

## Climate policy: Australia's net zero transition and economic prosperity

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The Australian government seems poised to announce a net-zero emissions target. It is a big step politically in Australia, but it is now the standard among developed countries. Even China has a net-zero target. The pressure from Washington, London and elsewhere is irresistible. The Australian business community by and large wants a net zero target, as we have heard today, and there is overwhelming support in public opinion polls.

It can and should be a reset for climate policy in Australia. If so then we can expect a new investment push that will put Australia's economy on a more resilient footing.

But declaring the target is only the start.

### How to do net zero?

The largest part of the net-zero story is capital turnover. By 2050, the bulk of existing high-emissions assets in Australia can be replaced by zero-emissions production processes and products.

That process can be accelerated, and this will allow Australia meeting a much more ambitious 2030 target.

Net zero also means not building new long lived fossil fuel facilities and infrastructure. The finance sector understands this very well.

The main pillar of decarbonisation towards net-zero is the electricity sector. The transition from coal to solar and wind power is well and truly underway, driven mostly by relative costs. As Kerry Schott said earlier today, we will probably see coal plants close a decade earlier than was thought not so long ago.

And we will have a far larger electricity supply sector in future as we replace fossil fuel use across the economy. This means very large up front investments that will pay back with cheap and clean energy for a very long time.

In transport, the net zero story is largely one of electrification, as Trevor St Baker pointed. We are behind in the uptake of electric vehicles, but electric cars, buses and trucks are becoming cost competitive.

In industry, part of the story is electrification of heat for processes, a variety of other process changes, and some carbon capture and storage.

In agriculture, it is a question of improving technologies and practices to reduce emissions of methane and nitrous oxide, to run farming more efficiently, and to shift the agricultural product mix away from the most emissions intensive products namely cattle and sheep.

There has been talk about a national net-zero target that excludes agriculture. This would be nonsensical. A net zero target needs to include everything. We need to act in all parts of the economy to move to cleaner production, and then compensate for whatever emissions remain.

Remaining emissions will be made up for by dedicated carbon dioxide removal from the atmosphere. This can be done biologically, for example through reforestation or soil carbon uptake; or technologically, including through carbon dioxide capture directly from the air.

We have the preconditions to do carbon dioxide removal at large scale. Australia could readily become a net negative emissions economy, through large carbon uptake on the land and technological carbon dioxide powered removal by renewable energy. What would be needed is an international framework where Australian operators could sell carbon dioxide removal services to other countries. This does not yet exist but it will be worth striving for, including in future UN climate negotiations.

### A stronger 2030 target

At the UN climate conference next month, the big topic will be stronger emissions targets for 2030, more so than net-zero. Most developed countries have strengthened their targets and now have far stronger targets for 2030 than Australia. Notably, the [BCA](#) is now calling for a 46-50% reduction target.

It can be done, because there is huge untapped potential. The national reductions so far have almost entirely come from reduced land clearing and higher forest carbon, achieved mostly before 2013.

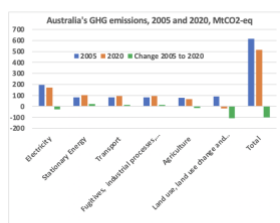
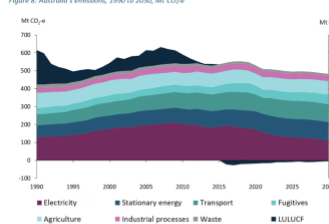
In electricity decarbonisation has begun. Since 2016, electricity sector emissions have fallen every year, because of the rapid rise of wind and solar power. This trend will continue and it could be accelerated.

We need faster investments in infrastructure especially transmission lines and energy storage, reform in the National Electricity Market that creates greater investment confidence, and planned exit of the remaining coal generators on a rapid schedule. That is the opposite of the current plans where subsidies and market rules would be geared to keep coal plants running longer. The planned NEM capacity mechanism needs to be paired with a NEM carbon mechanism.

Emissions from transport, stationary energy use (especially fossil fuel combustion in industry), fugitive emissions (especially from the gas industry), and industrial processes have all increased. There are massive opportunities to reduce emissions that have been left dormant.

