

Australia 2050: Confronting the Problems Now

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2050. Australia's population has swollen to 33.4 million¹. Continued urban development has seen city boundaries defined and redefined resulting in geographically vast cities that struggle to provide vital services to those living on the urban-rural fringe. Public transport is shambolic, inefficient and falls short in meeting the needs of most Australians. There are more cars on the road than ever causing mass congestion and pollution. Electricity consumption is at an all time high and fossil fuel sources continue to be exploited. Water supplies are dwindling, the climate is becoming increasingly erratic and natural disasters are becoming commonplace. This is the Australia we will inhabit in just over 40 years from now if significant changes to our current way of life are not made in the electricity generation, transport, land management and minerals sectors.

Electricity generation is one of the largest contributors to Australia's carbon dioxide (CO₂) emissions. As an example, Victoria's Hazelwood Power Station in the Latrobe Valley is the most polluting power station in the industrialised world² and contributes to more than 5% of Australia's CO₂ emissions, or, 9% of total CO₂ emissions from the electricity generation sector³. This single example demonstrates just how pollutant current Australian electricity generation is, given that the vast majority of Australia's power is derived from fossil fuel sources and particularly coal. Hence, any marked reduction in greenhouse emissions in the future requires substantial changes in the energy generation sector. Ideally by 2050, Australia's reliance on fossil fuels will be dwarfed by its use of renewable energy sources. Renewable hydro sources such as the Snowy Mountains Scheme will be used to their full potential and there will be a significant increase in the number of Australian households that are self-sufficient in terms of power generation. This is to say that more and more households will have installed solar panels or similar green technologies and will be less reliant on other power sources.

However, given Australia's heavy reliance on fossil fuels and the sheer amount of infrastructure currently in place to support this dependence in concentrated areas such as the Latrobe Valley, it is naïve to conclude that Australia in 2050 will meet all of its energy needs independent of fossil fuels. Hence, while phasing out coal sources is ideal from an environmental perspective it is economically impractical for this to occur by 2050. Thus, in addition to the gradual reduction of the use of fossil fuels, efforts need to be concentrated towards making coal generated power a zero-emissions sector. As the production of CO₂ is inevitable in the combustion process of

¹Australian Bureau of Statistics. *Year Book Australia, 2008: Population Projections*. 7 February 2008, accessed 9 October 2009.

<http://www.abs.gov.au/ausstats/ABS@.nsf/0/B72C736116A4A32DCA2573D20010FDB6?opendocument>

Population projection based upon a fertility rate of 1.9 children per woman from 2018 onwards, net overseas migration of 140,000 people per year and life expectancies of 92.7 and 95.1 years for males and females respectively. More modest projections yield a population range from 24.9 to 33.4 million people in the year 2051.

²Charlie Stevens. *Hazelwood Tops International List of Dirty Power Stations*. 13 July 2005, accessed 9 October 2009, <http://www.wwf.org.au/news/n223/>

³Australian Conservation Foundation. *Green Groups to Fight Hazelwood New Coal Application*. 5 September 2005, accessed 9 October 2009, http://www.acfonline.org.au/news.asp?news_id=551

coal-based power generation the real challenge is to prevent CO₂ from being released into the atmosphere⁴. As such, the continued development and application of carbon capture, transport, sequestration and re-use technologies will be required to meet this goal. Further government legislation is also needed to ensure that power stations have strict greenhouse emission quotas and that any new power stations have measures in place to be as close to carbon-neutral as possible.

Presently, transport in Australia is a \$42.6 billion industry contributing to 4.63% of Australia's total GDP⁵. As such, it is clear that this lucrative industry will remain vitally important to the Australian economy in 2050 and beyond. However, vehicular transport contributed to 84.9% of the Australian transport industry's greenhouse gas emissions in 2007⁶. An industry such as this - highly pollutant yet of great financial importance to the nation - needs specific attention in planning for a sustainable future. Considering that the vast majority of the industry's greenhouse emissions come from road transportation it seems logical to encourage commuters to get off the road, out of their cars and turn towards public transport. Although any marked increased in public transport usage would require additional services and rolling stock (given much of Australia's public transport is already near to capacity⁷), the infrastructure costs associated with extending and upgrading current networks pale in comparison to the potential environmental costs associated with road travel continuing in its current state. Consequently, Australia in 2050 will be a nation where public transport must become a more fundamental method of transport both for the daily commuter and those undertaking longer journeys. Such a transition will not occur without appropriate motivation at both a government and individual level. As such, the public transport system in all its forms - train, bus, tram and ferry to name a few - needs to become wholly integrated so that travel times can be reduced leading to less traffic congestion and increased customer satisfaction. If public transport can be seen as a travel option that is not only greener, but also more efficient for commuters, it will become a more attractive option.

Public transport use could also be augmented by reducing some of the financial costs associated with travel. Although free public transport is not necessarily viable in large cities given the cost associated with the maintenance and expansion of networks, such an idea could be applied to smaller rural cities where transportation presently is primarily by car. A noteworthy example of the successful application of such a scheme is the city of Hasselt in Belgium which has a population of about 70,000⁸. Free public transport has been in place in Hasselt for more than 10 years and in that time its usage has increased by more than 1200%⁹, greatly reducing dependence on cars. The success of this model is evident in this example and raises the question of why such schemes are not more commonplace. It seems feasible that such a scheme could be applied in mid-sized Australian cities such as Albury-Wodonga, Bendigo, Ballarat and Launceston.

