

FINANCIAL REVIEW

— Opinion

Australia's road map to net zero sets too narrow a path

The AEMO is being expected to design a future energy system with too few options and too many constraints on what it can do.

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Australia is attempting to transform its energy system via a multi-decade process that will involve developments in infrastructure and generation facilities on a scale that is difficult to comprehend.

Consider the triple crown of decarbonisation:



There are other heat sources which could keep existing turbines generating power. **Dean Sewell**

First, the upfront price tag – a \$300 billion to \$500 billion minimum direct investment for new generation and transmission.

Second, the broader economic impacts – both upstream and downstream – from electrifying the nation, which will dwarf the upfront direct costs.

Third, prolonged adverse effects on industry – this is the potential long-run damage to industry and our standard of living from bad policy decisions and inconsistent or ill-informed approaches. Namely, the costs associated with picking winners along technological paths that actually don't work out or are superseded. Perhaps harder to quantify than the first two, but think the national broadband network.

We know who loses here. Those people who don't have the resources to maintain temperature control in homes. Pensioners, people on fixed incomes, children, the frail and the sick.

The United Kingdom is learning a lesson [<https://www.afr.com/link/follow-20180101-p5cag4>] in the cost of energy policy-related human misery.

Given the energy transition challenge is fundamental to our future prosperity, shouldn't we be giving this some serious economic analysis?

This means no less than a rigorous study that considers all technological options and economic costs at the national grid scale level.

This includes a proper analysis of environmental and economic externalities, including risk, impact on growth, national technological capacity, defence capability, competitiveness, options costs and so on.

These go well beyond the normal accounting-based CSIRO Generation Cost figures that dominate the debate.

Policymakers are relying on a limited range of partial inputs, assuming most of our future electricity will come from solar and wind.

The problem is that this kind of nuts and bolts economic analysis is just not being done anywhere. Even at the departmental policy level, where it might be expected, there is no agency focused on determining the energy system that would best suit our long-run national interest.

Instead of a comprehensive study approach, policymakers seem to be relying on a limited range of partial inputs to support the assumption that we can generate most of our future electricity from solar and wind, and that this will maximise development opportunities.

This is a high-risk strategy.

To make matters worse, we can't simply rely on the example of other countries. If anything, we're now seeing regular signals that this approach is being rejected.

In places such as the UK, France, China, India, the United States and major world bodies like the Intergovernmental Panel on Climate Change, don't share our faith in the almost complete reliance on solar and wind.

Perhaps Australia is special? Even innovators such as Germany and California [<https://www.afr.com/link/follow-20180101-p5ca65>], where a similar program is being tried, have back up from nation-sized grids and much lower risk of failure than Australia. Even then, the results don't seem to indicate that it is a sure thing.

How do we find ourselves in a situation where we are not undertaking the necessary economic analysis which would identify the most appropriate path through the energy transition?

Planning for energy is the responsibility of the Australian Energy Market Operator and the Energy Security Board.

The AEMO says it has been "leading the design of Australia's future energy system". But when it says it has been developing an optimal plan, it isn't working out the best energy policy for the nation and how to get there.

It is doing something called constrained optimisation. Here you are concerned with the best thing to do under certain conditions, such as you can't use technology A, or perhaps you must include technology B, and so on.

To illustrate, think of a navigation app that has been told to find the best route but only using roads without tolls or without more than two lanes. That is not the same as asking it to pick the best overall route.

In the same way, the AEMO is asking its planning app to find the best policy – with the constraint that most energy needs to be generated from solar and wind.

To see the details of how this works, consider the AEMO's 2022 Integrated Systems Plan.

This plan is based on four scenarios established in consultation with government and industry bodies and other interested groups. They reflect what these groups think will happen over a period of decades. A development plan is then established for each scenario. This then identifies the transmission and network investment priorities that then have to be financed.

But the questions, "what will happen?" and "what should happen?" are totally different.

Effectively, the AEMO is asking – given the scenarios identified by the group – "how can we make them work?" Fine.

But the more important question is, "what should we be doing"? This is not being discussed by AEMO.

It should address the question of what would be the best overall mix of technologies and grid network for Australia, and how do we get there from here?

We are not suggesting that what the AEMO is doing is being done poorly. In its defence, it isn't directed to identify the best policy options, nor is it the only body restricted to such a constrained and partial analysis.

The shackles must be lifted and the AEMO permitted to optimise policy settings across all feasible options. This is the critical policy work to be done and includes exploiting technologies which can make use of existing thermal power stations and transmission infrastructure.

The value of retaining existing thermal power infrastructure has already been recognised in several countries. It has recently been the subject of analysis by the US Department of Energy. It has identified several hundred potential sites for conversion.

The Americans are considering a coal to nuclear strategy. This C2N strategy could even extend to small modular reactors [<https://www.afr.com/link/follow-20180101-p5be4u>].

Alternatively (and perhaps complementary), Australia could develop a coal to long duration strategy utilising recent local developments in ultra-high temperature thermal storage technologies.

This potentially presents an even simpler coal-fired power station retrofitting option than C2N, but we won't know until we get to work or at least let the AEMO start with a clean slate.

The US approach is smart and arguably even better suited to Australia, which lacks any backup from neighbouring energy grids.

Though, to the best of our knowledge, none of this thinking is reflected in any policy or grid planning in Australia.

So, a better approach to guide energy policy at the start of 2023 and beyond would be for policymakers to commission some serious economic analysis of optimal energy options.

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