## Australia's emissions to 2030: untapped opportunities

Figure 8: Australia's emissions, 1990 to 2030, Mt CO<sub>2</sub>-e



Reductions since 2005 almost entirely from land use, land use change and forestry ... and recent reductions in electricity emissions Increases overall across the rest of the economy

### Some low-hanging fruit for climate policy

In industry there is almost no effective policy in place to help constrain emissions, neither by way of penalties or incentives, nor by way of regulation. [Turning the Safeguard Mechanism into a baseline-and-credit scheme](#) covering all industrial installations, and changing baselines to be meaningful, would be a start.

In transport, we need investment in charging infrastructure. We also need regulatory settings to allow for vehicle-to-grid charging to make use of that enormous energy storage on wheels. And there is an opportunity for reforming road taxes, with charges for road use and congestion for all vehicles, in addition to fuel excise.

Agricultural emissions in Australia are somewhat lower than they were in 2005, but this does not signify an underlying trend. Not much more will happen in land-use change and forestry without additional policies. The Emissions Reductions Fund is nowhere near enough, with its patchy incentives to some farmers, with some of the payments going to projects that may not have an effect in practice.

What is needed is a broad based effort to help Australian farming become low-emissions, through R&D and extension, incentives to shift to low-emissions practices, and certification of low-emissions products. Regulation to cut out unnecessarily highly emissions intensive practices could be part of the mix.

### Low-hanging fruit for Australia's climate policy

- Making the Safeguards Mechanism effective and broadening it, on the road to a carbon price
- Investment to help towards an electricity grid with very high shares of renewables
- Innovation support, targeted incentives and regulatory standards in specific sectors and activities
- A green infrastructure program to stimulate demand and raise productivity
- Structural adjustment funding for fossil fuel regions
- Facilitating the emergence of renewable energy-based export industries

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**Low Hanging Fruit in Australia's Climate Policy**

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**Abstract**

Australia has a history of fragmented and politically contested climate policy, and current climate policy is both piecemeal and limited in scope and ambition. Ample opportunities exist to reduce emissions through the more targeted and application of policy. This paper will discuss the current state of play in Australia's climate policy, including the Safeguard Mechanism, and the role of the Safeguard Mechanism in reducing emissions. It also discusses the role of the Safeguard Mechanism in reducing emissions in industry through a modification and strengthening of the existing Safeguard Mechanism, combined with strengthening of the electricity grid to very high shares of renewables, a culture of innovation support, and targeted emissions and regulatory standards to specific sectors and activities. An effective green infrastructure program to stimulate demand and raise productivity, in addition to a community focused structural adjustment fund that would assist disproportionately impacted communities to adjust to the global transition to net zero emissions by 2050, and removing impediments to the emergence of new renewable energy-based export industries to take the place of coal and gas exports.

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## A future for carbon pricing

Looking ahead, carbon pricing should be an important element of the policy mix. The OECD now advocates for a globally harmonized carbon price, and for good reason.

There will be pressure by countries. The EU is serious about Carbon Border Adjustment Measures, or a carbon border tax for short. This will not affect many of our exporters now, but it is a policy that can very easily catch on. That would mean trade hurdles for exporters in countries that do not have effective climate policies in place.

Carbon pricing now covers over 20% of global emissions. Typical prices in key schemes are above 60 Australian dollars per tonne of carbon dioxide. Last Friday's price in the EU emissions trading scheme was 60 euros or 95 Australian dollars per tonne.

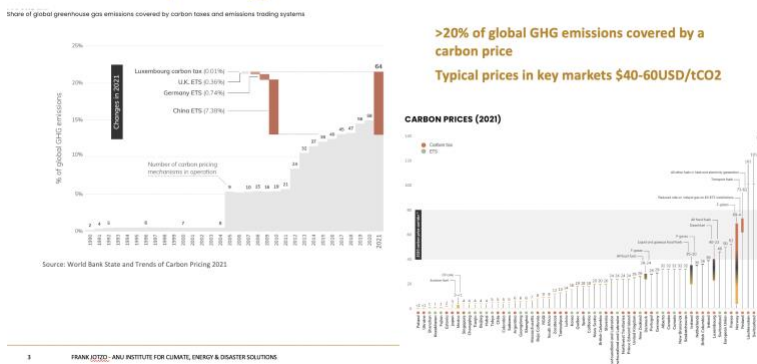
In Australia, the three-word slogans should be "technology through markets" and "deployment through markets". Given the political legacy, progress will need to be incremental.

