



Australian Climate Roundtable Workshop 2:2

“What do successful transitions to net zero emissions look like in the electricity sector?”

September 10, 2020

This is a record of the presentations and discussion at a workshop held by the Australian Climate Roundtable with their respective members on 10 September 2020. The views stated were those of the presenters; the ACR will make its own statement on successful transition to a net zero emissions economy in due course following the completion of this series of workshops. Subsequent workshops in this series will address successful transitions in the electricity, manufacturing and agricultural sectors; and the social and regional impacts of the transition to net zero emissions.

Professor Frank Jotzo, Crawford School of Public Policy, The Australian National University

Frank Jotzo is a Professor at the Australian National University's Crawford School of Public Policy, and Director of the Centre for Climate Economics and Policy at Australian National University.

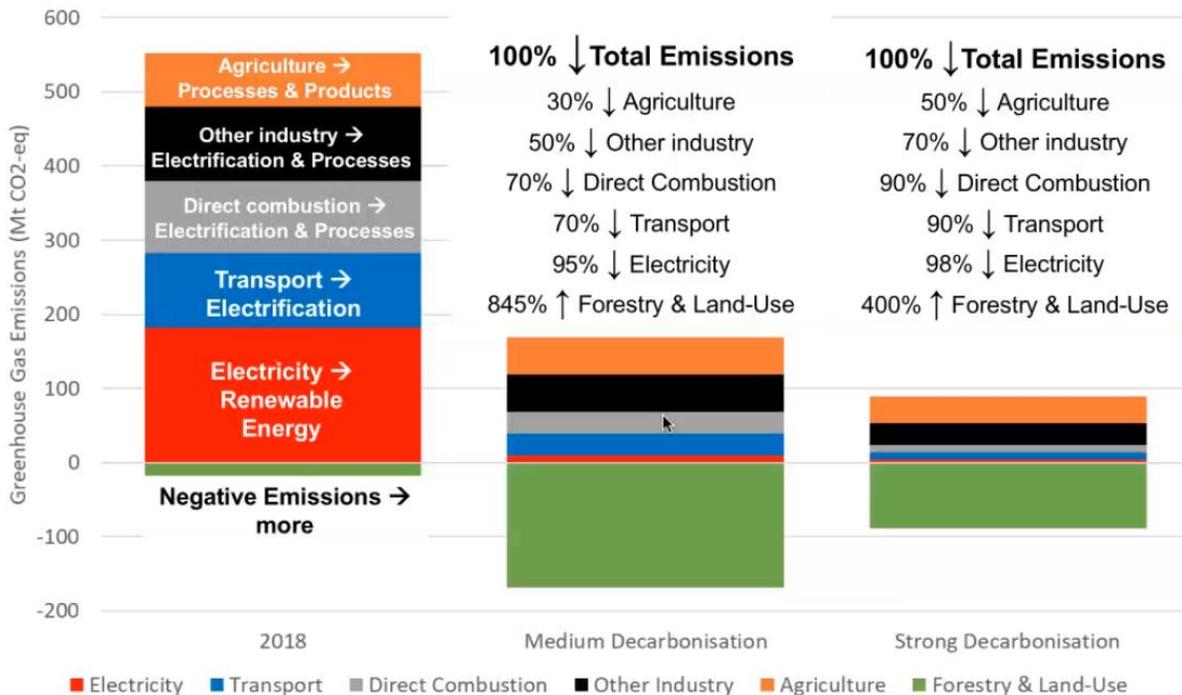
The widely accepted premise of the Paris Agreement is that we need to keep temperature increases well below 2 degrees and achieve global net zero emissions. The international negotiations will resume renewed in 2021. The UK and EU are clearly positioning for further action and to drive greater ambition. A potential US Biden Administration would have an ambitious climate agenda including a trade safeguard agenda of carbon border taxes that is China-oriented, but could have implications for Australia.

The pillars of decarbonisation are zero emissions electricity; electrification of currently fossil-fuelled activities; decarbonising products and processes; and driving negative emissions to account for residual emissions elsewhere in the economy.

What net zero might look like for Australia could be either very deep emissions reductions and modest negative emissions from forestry and land use; or higher residual emissions and

consequently larger forestry and land use carbon sequestration. The costs of emissions reduction are reducing fast, making the former more feasible than it previously looked.

