locomotives and the retirement of less emissions efficient equipment.

R&D Incentives – to provide 100% rebate on R&D activities in emissions reduction initiatives in cash form to assist the cash flow of parties involved in research.

Congestion Charges – on key corridors or metropolitan areas to assist modal shift to rail.

Appropriate Truck Sizes – to ensure the benefits of large trucks in the most appropriate situations and not at the expense of the mode best suited for the task.

Mandatory Rail Use Target (MRUT) – to set targets for mandatory rail use as already done by the Victorian and NSW state governments to move toward more sustainable transport choices, and provide supporting policies to ensure success.

Rail Access Pricing – to provide rail access price relief to rail to encourage modal shift to rail.

It is submitted to the Senate Select Committee on Climate Policy that:

1. **There is a need for urgent early action in reducing greenhouse gas emissions.**

2. **Australia needs a Carbon Pollution Reduction Scheme and carbon price to reduce greenhouse gas emissions.**

3. **An integrated national transport plan and policies that support productivity improvements in the rail industry are essential for halting the increase in transport emissions.**

4. **The policy instruments submitted are needed to support modal shift from road to lower emissions rail.**

5. **Investment in rail infrastructure must be increased to allow it to provide a viable low emissions solution for Australia and meet market service quality and capacity requirements.**

Background

In March 2009 the Federal Government Department of Climate Change released its exposure draft for the Carbon Pollution Reduction Scheme legislation. Asciano has been an active participant in the inputs for the design of the Carbon Pollution Reduction Scheme. Submissions and involvement have been provided through participation in the Industry Roundtable Consultation forums, and submissions to the Garnaut Climate Change Review, the CPRS Green Paper, the Wilkins Review; the Federal Treasury, and submissions to the National Transport Commission reviews on Rail Productivity, and Freight Transport in a Carbon Constrained Economy.

Transport in Australia is the third highest contributor to national greenhouse gases, with stationary energy (electricity) and agriculture holding first and second place respectively. If the electricity used in the provision for electric rail transport is taken into account, transport is the second highest cause of emissions.

Rail transport is inherently a much less carbon intensive form of transport than other land transport modes. The short and long term benefits of switching people and freight to rail transport are immediate and significant. The availability of options to increase rail productivity through investment in the rail network will also result in reduced transport emissions. Unlike the road sector, current technology is available that allows rail to use electricity and therefore become even lower emissions as a result of reform in the electricity generation sector.

Transport can represent 1 – 10% of the final cost of a product and greenhouse gas emissions from transport can represent 10%+ of the carbon footprint of a product. In a world of increasing energy costs and costs for carbon emissions, increases in rail productivity have the potential to assist in dampening inflationary impact on the costs of goods in Australia and lower transport emissions.

Asciano is a large transport operations company that provides road and rail transport across Australia and facilitates shipping through its port and stevedoring operations. As a large energy user, Asciano will be significantly affected by the Carbon Pollution Reduction Scheme, but nevertheless recognises the need for such a Scheme to reduce greenhouse gas emissions.

The Need for a Carbon Pollution Reduction Scheme

Asciano supports the government timeframe for the introduction of a Carbon Pollution Reduction Scheme to commence in July 2010. Ongoing debate could continue ad infinitum, on the merits of a cap and trade scheme versus a carbon tax, or other further design options of the proposed cap and trade scheme. However, Asciano believes that the broad mechanism for the design of the proposed Scheme is sound and is not a cause for further delay.

There have been significant opportunities for industries to engage with the government on the design of the Carbon Pollution Reduction Scheme. While the diabolical nature of climate change policy means that there will be winners and losers as a result of introducing such policy, the threat of climate change and the need to implement a framework for the future should not be drowned out by the complaints of the political stakeholders and those who will have to change their businesses in response to climate change.

The delay in bringing some sectors into the Carbon Pollution Reduction Scheme through protection to road vehicles (on-road business users, passenger vehicles, and heavy vehicles) and delays in including the agriculture sector and deforestation, is in itself recognition that a staged implementation will soften the implementation of the Scheme on the economy.

While Asciano does not support the exclusion of road vehicles from the Carbon Pollution Reduction Scheme in its early years, these points of disagreement are no reason to delay the Scheme's commencement. The exclusion of further sectors or a delay in the introduction of the start of the Scheme will not serve to provide further significant improvement in the Scheme but instead place a greater burden on the remainder in achieving the National emissions reduction targets.

