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The curious case of Taylor's technology road map

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The [government's technology road map](#) is meant to be the centrepiece of a national long-term emissions reductions strategy. It is an opportunity to set some directions among seismic shifts in energy technologies, and against the lack of a climate policy framework.

This week a discussion paper for that road map was put out by the Energy Minister. It is a curious document. The mantra is low emissions innovation with 'technology neutrality', a useful starting point. The bulk of the document is a survey of many technologies that together can underpin a low-carbon economy. But there is no real indication of priorities, nor of how progress will actually be made. Policy is not mentioned.

The most important message might simply be that the future is low-carbon energy, industry and transport. This is obvious to anyone who is alert to climate change, and to Australia's opportunities in an age of cheap renewable energy. Still, for a government document to spell it out suggests that some progress is made amid the political hang-ups over energy and climate. The 2015 Energy White Paper listed 18 priorities — not a single one of these had anything to with low carbon.

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This week's paper lists 50 technologies as potential priorities. Fifty hardly constitutes prioritisation. The only notable omission from the indicative priority list is coal. It is quite obvious that there is no role for coal in Australia's future energy system, but having it implicitly stated by the government in this way is progress.

[Gas is prominent in the document](#). True, gas now is an easy way to balance intermittent renewables generation. But the future of grid balancing in Australia belongs to pumped hydro and batteries.

The context is obviously the broader push by the government for the expansion of the Australian gas industry, which is fundamentally at odds with a low-carbon scenario. Perhaps the push for more gas is a way to make it possible politically to stop supporting coal.

The future for Australia's clean energy system is quite clear: keep expanding solar and wind power, perhaps including offshore wind. Couple them with energy storage in pumped hydro and batteries, which over time largely displace gas peaking plants. At the same time, electrify transport and industry where possible.

These things are correctly described in the discussion paper. But they have been well understood for some time. And why declare technologies such as photovoltaics, wind and pumped hydro as technology priorities when they are fully mature? They are priorities for

investment, not for innovation. What is needed is measures to continue and perhaps speed up deployment.

The question of how we will move along the road to decarbonisation, and how quickly, is the central one.

Carbon capture and storage (CCS) is prominent in the paper too, but not for coal-fired power stations, which was the futile dream of a decade or two ago. Rather, CCS would be for industrial processes like cement production where zero-emissions alternatives are a long way off. And it may come with the twist of using the captured carbon as a product.

Developing such technologies makes sense. But what will make companies invest in them, given that CCS is likely to always be an additional cost in the production process? Will it be a price on carbon or a regulatory requirement? Clearly this remains unmentionable.

Perhaps the answer is the existing national emissions target is so weak that questions of deployment in 'hard-to-abate' sectors would not come up until well after 2030. In this way, an implicit part of the emerging technology road map is to keep some old polluting equipment going for a long time. This week, Energy Minister Angus Taylor said Australia is committed to reach net zero emissions in the second half of the century.

This tug of war about what is in and what is out of the government's actual road map and priority statement will play out over coming months. Importantly there will be input in the process from the deep well of knowledge at universities, research institutes, think tanks, businesses and NGOs. It will show the enormous opportunities in the transition to a decarbonised economy. The process will draw out a rich tapestry of possibilities in clean energy, industry and transport.

One rallying point is the possibility of new export industries based on renewable energy. Hardly anyone disagrees that this is a desirable prospect. And in contrast to some of the other things on the list, this is an area that truly needs support for innovation and deployment of new technologies and that actually promises lasting economic gains. It deserves a prominent slot in a road map of Australia's energy future.

Perhaps it is a good thing to start that process with a wide-ranging and largely inconclusive paper.