What net zero *might* look like, for Australia



South Australia's electricity system is a preview of trends for the wider electricity market: high renewable generation, significant support from gas, limited energy storage. Over time storage and other sources of flexibility will take on more of the role played by gas today. The Integrated System Plan scenarios indicate very little growth in the role of gas; current assets will remain important, but new ones are unlikely to be needed. Falls in the cost of battery storage threaten the role of gas in some niches and pumped hydro in others.

Coal generator retirements in the ISP's Step Change Scenario would be rapid from the mid 2020s to the mid 2030s. Reality may see even faster change than this; the more renewables in the system, the harder it is for existing coal plants to compete.

My colleagues overseas are amazed at the pace of change in Australia. Directions for reform include:

- Predictable revenue for renewables - the current market was not designed for zero-marginal-cost generation. An average cost pricing model is where we need to go; there are multiple options to do it.
- Transmission - investment is needed with greater speed, efficiency and cost effectiveness. Currently networks are a bottleneck on the growth of renewable energy.

- Storage - the role of large centralised storage is not everything, and extremely large projects like Snowy 2 may be less useful than multiple smaller projects.
- Demand response - can play a very important role.

We need greater predictability of coal exit. The current requirement for three years notice is not enough; operators may not comply with it and we could get a Hazelwood pattern of sawtooth prices, with insufficient prior investment and preparation when closures happen. We need some type of time-bound coal exit plan, ideally with a market mechanism rather than central control determining which plants exit when. The German Government has created something like this; there is an auction scheme in place to determine exit timing and order.

What sort of policies should we think about? The toolbox looks much more complex than economists would have considered a decade ago. A price on carbon is in the mix, but is not the sole or central policy for any sector except industry and negative emissions.



What policies? (simplistically)

Sector	Key policies	Plus
Electricity	Market and institutional reform	Coal exit, carbon price
Industry	Carbon price	Standards, R&D
Transport	Infrastructure	Pricing
Agriculture	Standards, R&D	Carbon price
Negative emissions	Carbon price / subsidies	R&D

The NSW Government commissioned a report, in which I participated, on net zero opportunities for that State; it is worth a look.

Economic recovery from the pandemic requires sensible public investment and not ad hoc project grab bags. Regional spread, employment benefits and long-term benefits are important. All recovery spend should be at least emissions-neutral. Energy efficiency in buildings, especially public buildings, is a large and useful opportunity. Better windows, insulation, more efficient cooling - this and more would have social and economic benefits.

Transport has benefits but the projects can be too long term to impact recovery; for instance the Inland Rail project.

 Australian National University

 Australian National University
Created School of Public Policy
Centre for Climate & Energy Policy

Fiscal stimulus for low-carbon compatible COVID-19 recovery: criteria for infrastructure investment

CCEP Working Paper 2020
June 2020

Frank Jotzo, Thomas Longden and Zaha Anjum
Created School of Public Policy, Australian National University

COVID recession recovery: criteria for sensible public investment

Employment	Economic activity and growth	Timeliness
Reduced implementation risk	Low carbon compatibility	Environmental benefits
Social benefits	Resilience	Governance

ANU is looking closely at opportunities for renewables-based export industries. Hydrogen is important, but shipping the hydrogen involves a lot of cost. The better opportunities may involve large scale H2 production for use in Australia to produce goods for export, including ammonia; synthetic fuels for aviation; and clean steel. Steel is the big prize, though the largest scale of this is well down the track. Aluminium may be the simplest of the green commodity energy intensive export options; will we see a green Australian aluminium industry emerge with a greatly expanded renewable energy system, or indeed the survival of our existing smelters?

Green hydrogen is catching up really fast to hydrogen made from coal or gas. We should be careful not to sink a lot of capital into fossil-based options that may not be competitive later.

The Low Emissions Technology Statement is imminent; the most important thing is not which technologies it identifies, but what will be done about them. The gas debate is a bit of a distraction.

Discussion/Q&A

Q: Average cost pricing for bulk energy from RE doesn't seem to be in the mix for the NEM25 project - do you see options under discussion that could do this?

A: Greater use of contracting by energy users, retailers and governments is one approach.

Q: Many companies I speak to are bullish on the role of gas to support the grid with higher renewables. Are they right?