Transport and Greenhouse Gases

Transport Emissions

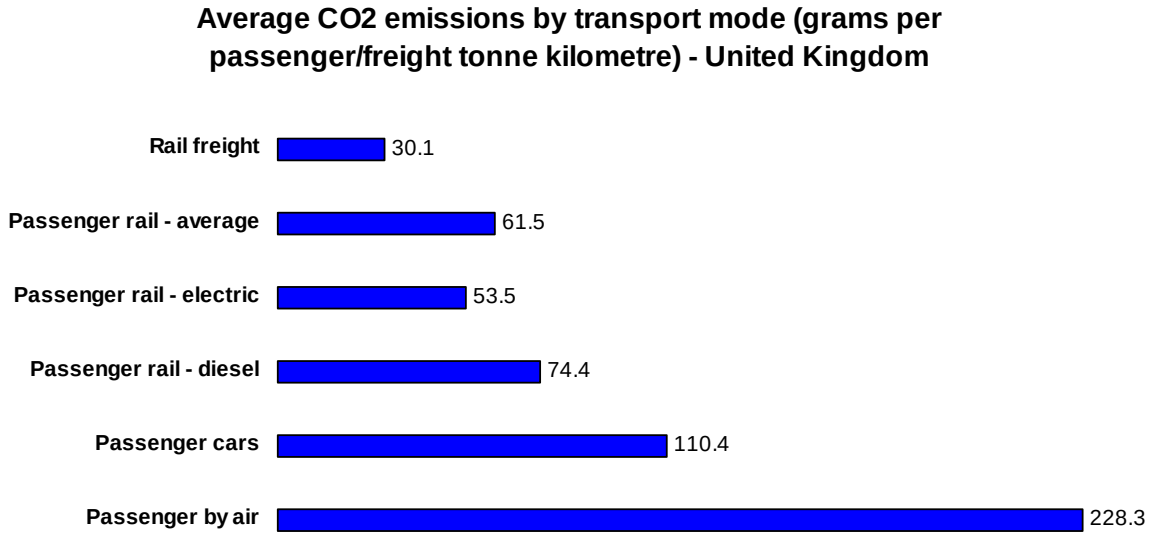
Australian transport emissions are increasing at a dramatic rate and at a rate greater in scale to national emissions. With national emissions increasing by Kyoto obligations of 8% between 1990 and 2012, transport emissions increases are significantly out of proportion and have instead increased at a rate of 29% between 1990 and 2005. In a world where there is an urgent requirement to reduce emissions by large amounts, the transport sector with its emissions growth rate will require significant focus and support to move to a negative emissions trajectory and assist Australia in achieving emissions reductions.

Transport emissions from cars, trucks, trains and aircraft are all increasing and the two key markets for these emissions are the transportation of passengers or freight. Growth in emissions from road transport is projected to be seven times higher than all other forms of transport, between 2010 and 2020, and it is this road transport emissions growth that can be reduced through appropriate modal shift to rail.

The benefits of rail in providing a low emissions rail solution are globally recognised. The United Nations Intergovernmental Panel on Climate Change in their AR4 report released in late 2007, support the use of rail as a transport policy for emissions reduction.

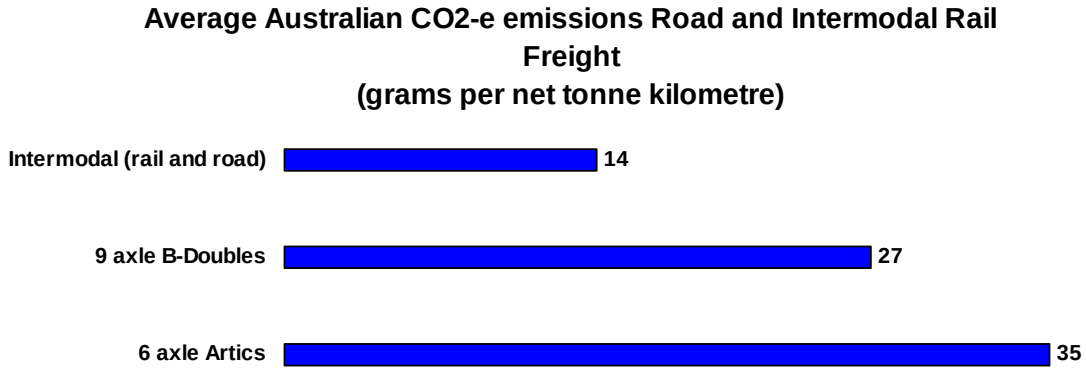
Modal Shift Benefits

The low emissions benefits of rail transport are significant, with rail emissions one third to a half of the emissions from road. While the information below is from the United Kingdom, which has different emissions factors for electricity generation, it highlights the immediate emissions reduction benefits available from modal shift.