An obvious start is to turn the Safeguards Mechanism into an effective baseline-and-credit mechanism, as a revenue-neutral carbon price. It can integrate with the Emissions Reductions Fund, and bring in progressively more emitters on a mandatory basis, also from outside industry.

In electricity, a carbon penalty should sit alongside payments for reliable capacity. This can help fund infrastructure investment like transmission lines and energy storage.

At some point, all of this can be put together under a national emissions trading scheme, for maximum efficiency and to allow international carbon trading.

## Carbon pricing around the world



Costs: understanding the pains and the gains

Then there is the important question of the economic cost of climate policy.

The public discourse on this point has been very poor, by and large. The choice is not between some horror scenario of hugely expensive emissions cuts, or some hypothetical business-as-usual where there is no decarbonisation anywhere and we can sell coal and gas at high prices forever.

And yes, there will be economic costs from climate action. But those costs are small compared to everything else that goes on in the economy over decades. And there is also economic opportunity from the shift to low carbon systems if we go about it the right way, through innovation, productivity and diversification. Economic modelling usually ignores these. And of course accelerated capital turnover means economic stimulus through investment.

In any case decarbonisation is coming, whether we like it or not. Demand for coal, gas and oil will decline. For Australia it will not be a question of 'unilateral withdrawal', as Minister Taylor termed it this morning, but a response to market conditions, and hopefully a strategy of anticipating future conditions.

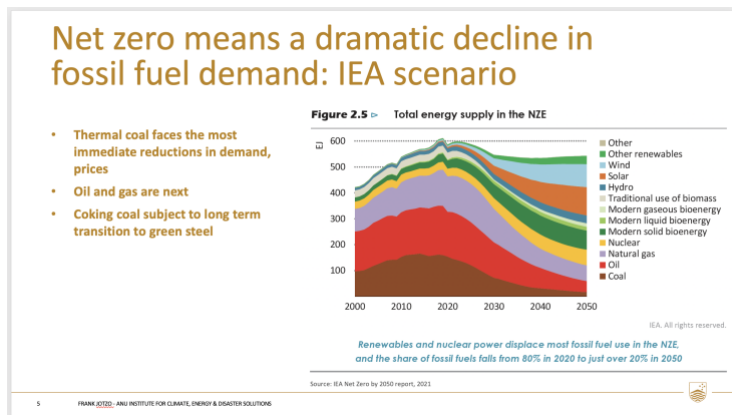
The bulk of economic cost of net-zero for Australia will come from the demise of fossil fuel exports. What happens to export demand is out of our hands. Investors in other countries increasingly favour renewable energy because it is cheaper, and because the climate change imperative is being taken more seriously.

Much of the cost that really matters politically is the social and regional adjustment in coal fired power and coal mining, concentrated in a few regions.

We can learn from how Australia have handled transitions in manufacturing and agriculture in the past, and how other countries are handling the energy transition, for example Germany.

The keys are to create a shared understanding between the key stakeholders about how that transition will unfold, and for governments to support the transition where it hurts. Public funding can help with infrastructure and economic diversification, worker retraining and social programmes.

So government support needs to go towards making the transition smoother, not to prop up industries that are in structural decline, in a futile attempt to prevent change.



## Australia's future economic advantage

There is a huge upside for Australia in a global low-emissions economy. That is the practically unlimited availability of low-cost renewable energy, coupled with the capacity in large scale resource and processing industries, with stable institutions and an open investment framework. We can build large export industries on the basis of zero-emissions energy.

There is excitement about a hydrogen economy, here and in many other countries. Hydrogen is attractive as it burns perfectly cleanly and is an alternative to electrification in heavy transport and industry. Countries including Germany and Japan expect to be importing large amounts of hydrogen in the future, possibly also zero-emissions ammonia which is more easily transported, and synthetic fuels.

Australia is one of the countries that could be an exporter of hydrogen and hydrogen derived energy carriers. How will we make it? Many see hydrogen as a lifeline for gas and coal, as a feedstock for hydrogen. But even with carbon capture and storage, there are remaining emissions. The [difference between green and blue hydrogen](#) is real. Unless capture rates are very high, the emissions balance is not dramatically better than using gas straight.

