

Comment on PC Pillar 2, Moving to net Zero for Electricity Generation

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1. It would be useful to provide explicit costings of investing in renewable energy. The CSIRO GenCost numbers need more details for guidance on the relative costs of different energy options and on the magnitude of required investment.

I focus on electricity generation and transmission costs and assume that retail costs are common across the different options. Data for: small and large scale solar, on shore and off shore wind, and associated battery, hydro and pumped hydro storage; perhaps nuclear and carbon capture and storage; and for gas and diesel as backup. For renewables spell out details on hours of production (mean and higher moments), required capital to provide electricity as required, storage procedures and costs.

Costs to include:

- Acquisition of land
- Any environmental costs
- Capital costs of generation and storage to provide a KWh 24/7. This includes wind, solar, nuclear, maybe coal, with back-up battery, hydro, pumped hydro and other storage for the intermittent providers. Then derive costs per KWh with required reliability of supply over each day, season and year with assumptions of life span, depreciation, and interest
- Operating costs

I think one can assume that Australia as a net importer of renewables capital in a much larger global market makes a negligible contribution to lower costs via its quantity decisions to global cost reductions associated with R&D, learning-by-doing, and scale economies

2. Recognise that for the renewables the marginal cost will not be constant but increase with quantity of output. Reasons for rising MC with a larger quantity of renewables electricity include one or more of:
 - Extend production to areas with less hours and intensity of sunlight and wind each day, and perhaps also greater variability. The additional areas require more KW capacity generation and storage to provide a KWh
 - Extend to areas requiring more expenditures on transmission infrastructure
 - Expand production to areas with larger environmental costs

Rising MC for renewables when compared with costs of fossil fuels, including pollution costs, may point to less than a 100% renewables target