Source: UK Case for Rail 2007

In comparing rail freight emissions with road freight, and including additional emissions for rail with road pick up and delivery of goods at the origin and destination, rail provides a marked emissions reduction benefit for the same quantity of goods moved.



Source: QRNA Oct 2002 Report – Comparison of Greenhouse Gas Emissions by Australian Intermodal Rail and Road Transport

The modal shift benefits of rail cannot be under valued. With the freight transport task to double between 2000 and 2020, this increases the quantum of emissions cuts

required in the freight transport sector to meet national emissions reduction targets. It will not be possible for road transport to provide the reductions required

With rail emissions 66% to 50% lower than road, rail can provide the scale of cuts required and meet 2020 targets if supported with appropriate infrastructure and policies.

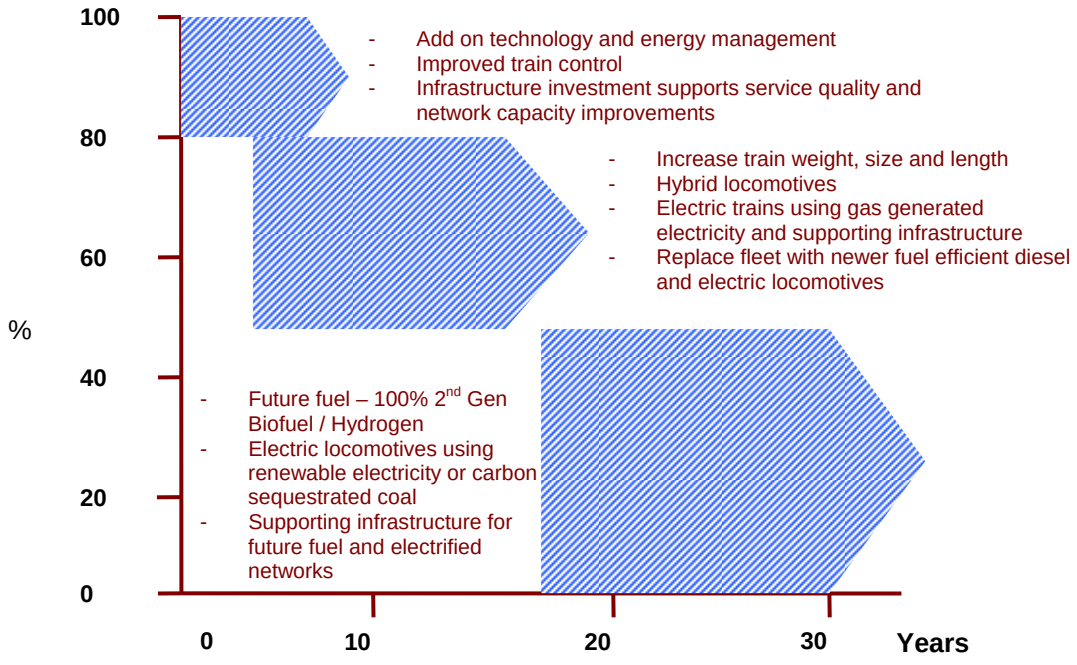
The growth of transport emissions are such that in a business as usual scenario, transport emissions will increase from being the current 14% of national emissions to comprise 66% of national emissions by 2050. To ensure that transport emissions reduce in line with other sectors, complementary policies are required.

Future Emissions Pathway

To meet 2050 emissions reduction targets, rail is in a position to provide further emissions reductions. A number of these though are captive to government policy decisions that will improve the productivity of the rail industry and reduce the amount of greenhouse gas emissions per passenger or tonne of goods carried.

There are a number of existing technological options for rail to reduce emissions from their current levels per unit of goods transported. The options involve investment in above rail operations in the operation of trains and below rail investment in the supply of rail network. The following diagram shows options that will reduce rail emissions and allow these to provide a freight transport solution for Australia that meets 2050 national emissions reduction targets.

