

Garnaut Submission - Land Transport and CO2 Emissions

Introduction - Proven Technologies

I believe that planned emissions reductions from transport should be based first on existing technologies rather than unproven new technologies; for example, the much-vaunted but uncertain hydrogen economy. There is already scope to achieve 90% reductions in carbon dioxide emissions from the transport sector using existing technologies already in widespread use. This could be achieved by a shift from polluting to non polluting modes such as walking and cycling, and from less energy efficient to more energy efficient modes, for example from cars to public transport or from road freight transport to rail. The overall structure of the reforms should be aimed at reversing the long term trend towards motorised road transport which has been the consequence of long-term untied grant-type funding to bus, truck and car oriented road infrastructure by all three levels of government in Australia for well over a century (the Commonwealth was a late starter in the 1920s). The most unfortunate trend in the last fifty years has been the large scale abandonment of expensive rail infrastructure in favour of road on the basis of flawed financial comparisons. Typically rail has been expected to furnish an economic return on its historic capital costs (including the cost of land acquisition in some instances) whereas roads have simply been built by unrepayable grants of money on a traffic demand forecast basis (predict and provide), and supplied virtually free of charge to all users. Electric road vehicles once competed keenly with steam and petrol engined cars; now even the small electric delivery vehicle is a rarity. Electric traction on rail, on the other hand, has been perfected over the last 120 years, and if renewable (solar, wave, hydro, or geothermal) electric power is available, delivers zero CO2 output.

Potential CO2 Savings Using Existing Technology

There are two areas promising large savings in CO2 emissions in a different regulatory environment. The first is the private car. Existing automotive technology would permit savings of 50% or more if smaller, lighter 2WD cars with smaller diesel engines replaced the current car fleet which has a substantial proportion of large engined heavy cars and 4WD vehicles. Hybrid technology, though expensive and complicated, also promises further savings of perhaps 25% on any given vehicle if it is used predominantly in an urban setting. Replacing car trips with walking, cycling and public transport would also offer large CO2 savings; 100% for walking and cycling. The other main potential saving is shifting from road to rail. Passenger rail is only marginally

more energy efficient than buses because the rolling resistance of rubber tyres on roads is not much more than twice that of steel wheels on steel rails, and rail vehicles tend to be heavier than buses. However, trains are better at attracting people out of cars than buses and promise better energy savings than buses as a result. Electric passenger trains and trams offer potential zero carbon emissions if renewable power is available. Former deputy Prime Minister Tim Fisher was fond of claiming that the rolling resistance of a steel wheel on steel rail was seven times less than that of a rubber tyre on a bitumen road. In fact, the actual number is closer to two, but trains enjoy a multiplier effect owing to careful grade selection, low power to weight ratios and excellent load to tare ratios. Estimates for relative energy use for freight trains compared to trucks are as low as 8% for bulk loads with off-rail loading and unloading facilities (for example, rotary car dumpers). Application of electric traction and renewable power to rail freight promises zero CO₂ emissions - nearly achieved in Switzerland with 98% electrification of rail routes and use of hydroelectric power).

Recommendations

The following recommendations comprise a motley collection of incentives and penalties which would aid the shift from large private cars to smaller cars, motorcycles, bicycles and walking; and from road passenger and freight transport to rail. Many of the existing incentives for road transport and private car use are very well entrenched by a sprawling urban and industrial form that has evolved over the last century based on the free provision of apparently unlimited road infrastructure. Non-motorised forms of transport such as walking and cycling have become unpopular as a result of increasingly fast and busy motor traffic with its attendant fumes, noise and ever present physical danger to unprotected road users. An obsession with personal safety has led to heavier and better insulated cars and trucks with little concern for smaller, lighter vehicles in the event of a collision. Large four wheel drives fitted with aggressive bull bars and trucks with no underrunning protection have become commonplace on Australian roads. Lowering CO₂ emissions from the transport sector will need to address the kind of aggressive size, weight and power battles that have been an important part of marketing cars in the recent past. Even at the bottom end of the popular Australian car market, the Holden Barina in 1990 (in its three-cylinder variant) developed 39Kw, weighed 700kg and delivered a combined fuel consumption of 5.3l/100km. The current Barina develops 76Kw, weighs 1116kg and has a combined fuel consumption of 6.9l/100km. This is not the sort of automotive 'progress' that we should sustain.