A: There is a very plausible continuing role for gas as backup generation to fill occasional longer-duration gaps between supply and demand - with a greater likelihood of occurrence the height of summer or the depths of winter. That role takes us into the slightly uncomfortable territory of considering capacity / availability payments to keep extremely low-utilisation assets available.

Q: We will see more coal generator closures, and we need to handle the worker impacts better. Recent closures in state-owned generators have seen some workers transferred to other assets, softening blows. The psychology of coal closures needs focus; the language of some activists, describing coal assets as 'death factories', make workers and communities associated with coal very upset. These are current essential services workers and they feel incredibly insulted. It is not just their livelihood but their moral worth and integrity that are being threatened. In Germany the approach is not to say that coal is evil, but "that it is part of how Germany built itself; technology and science have moved on, but we will always recognise the contribution that coal workers made, and look after them." That approach - build on the past to create the future - is what we should take in Australia.

A: I agree wholeheartedly with this sentiment. Coal generators still are essential and they enabled industrialisation that benefitted many people for a long time. We have energy systems that were built by State governments and then privatised; now technology and economics mean we will be moving to a new system. There is a responsibility on industry and governments to do this in a way that is acceptable to the community. Predictability of exit is the first and fundamental building block of this.

I am not optimistic about the job-substitution aspect of renewables displacing coal - the jobs involved are different in nature, number and location, and are often less secure. High energy intensity clean manufacturing industries are a much more promising prospect for employment transition.

Audience comment: the high skilled, high paid jobs which may come will be in the value adding sectors which should be more competitive with this energy transition. But we need to keep as many mineral processing jobs as we can through this transition, so that we have a base of skills and innovation mindset once this growth comes.

The Energy Transition in the Latrobe Valley: insights from the Latrobe Valley Authority ***Karen Cain, Chief Executive Officer, Latrobe Valley Authority***

Karen Cain is a Latrobe Valley resident and among many other leadership roles a former school principal with a long history of community leadership.

The Latrobe Valley is a relatively large region with a small and spread-out population. It's important to understand its coal mining history over 130 years; the pride of generations of people who have worked in coal mining and generation there, contributing to the prosperity of the State.

The most recent significant change was the closure of Hazelwood in March 2017, announced four months beforehand in November 2016. That cost 1000 jobs in the plant and associated supply chains. The Latrobe Valley Authority (LVA) was formed to help manage the rapid transition, with a strong authorising environment to work differently than public bodies have done in the past.

The LVA approach has been about action orientation; genuine partnership; locally owned ideas; coordinated effort; outcomes focus. We had workers in the door the day we started operating, We've moved from filling short-term gaps to focussing on sustainable system-wide change. Creating the local conditions for collaboration is vital.

Latrobe Valley Authority

Who are we?

We work with and for the people of the Latrobe Valley to:

- build on community strengths and capability for the future;
- lead collaboration and innovation;
- draw on and use the best ideas for what works, both locally and from outside the region; and
- support opportunity for all.

Evolving our approach



- We've moved from immediate response and filling gaps to work that will create long-term sustainable system-wide change
- We're creating the local conditions for collaboration, learning from others and testing new ideas for collective benefit

The establishment of LVA was part of a \$266m package from the State Government, involving a comprehensive set of initiatives. Free upgrades to public housing and low-income housing have had high uptake and made a big difference to living costs. Industry-school partnerships are connecting young people to jobs. \$85m in sports infrastructure has built up events and tourism. Local community pride and livability is being fostered. We've learned from the experience of Geelong-based initiatives to grow local procurement, and now have 85-90% of construction using local content.



Worker transition service delivery has been central to our role. Partnerships have made this work, especially with the Gippsland Trades and Labour Council and TAFE Gippsland Skills and Jobs Centre. When people came in we did not make assumptions about what they would want to do. As we learned about what workers needed, we put in place the services that would meet those needs. An important lesson is to focus on what workers are asking for, not our prior assumptions.

Immediate response

Worker Transition Service

Delivery model



While LVA was set up around the Hazelwood closure, it has become important to wider transition in the region, such as the Heyfield mill closure.

Strategic & sustainable growth

World's best practice

Smart Specialisation in Gippsland

The Smart Specialisation approach was pioneered by the European Union and has been applied and refined over two decades in more than 120 places at differing scales – from rural communities to whole cities and regions.