⁴Ross Garnaut. 'Chapter 20 - Transforming Energy', *The Garnaut Climate Change Review*. September 2008, accessed 8 October 2009, <http://www.garnautreview.org.au/chp20.htm>

⁵Anthony Albanese. *Transport: Australia's \$46 Billion Industry*. 18 June 2008, accessed 10 October 2009, http://www.minister.infrastructure.gov.au/aa/releases/2008/june/aa060_2008.htm

⁶*Ibid.*

⁷Graham Matthews. *How do we fix public transport?* 20 September 2009, accessed 10 October 2009, <http://www.greenleft.org.au/2009/811/41707>

⁸Dave Olsen. *Free Transit System a Success for Belgian City*. 9 July 2007, accessed 10 October 2009, <http://www.postcarboncities.net/node/415>

⁹*Ibid.*

Nonetheless, it needs to be acknowledged that public transport will not be a viable option for all commuters. With the continual expansion of the metropolitan areas around Australia's largest cities those living on the rural-urban fringe will be unlikely to have wholly sufficient public transport options available to them in the years to come. Thus, much of the population will remain reliant on cars for their transportation needs in 2050. The issue of transportation then becomes one concerned with reducing the carbon emissions of the vehicles that will remain on our road networks. Consequently, there needs to be a greater push towards the use of greener cars and further development of carbon-neutral fuels. Petrol as a primary fuel source needs to be phased out, and should not be in use at all by 2050, having been replaced by electric cars utilising energy derived largely from renewable sources.

The Australian minerals industry comprises 8% of Australia's total GDP and accounted for 42% of the country's total revenue from exports in 2007-08¹⁰. Such figures are staggering. However, the future of the minerals industry is not absolute – at present we are extracting these resources faster than we are locating new deposits. This imbalance means that, without careful planning, difficulties in the minerals industry will be directly reflected in the economic stability of our nation. The main challenges facing the minerals industry are the need to find more mineral deposits, the declining grade of ores (leading to an increase in waste), ores of increasing complexity, the scarcity of water near deposits and the need to reduce the industry's environmental waste and impact¹¹. By 2050 technologies will have been developed to better locate and extract required resources, while also reducing the extensive impact mining has on the environment. Developments here will include 'invisible' mines¹² allowing for onsite (both underground and in-pit) mineral processing and sorting so as to drastically reduce the cost of mineral transportation and the amount of waste generated in sorting and processing the minerals.

Land management strategies consider the way in which we use our land resources and are particularly concerned with the difficulties facing the agricultural sector, the growth of urban areas, the use of water resources and the prevention and management of natural disasters. Firstly, in terms of urban planning, the current trend is that our cities are continuing to expand, pushing the edges of the urban growth boundary further and further away from the city¹³. As discussed above, public transport is already an issue and one that will become even more pressing if cities are allowed to continue expanding at their current rate. The solution is to define the limits of city boundaries and to encourage the development of medium-density housing closer to the city. Ideally, if this scheme is followed, the Australia of 2050 will have more highly concentrated populations in its city and inner-suburbs which will become medium-density areas. Consequently, cities will not become great sprawling metropolises. Secondly, in terms of agriculture, specific attention needs to be paid to developing smarter irrigation strategies. At present, about 70% of Australia's water is used in

¹⁰ CSIRO. 'Minerals Down Under: helping to transform the minerals industry in Australia', *Minerals Down Under Flagship*. 23 December 2008, accessed 11 October 2009, <http://www.csiro.au/org/Minerals-Down-Under-Overview.html>

¹¹ CSIRO. 'Securing Australia's Future Ore Reserves', *Minerals Down Under Flagship*. 23 December 2008, accessed 11 October 2009, <http://www.csiro.gov.au/science/MDUSecureFutureOre.html>

¹² *Ibid.*

¹³ Jason Dowling and Marika Dobbin. 'No Need to Expand City's Boundary', *The Age*. 8 August 2009, accessed 11 October 2009, <http://www.theage.com.au/national/no-need-to-expand-citys-boundary-20090807-ecy1.html>

irrigation¹⁴ - a disproportionate amount considering the significant strains on water supplies in our country. Clearly, water use will continue to be an issue in the future. To ensure ample water supplies, Australia in 2050 will be a nation that uses water more efficiently than at present. Most irrigators will use recycled wastewater as will businesses and industries not requiring drinking water. In addition, water supplies will be enhanced by the widespread desalination of seawater allowing for ready availability of water even in times of drought. Finally, comprehensive strategies need to be implemented in order to help prevent, manage and mitigate the damage caused by natural disasters. By 2050, these strategies will include sufficient early warning systems that can – to a high level of accuracy – predict when and where natural disasters, such as bushfires, floods and cyclones, are going to occur, and planning to allow effective evacuation in danger areas while also reducing the environmental impact of such disasters.

A sustainable Australia in 2050 requires thought and action beginning now. The best examples of current sustainable technology need to be identified and their widespread adoption promoted. By considering where mankind is succeeding at the moment, and also where we are falling short, we will be able to act appropriately to ensure a bright future for generations to come. I hope that by 2050 the majority of the issues raised in this essay have been tackled so as to avoid living in a country of hardship akin to the one evoked in my introduction. In order to facilitate change of the necessary magnitude all Australians, but particularly the government, need to adopt a long-term view. Political rhetoric, agendas and expediency need to be abandoned now in favour of real, multi-partisan action in order to ensure our sustainable future. Australia 2050 – the future is already here.

¹⁴ ABC. *Water Facts: Irrigation*. 17 February 2006, accessed 11 October 2009, <http://www.abc.net.au/water/stories/s1572475.htm>

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