Rail Emissions Reduction Options showing Percentage Emissions Reduction and Implementation Timeframes



A Carbon Price and Other Policies

The Garnaut Review states that the transport sector is a market failure when it comes to the desired effect from a Carbon Pollution Reduction Scheme. The price effect of carbon will be too low in the short term, and the alternative transport choices too few due to infrastructure limitations, to drive a change to lower emissions transport solutions. The Garnaut Review recommends that complementary policies are necessary to support structural change in the transport sector to complement the price effects from a carbon price, and drive a change to lower emissions transport modes such as rail and ships. Asciano supports this conclusion and recommendation.

Therefore, the commencement of a Carbon Pollution Reduction Scheme in Australia should not be delayed and complementary measures to support the use of lower emissions transport should be a key element of government policy to reduce transport emissions.

Improving rail productivity will further improve the greenhouse gas benefits of rail transport. Addressing the following issues through complementary policies to a carbon price will be beneficial in reducing greenhouse gas emissions.

A long term plan to improve rail productivity

Transport is an enabler for economic activity and wealth creation. An efficient transport industry allows other industries to be efficient, and creates wealth in all sectors of the Australian economy.

Productivity increases in freight transport translate to greater national productivity growth. A focus on freight transport productivity and rail productivity will have long term benefits, particularly in providing a lower emissions transport solution for Australia. For these benefits to be achieved, there is a need for a long term vision that can be articulated and implemented in all transport planning strategy.

By example, in examining productivity reform in the rail industry consideration should be given to what has occurred with the planning of continuous improvement in the trucking industry. In 1971 a national highways strategy evolved and a vision of dual carriage lanes on the Australian Eastern seaboard North South transport corridor was developed. This vision and resulting plan had the commitment of governments at State and Federal level. This plan has resulted in continual upgrade in the road infrastructure which has supported the upgrade in heavy road vehicles.

Over the decade to 2003 – 2004, the total expenditure by all levels of government in Australia on roads was $91 billion (in 2004 – 2005 prices). This has seen a change in truck types for inter-capital haulage, from rigid trucks, to articulated trucks, to B-Doubles, to the introduction of B-Triples using the latest overseas technology. With intercity truck movements expected to increase by 2 – 3 per cent per annum, there

may be 5,000 – 6,000 trucks on the Hume Highway each day by 2025[1], increasing from the current level of 3,000 – 4,000 trucks each day.

To meet the increasing transport task, the rising costs for transport, and with reduced creation of greenhouse gases, similar long term vision for the rail industry, and in particular long distance intermodal freight haulage must be realised. This must be supported, with a plan and commitment from all levels of government.

Access to world class technology

There is significant opportunity for increases in rail productivity by addressing technology and standards to allow rail operators to use the latest world class technology and practice.

Whilst Australia has a common standard gauge rail network to all capital cities, this gauge is inconsistent with that of the key equipment suppliers in the United States. The USA AAR (Association of American Railroads) track standard is able to take heavier equipment up to 32.5 tonne axle load. The current Australian interstate rail network has an axle load limit of 23 tonnes. The AAR standard also has a larger rollingstock window outline in comparison to the smaller outline for the Australian network. Unlike road transport where most vehicles designed overseas can fit on Australian roads, rail rollingstock for use in Australia cannot be purchased 'off the shelf' and instead must be made smaller and lighter to fit on the Australian network. This has several negative effects:

- It increases the cost of equipment as it has to be redesigned and built as a limited one off manufacture.
- It decreases the speed of response to rail customers as lead times for rollingstock are extended and can take years to acquire.
- It limits the ability to find room in the rollingstock for the various noise and pollution equipment in an environment where standards for these measures are increasing and applied inconsistently across the country.
- It delays the acquisition of the latest technologies as manufacturers instead focus on key markets that do not required redesign of their equipment.
- It limits access to more fuel efficient technology which in turn limits opportunities to reduce greenhouse gases.

Infrastructure standards must improve

Similar to productivity improvements in road through the use of bigger and longer vehicles, the rail network infrastructure must be improved to enable use of High Productivity Trains.

[1] Laird 2007

Specifically the following major improvements are required:

- Increase the current maximum 1500m length of trains between Melbourne and Adelaide, Melbourne and Sydney, and Sydney and Brisbane to 1800m or longer.
- Implement plans to provide double stacking of containers between Sydney and Perth, and Melbourne, and Perth. It is recognised that the Sydney to Brisbane route has existing overhead electric locomotive wiring, tunnels, structures and grades that makes double stacking on this route difficult and costly to implement at this point in time. Any future inland route between Melbourne and Brisbane must provide for double stacking of containers.

