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Voluntary climate action won't reach net zero

‘Technology not taxes’ is not enough. A price on carbon is needed to make more expensive lower-emissions innovations the cheaper option.

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The Commonwealth government says it will reach zero net emissions by 2050 through voluntary action and technology, not mandates or taxes. This is a false dichotomy. Emissions reductions in line with our international obligations require mandatory measures. Voluntary action supplements and extends mandatory measures – as it has done over the past decade.

Prime Minister Scott Morrison in [Glasgow](#) was right to say that Australia has reduced emissions since 2005 by as much as many and more than some other developed countries. The reductions are concentrated in two sectors in which mandatory action has been dominant and voluntary action helpful.



Uptake of electric cars is behind other developed nations where there is stronger policy support. **AP**

One is land use change. Bans on land clearing greatly reduced emissions. This has been modestly augmented by the Emissions Reduction Fund – where the main action has been funded from revenues from carbon pricing from 2012 to 2014. Voluntary contributions to the conservation and restoration of forests and woodlands have further reduced land use emissions.

The other is the replacement of coal by renewable energy in electricity generation. The mandatory Renewable Energy Target (RET), with grid-scale and rooftop components, has been the main driver for change.

State government mandates and subsidies have contributed. Support from the Australian Renewable Energy Agency and the Clean Energy Finance Corporation has contributed to solar, wind and energy storage. Budgetary funding for ARENA and the CEFC so far has also come mainly from revenues from carbon pricing. In future, it will come from general taxes. No dichotomy here. We will have technology and taxes.

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Emissions from sectors with no continuing mandatory measures – notably industry and transport – have increased by large amounts since 2005. Fugitive emissions from coal and gas have increased prodigiously.

There is no law of physics or economics that says that the zero emissions technologies will be cheaper.

Voluntary action has extended the use of rooftop and other decentralised solar: some households and small businesses have introduced rooftop solar before it was warranted by financial calculations.

Voluntary purchase and surrender of renewable energy certificates by firms committed to zero emissions has caused the proportion of electricity supplied by renewables to be several percentage points higher than required by mandatory targets.

In transport, voluntary purchases in advance of clear financial advantages have contributed to early electric vehicle sales. But Australia lags a long way behind all other developed countries, where there is stronger policy support.

There is no law of physics or economics that says that the zero emissions technologies will be cheaper. If we knew an alternative technology was cheaper, we would already be using it, independently of climate change.

Harvard professor Zvi Griliches long ago demonstrated that the rate of technological improvement increases with expected profitability. Raise the price of corn, and the rate of development and deployment of hybrid varieties increases.

My 2008 climate change review explained why the combination of a price on carbon equal to the cost imposed on others, and fiscal support for innovation to reward a business for knowledge that benefits others, would lead to reductions in net emissions at the lowest possible cost.



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OECD Secretary-General [Mathias Cormann](#) was a leading member of the government that abolished Australian carbon pricing in 2014. He is now leading efforts to introduce a global carbon price.

If he makes headway, it will become obvious to his old colleagues that Australia should join all other developed economies in placing a price on carbon. Meanwhile, we must use other mechanisms to promote rapid deployment of new technologies.

Some costs of innovation – and benefits to those who observe and use the knowledge generated by innovation – are from first global use of new technology. European consumers carried these costs for the world in mandatory requirements to use renewable energy in the early 21st century.

Young Chinese electrical engineers absorbed knowledge of solar technologies in graduate programmes in Australia. They saw the opportunity to use China's comparative advantage in mass manufacturing to supply the high-price European market. Thus began the cumulative process of increasing scale and falling costs and expanding markets that makes solar a much cheaper source of electricity than coal and gas in Australia today.

Demonstration of the superiority of the new technology abroad does not ensure its deployment in Australia. Roughly half the costs of generating renewable energy in Australia are local.

Zero emission exports

Large grants from ARENA facilitated early grid-scale solar projects. That illuminated and disseminated ways of reducing installation costs. Australian deployment of solar generators became much cheaper for those who came later.

Renewable electricity generation ended up being cheaper than the old technologies. Electric vehicles look as if they will end up much cheaper. But many technologies that have a place in an economically efficient zero emissions economy will remain more expensive than the alternatives.

No matter how much government subsidises [carbon capture and storage](#), and no matter how costs fall with large-scale deployment, it will never be as cheap as venting carbon dioxide into the atmosphere. Without carbon pricing or emissions regulation, the technology will never be used on a large scale.

Mandatory measures accelerate deployment of the technologies that eventually become cheaper, and allow use of zero emissions technologies that remain more expensive.

Voluntary action alone would not have reduced Australian emissions by 20 per cent by 2020, and would not get us to minus 28 or minus 35 per cent by 2030.

The continuation of established federal programmes will allow the Commonwealth government to lean to some extent on others' mandates. We can aspire to sell zero emissions iron, steel, other metals and food into developed countries which impose taxes on emissions-intensive imports, but will have to comply with their emissions mandates.

We will have to demonstrate that we have zero emissions supply chains. That requires a credible framework for certifying that the goods are produced with zero emissions.

Three certification schemes are the building blocks for zero emissions credentials for Australian goods and carbon credits entering international trade: the Renewable Energy Target, and the system of renewable energy certificates (RECs); the Emissions Reduction Fund and the system of Australian Carbon Credit Units (ACCUs); and the Hydrogen Guarantee of Origin scheme foreshadowed in the 2021 Commonwealth Low Emissions Technology Road Map.

The purchase and surrender of an REC expands renewable energy supply beyond the minimum mandatory requirements of the target. It is the way an Australian company demonstrates to customers abroad or at home or to investors that it has zero emissions from electricity in its supply chain.

Voluntary surrender of RECs to demonstrate zero emissions from electricity has become much more important this year with many major companies committing to zero emissions by 2025 or 2030.

The RET system needs to be extended beyond 2030 to play this role. Extending the system could but does not necessarily involve increasing the mandatory target above the current 33 terawatt hours.



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ACCUs certify that a firm has offset emissions by paying for genuine carbon sequestration. As I explained in RESET, the system would be more powerful in reducing emissions and also for prosperity in rural Australia if it were developed into comprehensive accounting for carbon in soils and plants. It will play a major role in voluntary reductions in emissions, and in qualifying Australian exports of goods and carbon credits for entry into countries committed to effective action on climate change.

There is a case for allowing substitution among RECs and ACCUs, and later Zero Emissions Hydrogen Units. Trade and arbitrage would lead to similar costs and incentives for reducing emissions across a wider range of activities. Any one of them could be used to acquit obligations under the ERF's safeguard mechanism.

Voluntary action using RECs and ACCUs would extend Australia's contribution to the global climate change mitigation effort above Australian mandatory requirements.

Ross Garnaut is Emeritus Professor of Economics, University of Melbourne, and a director of ZEN Energy and chairman, Sunshot Zero Carbon Futures. This is the fourth in series of articles on Australia's energy superpower opportunities after Glasgow.

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