1. Encourage Smaller Motor Vehicles

There is a range of incentives that can be used here. At present, in Western Australia, there is no difference in the cost of registering a small or a large motorcycle and only about 150% extra for a very large 4WD compared to a small car. I understand that the UK has adopted output of CO₂ per km as a basis for registration charges - this seems like a good idea. There would also be advantages in offering free registration for electric vehicles and a relaxation of registration requirements for small motorcycles and scooters. At the moment, small cars have to meet stringent safety requirements whereas the next step down in basic motorised transport (motorcycles) essentially have no passive safety features at all. There may be scope for enlarging the definition of a motorcycle to encompass basic, cheap weatherproof motorised transport with the minimal safety requirements typical of motorcycles. Electric bicycles should be permitted higher power motors without the threat of requiring registration. Possibly the Swiss system of allowing multiple vehicle use on the one license should be adopted so that the large family 4WD is not inevitably used for every trip. The problem of tax benefits for private car use, private car parking and the disincentives for small cars in the tax system are too complex for me to deal with here. Serious consideration needs to be given to punitively high taxes on selling very large aggressive cars and 4WDs (unless needed), and on large capacity engines for private cars and motorcycles (eg: over 2 litres - note that Triumph motorcycles produce a 2.3 litre motorcycle!). Most new cars on Australian roads have an unnecessarily high power to weight ratio and would achieve much better fuel economy with smaller engines. A reduction in country speed limits also offers fuel savings of 15%-20% and would make lower power vehicles more acceptable for country travel. The Australian motor manufacturing industry has become a world leader in the provision of automotive dinosaurs. Ford has recently bucked this self-destructive trend by announcing local production of the medium sized 'Focus' model. The government faces critical decisions about tariffs and subsidies to the local car industry in the very near future. Australian Design Rules have served as an effective non-tariff barrier to imports in the past but may now need revising, either to foster domestic small car manufacturing or as a first step towards abandoning Australian-made cars altogether. Unfortunately, Australian car buyers have become out of touch with ideas such as peak oil and global warming, and the domestic manufacturers have done little to bring any sense of these realities to the way they market their cars. As a footnote, the specification of fuel economy for vehicles in litres per hundred kilometres needs changing to kilometres per litre. This would take advantage of the 'bigger is better' prejudice, gives more useful information in terms of how far a known quantity and cost of fuel will propel a vehicle, and avoids the problem of increasingly fuel efficient vehicles having to be distinguished by one or two decimal places. Thus, very small motorcycles and scooters can achieve 30-40km/l, small motorcycles and small diesel cars 20-30km/l, medium sized motorcycles and small petrol cars 15-20km/l and the current Australian average is 10 in both measures.

2. Encourage Walking and Cycling

Cyclists and walkers are very badly provided for in this motor car obsessed society. I suggest that each local government authority should be obliged undertake a detailed study to improve facilities for cyclists and pedestrians. Popular cycling and walking routes need to be identified and enhanced with trees for shelter and windbreaks, enhanced lighting at night, and rights of way across busy roads. Pedestrian crossing that have become scarce as a result of quite overt campaigns by State roads bureaucracies need restoring, and more should be provided at crucial points in the pedestrian and cycling network. The recent proliferation of roundabouts annul a pedestrian's right of way over turning motor vehicles at intersections and are extremely dangerous for cyclists. New rules are needed here; perhaps a newly legislated right of way at roundabouts for pedestrians and cyclists. Recent 50km/h urban speed limits have helped but merely return us to the state of play before metrication but under the circumstances of much heavier motor traffic. Closures of pedestrian rights of way in urban areas need to be reversed. Priority should be given to identifying routes away from the noise and pollution of busy roads. Cycling and walking are the best solution to private motoring CO2 emissions, but will not gain popularity unless special attention is given to improving the amenity of walkways and cycleways. The right of cyclists to use the public roads should, however, never be compromised.

3. Repeal Compulsory Bicycle Helmet Laws

The simplest and most effective way of encouraging Australians back on their bicycles would be to repeal the foolish and paternalistic compulsory bicycle helmet laws. Most other countries in the world have learned from the Australian experience and wisely chosen not to follow our example. There are even people in the medical profession who have pointed out that any theoretical improvement in individual safety from helmet wearing is completely outweighed by the health penalty of the widespread abandonment of cycling as a result of these laws. Individual cyclists should be encouraged to wear helmets but those people who don't want to wear a helmet for religious reasons, because they become too hot or simply because they don't want to mess up an expensive hair style, should not be given any excuse for using their car instead.