Changes to infrastructure standards to should be incorporated into long term planning to enable the delivery of High Productivity Trains throughout the Defined Interstate Rail Network. This would increase rail productivity which would also provide lower greenhouse gas emissions solutions.

Transport corridors are congested and more land for transport must be made available

There is an urgent need to make more land available for intermodal terminal facilities and rail transport corridors. Existing terminals and corridors suffer from urban encroachment which has created pressures to limit rail operations, or require additional noise mitigation that are now costly and complex to fix.

These network bottlenecks and terminals limitations affect the service quality and reliability of rail operations. This in turn decreases the attractiveness in the use of this mode as well as lowering its productivity. Achieving modal shift from road to rail can only be achieved if there are rail corridors to allow rail to provide a comparable service to road.

Commitment by government and track owners is required to:

- Identify and reserve for transport use suitable sites to meet future intermodal terminal needs.
- Identify locations where the existing rail corridor is insufficient for future needs, and protect required additional land from inappropriate developments which may prevent its later use.
- Require new residential developments within the normal ‘noise envelope’ from rail operations to fund noise walls or other mitigation to allow satisfactory co-existence between residents and rail operations.
- Gazette new transport corridors where identified in the network vision, such as the Inland rail route through the southern part of Brisbane, to maintain future access to this land.

Passenger and freight rail battle for limited network capacity which results in poor network utilisation

In those situations where passenger and freight trains share the network, priority is given to passenger services. Where capacity limits are being reached, this results in significant loss of productivity for rail freight. The best example is in Sydney which has adopted curfews for the arrival and departure of freight services during the morning and evening passenger peaks, both north and south of Sydney. While the planned construction of the dedicated South Sydney Freight Line will assist on the south side, no such separation is planned for the crucial corridor north of Sydney. Rail productivity will continue to be severely constrained as long as Sydney insists on a curfew.

Freight rail is also considered last in the network planning process. Consequently, the 'passenger' rail network is optimised for passenger movements and sub-optimised for freight haulage.

The ownership of metropolitan below rail networks by State governments highly politicises their operations with any daily issues that negatively affect passenger services, resulting in further restrictions on freight rail operations.

For productivity gains to be realised in the rail industry, reform of its structure is required. There needs to be a single national operator of the Defined Interstate Rail Network (DIRN) and further work on separating passenger and freight operations on networks where there are conflicts in optimising the network for one rail market to the detriment of the other.

Infrastructure Investment

The key attributes of service quality for rail are service transit time and service reliability. Service transit time is the ability of the particular service to meet its planned transit time and for these transit times to meet market capacity requirements. Service reliability of on-time departures and arrivals through the whole supply chain are important in ensuring complex supply chains function well, and that trains are able to meet follow on transit departure windows.

Currently rail has difficulty in providing the service quality it requires to gain market share from modal shift. Transit times for the carriage of freight between capital cities in Australia are not competitive with road. Market requirements for freight delivery at certain times and or on certain days can condense rail traffic into peak periods, placing a strain on infrastructure capacity that can negatively affect transit times and reliability. With limited alternative route options in the event of disruption to the rail network, transit times also suffer.

The reliability in being able to provide on time freight departure and arrival in the supply chain is also critical. Rail's ability to provide reliable services that can deal with track maintenance, incidents affecting track network access, weather effects and changes to the planned operation is critical.

With significant investment earmarked for road construction and improvement versus the investment commitment for rail, the service quality competitiveness of rail is currently at a disadvantage.

The National Transport Commission's (NTC) February 2008 paper, *A New Beginning*, is an admission of the previous failings of an integrated transport planning framework in Australia. This NTC report is welcomed as it recognises the need for integrated planning on a national scale. The lack of integration between transport modes, and ineffective planning for freight corridors and whole of supply chain planning has led to a network of individual transport plans that have led to capacity constraints.

Significant immediate increases in investment in rail infrastructure to improve service quality and to provide capacity for the large modal shift from road to rail is required to achieve national emissions reduction targets.

