



ENERGY EFFICIENCY+CLIMATE CHANGE

Since the Federal Government's decision to delay the Carbon Pollution Reduction Scheme (CPRS) the alternatives to a pricing mechanism which could reduce Australia's greenhouse gas emissions by at least 5% by 2020 are being considered. Part of the discussion has focused on what role energy efficiency might play in meeting Australia's 2020 reduction targets. In this month's edition of the *Kinesis Climate Monitor*, we focus on energy efficiency and its potential for achieving absolute reductions in greenhouse gas emissions.

WHAT IS ENERGY EFFICIENCY

Energy efficiency simply refers to using less energy to provide the same level of services or performance. Technologies such as LED and compact fluorescent lighting, improved compressors for refrigerators and freezers and hybrid drive systems for vehicles can all reduce energy use while providing a similar level of service. Energy efficiency can also be used to reduce emissions created during production processes. For example, new super critical coal technology allows coal fired power plants to generate more electricity from the same amount of coal, compared to traditional plants. Energy efficiency is often called the 'low hanging fruit' amongst greenhouse gas abatement options because improving energy efficiency can save money over the long term. Money saved by reducing the amount of energy needed to provide a service can be used to pay back the energy efficiency investment.

There have been many claims about the extent to which Australia could reduce its greenhouse gas emissions through energy efficiency measures.

When McKinsey and Company released its greenhouse gas abatement cost curves for Australia in 2008 it argued Australia could reduce its greenhouse gas emissions by 30% below 1990 levels by 2020 using existing technologies. It estimated that a quarter of these reductions could be met through energy efficiency measures that would have a positive return on investment, that is, they would make money in the long term.

In June 2010, Australia's Energy Efficiency Council released a paper titled *Energy Efficiency:*

Australia's Low Carbon Opportunity which outlined a series of policies and measures for promoting energy efficiency in Australia. These measures include setting a national energy efficiency target and establishing a national energy efficiency trading scheme. The paper claims that Australia could meet half of its emissions reduction target through energy efficiency alone (without specifying what these targets would be).

Most recently, an editorial in *The Australian* claims that Australia could reduce its greenhouse gas emissions by 7.7% through energy efficiency by 2020.

WANT TO KNOW MORE?

To read the Energy Efficiency Council's report see <http://www.eec.org.au/UserFiles/File/EnergyEfficiencyCouncilPlatform.pdf>

To see McKinsey and Company's Australian cost curves go to http://www.mckinsey.com/locations/australia_newzealand/knowledge/pdf/1802_carbon.pdf

To read the recent energy efficiency editorial which appeared in *The Australian* see <http://www.theaustralian.com.au/business/builders-plan-for-a-low-carbon-future/story-e6frg8zx-1225886904392>

CAN ENERGY EFFICIENCY ACHIEVE ABSOLUTE REDUCTIONS

One of the key considerations for any energy efficiency policy or plan is whether energy efficiency measures can result in absolute emissions reductions. Traditionally, improvements in energy efficiency have resulted in increased output and performance, rather than absolute reductions.

In the aviation industry, the energy efficiency of aircraft has been steadily improving. Modern jet aircraft are now 70% more fuel efficient than they were 40 years ago and 20% more efficient than they were 10 years ago, despite improvements in speed and range. As a result, per passenger emissions have decreased. However, because these improvements have reduced the amount of fuel required to transport passengers by air, thereby reducing the cost of air travel; flights have become far more common. Between 1990 and 2008 absolute emissions from domestic aviation in Australia increased by 104%. And it is absolute emissions that are creating global warming and climate change, not inefficiency.

In the automotive industry, energy efficiency has had an even smaller impact on emissions. Like aviation, absolute emissions from road transport have increased significantly: 27.5% between 1990 and 2008. However, unlike the aviation industry per capita emissions have remained largely static. Compared to an FJ Holden which was built 50 years ago, a modern Holden Commodore produces more than twice as much power from its engine and can accelerate to 100 kilometres per hour more than twice as quickly. However, the fuel economy has remained almost static, with a modern Commodore achieving a fuel efficiency of only 9.3 litres per 100km compared to 10.5 for an FJ Holden.

In both these cases energy efficiency has produced significant improvements in cost and performance. But these improvements have not resulted in fewer greenhouse gas emissions.

WANT TO KNOW MORE?