- The main focus of this work is to build on a region's unique assets and maximise opportunity for innovation.
- It is a platform to target investment – the EU has provided more than \$77 billion in funding to support activities based on local strengths.



- Central to the approach is government, education, industry and the community working together to identify and develop local strengths and long-term growth strategies.
- Linking industry with government, community, education and research enables greater emphasis on collaboration and innovation and provides longer-term solutions.

ren L. Cain (DIPR)

We learned that we need to think about the long term transition and the future of the region. The energy sector's skills and expertise are absolutely an asset to this community. Identifying and developing local strengths for long term gain and benefit is best practice in the EU's regional

development and transition efforts. That isn't a natural fit with Australian practices and cultures, and we still have a lot to learn.

How do we look at new energy opportunities? We've started work using the EU Smart Specialisation approach. We've set up many collaborations and community discussions. The four areas we are currently focussed on include:

- Smart grids; several of our towns would like to establish town grids;
- Bioenergy, and its connections to agriculture and food & fibre. Recycling can also be part of this.
- Geothermal - a new regional aquatic centre is looking at geothermal to heat the pool, and this has sparked wider interest in geothermal;
- Community energy; we are working with Phillip Island, which has a 100% renewable energy goal for 2030.

New energy in Gippsland

Progress to date

The traditional centre of energy production in Victoria, Gippsland's extensive electricity infrastructure and transmission network are significant assets which provide opportunities for new renewable energy generation.

Engagement in the design process



ten L. Cain (DIPR)

Four themes have been identified as areas of potential competitive advantage:

 Smart grids Innovation opportunities <ul style="list-style-type: none"> • Pre-feasibility study underway into on how Heyfield and Loch Sport might develop local grids • Scan of the global market looking at smart grids and how we can learn from them 	 Bioenergy Innovation opportunities <ul style="list-style-type: none"> • Research underway to determine bioenergy potential in Gippsland. • Bioenergy development framework being developed to support stakeholders navigate the planning and regulatory process
 Geothermal Innovation opportunities <ul style="list-style-type: none"> • Research into uses for geothermal is underway to identify potential opportunities in Gippsland. • 3D case study of the Gippsland Regional Aquatic Centre is being developed to highlight geothermal opportunities 	 Community energy Innovation opportunities <ul style="list-style-type: none"> • Pre-feasibility study underway on how Phillip Island might achieve its 100% Renewable by 2030 goal. • Latrobe Valley Power Hub researching the potential of reusing mid-age solar PV panels and reduce solar panel e-waste.

LVA's experience suggests we should be reconsidering how government operates in many other contexts. We need to get away from egos and logos and work together. We also need much more time to prepare for future closures; if we had more time we would have been readier and even more effective around the Hazelwood closure. The LVA's work is going to be needed for at least five years more, and perhaps fifteen. We have to work in a respectful way that meets the needs that people and the community express, not those we assume they have.

Lessons learned

Latrobe Valley Authority

- Importance of community based team with resources, authority and flexibility backed by state
- Strong frameworks for operating that focus on what matters to people, collaboration and solutions
- Need for timely preparation, strong data and evidence base for informed collective decisions
- Being prepared for long term commitment and willingness to challenge status quo including the way government operates



en L. Cain (DJPR)

10:15 am Discussion/Q&A

Audience comment: The experience we have had in the Aluminium industry, when two smelters have closed, is that while people have been able to get jobs, so did not appear on unemployment statistics, the quality of the jobs was much lower and so their discretionary spend was lower and their rates of casualisation was higher. Support Karen's view that the response needs to be strategic and sustainable.

Audience comment: Data on job numbers and on unemployment rates does not capture the job quality issues - in pay and in security. Jobs on lower pay - often much lower pay - don't just cut the living standards of the worker - they impoverish the whole community as the community as a whole gets less income and has less to spend.

Audience comment: Importance of Federal Government and company contributions to supporting the transition. Latrobe Valley Authority only funded till 2021.

Audience comment: Experience of Hazelwood closure has been painful for workers and there have been some issues with Latrobe Valley transition eg construction contracts are being won

by Melbourne based companies rather than locals. Some are concerned about energy security with loss of coal generators

Frank: Proposals like the ALP's Energy Transition Authority may still be necessary. AEMO has highly sophisticated plans to maintain energy security.

Karen: Work is not done yet, many challenges ahead. Will always be room for improvement