Security of Land Tenure

The security of land tenure for transport infrastructure and supporting freight terminals must be increased. Longer leases are needed to encourage the significant investment required to develop these terminals to provide capacity and improve efficiency. Security from third parties seeking access also needs to be resolved as such issues create investment uncertainty.

Companies will be reticent to invest in infrastructure if this only then supports competitor claims to its use. Clear policy to provide longer term lease options, security of tenure and access to infrastructure assets, is needed to support a national transport plan.

Asset Depreciation

The rail industry operates under very long investment periods for high cost rollingstock. Encouragement is required for early investment in more efficient and low emissions rollingstock prior to the much delayed effect of any carbon price signal. Changes to reduce current depreciation times of 20 to 30 years to much shorter periods, would improve the financial justification for earlier technology change.

To encourage early retirement of a large locomotive fleet and its replacement with newer lower emissions locomotives, financial incentives through taxation policy are required.

R&D Incentives

Amendment of the current research and development incentives would assist the industry develop lower emissions technology. Introducing a mechanism to provide 100% rebate on R&D activities into the greenhouse emissions reduction initiatives would encourage innovation in this area.

Congestion Charges

Key road transport corridors experience congestion and this will increase with time. The London congestion charge has assisted shifts to public transport in that city. Applying a similar congestion charge either for key road transportation routes or for large truck entry within metropolitan limits, would encourage modal shift to rail.

Appropriate Truck Sizes

The introduction of B Triple trucks in Australia has benefits in moving large quantities of goods with lower emissions. Nevertheless, the carriage of the type of goods most likely carried by B Triples between capital cities is such that these could equally be transported by rail with lower emissions.

The United States has banned B Triple truck movements on federal interstate highways due to safety concerns and on the grounds that these goods can equally be carried by rail. Indeed the carriage of large quantities of goods long distances is the core strength of rail.

In seeking low emissions modal choices, and addressing other externalities such as road congestion, air quality and safety, the most appropriate modal choice must be used for each market. In some cases larger road vehicles will provide justifiable advantages in relieving congestion in port areas or a low emissions solution in the carriage of goods in areas not supported by rail. Further investigation on a policy regarding road vehicle sizes to encourage larger vehicles in the most appropriate circumstances is required.

Mandatory Rail Use Target (MRUT)

The Federal government has introduced a key instrument to drive behaviour outside of the emissions trading scheme. The RET (Renewable Energy Target) as imposed on the energy generation sector with a 20% MRET by 2020, has given a clear signal to this industry well before any emissions trading price signal is available.

An MRUT is an equally viable instrument to drive road transport to rail. Currently Victoria and New South Wales state governments have MRUTs for rail to and from ports. The NSW government has set a target of 40% of freight on rail to and from

Port Botany by 2010. The Victorian government has set a MRUT of 30% freight on rail to and from Victoria's ports by 2010.

These State targets are unlikely to be achieved through lack of appropriate rail infrastructure investment, terminal access and capacity, road charging mechanisms, and other policies to drive freight from road to rail. This reinforces that supporting policies on rail infrastructure transport planning, terminal land availability and security of tenure are needed.

Restrictions in road vehicle movements or costs to access ports would also assist in driving modal shift to meet the MRUT.

Extension of such a scheme to key interstate freight corridors would require similar supporting transport planning policies. Consideration is also needed on whether financial penalties or incentives would be appropriate tools to encourage accurate compliance and reporting and increase the price differential between road and rail to drive this modal shift to achieve the MRUT.

Rail Access Pricing

Rail access prices add significant costs to rail operations and make up approximately a third of operating costs for rail freight companies. Rail network providers in Australia seek a positive return on their rail network investment, and this situation leads to high costs for rail operators in using rail infrastructure and or underinvestment in the rail network.

The road industry is in an enviable position where it does not have to pay to access roads at a rate that covers the full cost and also provide a positive return to the road owner.

This pricing disparity between the two transport modes has served to protect the road industry and reduce the price differential between road and rail. Either government access price relief to rail, or increased road user charges for road freight transport would provide an immediate price incentive to encourage modal shift and a low freight transport emissions trajectory.