4. Shift Passengers from Road to Rail

The motor bus has been seen as the logical solution to mass passenger transport in the sprawling road-based city. The problem is that buses are unpopular because they are cramped, jerky, hard to access with shopping or

small children, infrequent, always stopping and unable to run to time in heavy traffic. As a consequence, they are often more empty than full and simply add diesel fumes and congestion to an already congested road system. Nevertheless, buses were widely adopted in place of electric trams in most Australian cities. In Perth in 1978, buses nearly replaced an important arm of the suburban rail system as well. The advantages of heavy suburban rail are now recognised but the electric tram now needs to make a comeback in those area where the cost of providing heavy segregated rail routes is not feasible. The busiest bus routes should be the first target for this well-proven electric transport system that promises zero CO2 emissions if renewable power is used.

5. Shift Freight from Road to Rail

This is the most intransigent problem of them all because the source of goods traffic has followed the people to the suburbs. The sprawling decentralised nature of our cities makes it difficult to gain sufficient concentrations of both goods and people to justify the kind of bulk services rail can deliver most efficiently. One of the problems here has been the myopic view of the State road bureaucracies who simply will not countenance the mix of rail and road infrastructure seen overseas. In Europe, for example, there are countless example of passenger and freight rail facilities using roadways to gain access to town centres or factories. This was, after all, the basis for the nineteenth century tramway legislation. In a place like Chur, for example, it is possible to see large ten-car electric long-distance passenger trains making their way down the main roads of that city. And in countless Swiss towns, tiny electric railway locomotives not much larger than small forklifts will trundle a single railway goods wagon along rails set in a public road in order to reach a factory. These sights were once common in some parts of Australia (eg Port Pirie or Gladstone). The Australian approach is typified by Bunbury here in Western Australia where the terminus for one of the few remaining country passenger trains was moved to an inconvenient suburban location and passengers bussed the last few remaining kilometres of their journey. The rail reserve and the city centre railway station still exist but it was apparently beyond the wit of the road engineers to combine a railway line carrying a few trains per day with their lavish new road system.

There are a wide range of incentives and disincentives that could move freight from road to rail. The failure of heavy road transport to make an adequate contribution to road construction and maintenance has been long recognised but has proven politically difficult to resolve. A comprehensive system of mass-distance charges is needed - the nature of such a complex undertaking is too difficult for me to address. In the interim, I suggest that new intercity mixed rail passenger/freight services should be subsidised, as much as anything, to get moribund rail services reopened. Here in Western Australia,

there is no longer any through rail traffic on the existing rail lines between Geraldton, Perth and Albany; yet there would be plenty of passengers and freight that could be carried by rail if the political and financial will of the government could be brought to bear on the situation. There are also potential new rail routes, for example from Perth to the Pilbara, taking advantage of the never-exercised common carrier obligations of the private iron ore railways. There is a vast amount of freight traffic theoretically on offer with a terminal to terminal distance of 1500km - ample to make rail profitable if the missing 700 km of standard gauge railway line were to be built. Transport operators will often complain about the cost of trans-shipment. The fact is that there is already a great deal of trans-shipment from large long-distance trucks to small delivery trucks and vans. Controls on vehicle types for urban delivery and proliferation of rail served distribution points in urban and suburban areas could help enhance rail delivery of general freight.

There is plenty of overseas experience with the problem of recovering lost rail freight from the road transport industry. Incentives such as free provision of rail sidings, new technology for trans-shipment, removal of tax incentives for road transport are all complex matters. Very few countries have succeeded in reversing an inevitable trend towards road freight based on the free provision of truck-friendly roads. Those countries achieving some success should be emulated. Road and rail freight in Australia are now run by the same people in many cases. They could probably help find the solution.

Conclusions

This rather rambling essay is unreferenced and uncomplicated for ease of reading. I can provide more detailed information on most subjects touched on here with the exception of the kind of advantages the taxation system has recently conferred upon private and commercial road transport users. I can provide historical information on the kind of legislative and taxation burdens that were unfairly placed on railway and tramway operators in the distant past, but this kind of material is probably of little relevance today; except perhaps to counter the modern prejudice that all forms of rail transport require generous subsidies to survive. The reality is that it was the massive cross-subsidies in the road transport system that have caused rail operators to eventually withdraw many of their services.

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