We may see blue hydrogen in the transition. But the future is green hydrogen, where hydrogen is made through electrolysis, using solar and wind power. The costs for green hydrogen are rapidly falling, and it is viable in the long term under net-zero. Australia is obviously very well positioned for this. But there will be competition from other countries with desert areas and coastlines.

An even larger prize is a zero emissions minerals and metals processing industry. That includes iron and steel. The global steel industry of the future will likely be based on primary steel made using hydrogen and electricity rather than coking coal, and scrap recycling.

Australia is by far the largest exporter of both iron ore and coking coal. The market for coking coal will probably wither away. An entirely new iron and steel industry will be created, replacing traditional blast furnaces.


This opens the prospect that some of the Pilbara's iron ore could be processed into green iron, and perhaps into green steel, locally. This would mean very large value added, potentially larger than the value of coal exports today.



But it is not just about replacing one kind of resources industry with another. For Australia, future prosperity is about economic diversification, and about the continued push into high value services.

That requires policy geared towards fostering innovation and facilitating investment in new industries, rather than guarding incumbents' interests. And it means funding for public education, training and research, and a relentless focus on productivity.

## A renewable energy export industry?

- Hydrogen: electrolysis using renewable energy is the future-proof option
- Other renewable energy carriers – ammonia, synthetic fuels, HVDC cables
- Renewables-based resource processing industries in Australia are the big prize
- Including a green iron / green steel industry in Australia



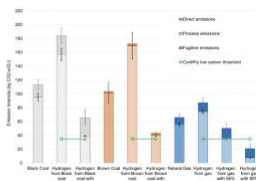
Clean hydrogen? An analysis of the emissions and costs of fossil fuel based versus renewable electricity based hydrogen

Zem-Carbon Energy for the Asia-Pacific ZESAP Working Paper ZCW02-21  
CCSEF Working Paper 21-03 March 2021

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<sup>2</sup>Western School of Electrical, Energy and Mechanical Engineering, 2015  
<sup>3</sup>Zem-Carbon Energy for the Asia-Pacific, Green Challenge, 2020/21, ANU

Figure 1: Emissions intensity of different fuels



### The need for a proper national emissions strategy

Finally, good long term climate policy needs a [proper long-term emissions strategy](#). We need to develop a clear understanding of how we might get to net zero. Many countries have developed such strategies now, and we need to do so in Australia.

Government has said that a national strategy is in the works and hinted, and that it will be related to the Technology Roadmap. But the Technology Roadmap and Priority Statement is not a national strategy. It is merely a list of a small number of specific technologies for government support.

What is needed is a comprehensive analysis of how we can get to net zero under different scenarios for technological change and economic developments, what kind of investments are needed and how to mobilize them, and ways to deal with the social and regional impacts of the transition. The overriding question must be how to position Australia for success in a low-carbon world economy.

A viable national emissions strategy is far more than just another report delivered by government. We need an open process of teasing out the best available knowledge, and bringing the major stakeholders to the table. A compact for energy and industrial transition will be needed – a shared understanding between industry, federal and state governments, the unions, civil society and local communities.

The research sector has much to contribute in this. There is great analytical capacity at the ready, including for topics such as an integrated energy system that runs largely on renewables, a clean energy export economy, negative emissions systems, and social and economic aspects of energy transition. We should put that capacity to full use. The Australian Energy Transition Research Plan by ACOLA, the Australian Council of Learned Academies, maps out what needs to be understood better.

There is appetite among major players for a structured national conversation, including the mainstream of Australian business.

We already have an institution that is perfectly geared to convene an emissions strategy development process. That is the Climate Change Authority. It has been sidelined in recent years but it could readily swing into action.

### Outlook

We are at the cusp of a new opportunity to get climate policy right. Or at least to start adjusting policy settings in the right direction.

Importantly, a net-zero target put in place by the Coalition will mean a degree of bipartisanship on climate change – though no doubt differences will remain over how fast to push forward, and what policy instruments to use.

The next important step is a stronger 2030 emissions target. That needs to be followed by sector-based policies, harvesting those low-hanging fruit and pushing to accelerate change. Then over time a move towards a more integrated and ambitious national climate policy framework, which would include a price on carbon. And to guide this, we need a proper national long-term emissions strategy that forges a shared agreement among a wide range of players.