For information on improvements to aircraft efficiency see http://www.iata.org/whatwedo/environment/Pages/fuel_efficiency.aspx

For information on Australia's greenhouse gas emissions see <http://www.climatechange.gov.au/en/climate-change/-/media/publications/greenhouse-acctg/national-greenhouse-gas-inventory-2008.ashx>



VALE STEVE SCHNEIDER

We cannot let this edition of the *Monitor* conclude without mention of the early death, at 65, of Professor Stephen Schneider.

As an IPCC lead author, Stephen was one of the most highly regarded climate scientists who had been working in the field since the 1970s. As a frequent visitor to Australia, Stephen was a feisty enthusiast, powerful communicator, obsessive ornithologist and truly generous soul. He will be missed by us and all those trying to tackle the global climate problem.

OBITUARY

Climate researcher Ben Santer paid tribute to Stephen Schneider in a poignant obituary published in *The Guardian* <http://www.guardian.co.uk/environment/2010/jul/20/climate-change?&cmp=EMCENVEM1288>



MEETING CHINA'S ENERGY EFFICIENCY TARGET

China is currently the world's largest emitter of greenhouse gasses, eclipsing the USA in 2006. According to an article which appeared in *The New York Times*, China recorded the largest growth in emissions over a six month period of any country in history. This was driven by sales of coal fired electricity and oil which each climbed 24% in the first quarter of 2010 compared to a year earlier.

Due to this unprecedented growth there have been further calls for China to commit to legally binding emissions reduction targets. China was classified as a developing country in the 1997 *Kyoto Protocol* and not legally required to reduce its emissions. At the 2009 Copenhagen Conference, China did not commit to an emissions reduction target. However, it did commit to improving its energy efficiency and greenhouse intensity of its economy. In its official submission to the *Copenhagen Accord*, China states that it will 'endeavor to lower its carbon dioxide emissions per unit of GDP by 40-45% by 2020 compared to the 2005 level'.

China has implemented a number of significant measures and reforms to achieve this target. In the last three years, China has shut down more than a thousand coal fired power plants to improve the energy efficiency of its electricity generation. China has now surpassed the United States in the fuel efficiency of its coal fired power plants. The Central Government has also ordered the shutdown of inefficient manufacturing plants. A decision to shut down the Guangzhou Steel mill because of its inefficiency by September this year is likely to result in almost all of its approximately 6,000 workers being laid off or forced into early retirement. In most buildings and workplaces, regulations dictate that a building's thermostat cannot be set lower than 26°C. Chinese cars achieve 40% better fuel mileage on average than cars from the USA.

However, despite these impressive energy efficiency measures, China's emissions continue to rise. Despite improvements in energy efficiency, increased output to meet growing demand is out-stripping these gains. For example, despite improvements in the fuel efficiency of new cars, the 48% growth experienced by the Chinese automobile market in 2009 has meant that vehicle emissions are rising.

Public demand is also having an impact. China's growing middle-class is now able to purchase appliances such as air-conditioners that were previously unavailable, driving this increased demand for electricity. There is also a push-back against the laws designed to help China meet its energy efficiency targets. When workers at a Honda factory in Foshan went on strike in May, one of their key demands was that the thermostats be set lower to improve working conditions in their factory.

What these trends indicate is that even if China is able to meet its 2020 energy efficiency targets, the growth across its economy is likely to have a much greater effect on greenhouse gas emissions than any improvements these targets will be able to yield.



WANT TO KNOW MORE?

The New York Times has written extensively on China's efforts to meet its energy efficiency targets. See <http://www.nytimes.com/2010/07/05/business/global/05warm.html> and <http://www.nytimes.com/2010/05/07/business/energy-environment/07energy.html>

To see China's official letter to the UNFCCC outlining its climate change commitments under the *Copenhagen Accord* go to http://unfccc.int/files/meetings/application/pdf/chinacphaccord_app2.pdf

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TWO VIDEOS TO WATCH

Professor Tim Jackson, member of the UK Government's Sustainable Development Commission and author of *Prosperity without Growth*, gave a lecture at the recent Alfred Deakin lecture series. Tim touched on whether energy efficiency could help achieve the reductions in greenhouse gas emissions needed to limit dangerous climate change or whether economic growth would out-strip these gains without any changes to our current economic system. We also recommend David Mitchell's most recent Soap Box video for *The Guardian*. It is short, funny and might also be true.



WANT TO SEE MORE?

To see the full video of Tim Jackson's presentation go to <http://wheelercentre.com/videos/video/prosperity-without-growth-tim-jackson/>

To watch David Mitchell's Soap Box video go to <http://www.guardian.co.uk/commentisfree/video/2010/jul/08/david-mitchells-soap-box-climate-change>