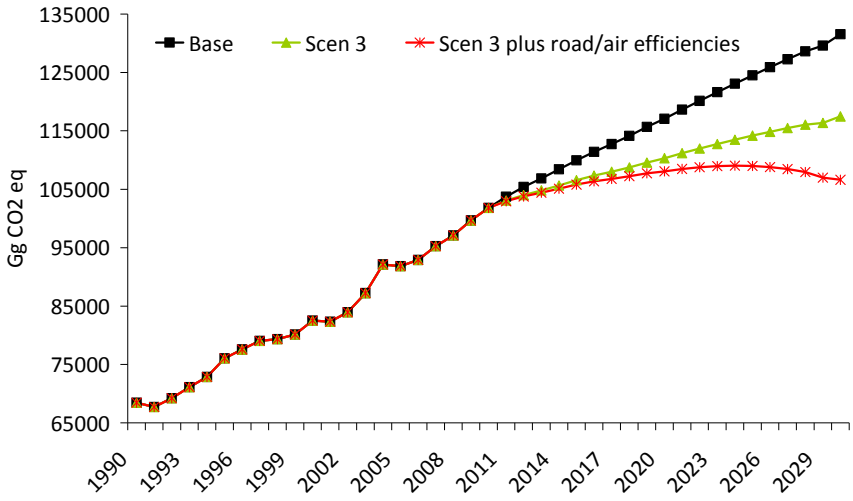
Climate Policies and the Benefits from Rail

Recent economic research conducted by the Co-operative Research Centre for Rail Innovation identifies that the economic and social costs to Australia of current transport patterns are immense. The social costs arising from transport are estimated at $52 billion or 5.6% of GDP in Australia in 2005, before including congestion costs. These social costs are mainly due to road transport with rail contributing 9% of these social costs.

Investment and policies that support rail and a cost for carbon from the Carbon Pollution Reduction Scheme if implemented, would provide high social returns and lower emissions. The potential social benefits accruing over 2010 – 2020 are worth $27.4 billion.

Similar carbon emissions benefits are realised through pricing and complementary policies and investment that drive modal shift from higher emissions transport modes to rail. On a business as usual case, transport emissions will be approximately 30% above their 2010 levels in 2030. Implementation of the Carbon Pollution Reduction Scheme and the introduction of complementary policies and investment in rail would reduce emissions and slow their growth so they would be just less than 5% above their 2010 level in 2030. [2]

Total transport emissions to 2030, base case, scenario 3 (rail policies and investment) and increased fuel efficiency in road and air transport (Gg CO_2-e)



Source: Actual data and projections to 2010, BITRE (2008c); estimates of the authors. [5]

The benefits of structural adaptation of Australia's transport use through policy that is cognitive of greenhouse gases supported with a carbon price will provide significant benefits for Australia.

[2] CRC for Rail Innovation 2009 – *Transforming Rail: A Key Element in Australia's Low Pollution Future*

Climate Change is Hurting Business

As a national transport operator, Asciano is affected by most extreme weather events across Australia. The CSIRO *Climate Change in Australia 2007 Technical Report*, proposes that significant weather events will become more extreme and/or more regular.

In the current financial year, Asciano has experienced a number of significant incidents directly attributable to extreme climate events. Significant incidents include derailments from heat buckling of track, flash flooding destroying track and extreme wind causing double stacked containers to topple. These incidents resulted in derailments that cost Asciano's rail business Pacific National, in excess $11.4m in damages. Significant lengthy obstruction of main rail corridors, lost revenue and damage to rail network infrastructure costs are additional.

'Minor' climate impacts from route diversions due to the Victorian bushfires and flooding in north Queensland blocking transport corridors, have also impacted on the costs of operating a road or rail transport company in Australia.

The Victorian Government in its publication, *Climate Change and Infrastructure – Planning Ahead*, acknowledges that infrastructure for a wide range of businesses in Australia is vulnerable to climate change impacts.

Conclusion

While the Carbon Pollution Reduction Scheme will have economic costs, Australia should not be ignoring the future increase in economic costs from inaction on climate change. While the Carbon Pollution Reduction Scheme will not address the physical impacts of climate change on transport infrastructure and operations, a start in the reduction of greenhouse gases, with the introduction of the Carbon Pollution Reduction Scheme legislation is necessary for long term sustainability.

Further support from complementary policies are also necessary to assist in minimising climate impacts on Australian businesses and support the use of lower emissions transport.

APPENDIX A – Transforming Rail Research Paper

This separate 2009 research report, *Transforming Rail: A Key Element in Australia's Low Pollution Future,* was commissioned by the Co-operative Research Centre for Rail Innovation. It provides the latest economic research in the emissions and other social benefits that will result from appropriate policies that support rail.

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