

CLIMATE CHANGE AUTHORITY

POLICY OPTIONS FOR AUSTRALIA'S ELECTRICITY SUPPLY SECTOR – SPECIAL REVIEW RESEARCH REPORT

SUMMARY

Why has the Authority published this report?

The Authority has released this report as part of the work on emissions reduction policies for Australia's electricity supply sector for its Special Review into Australia's post-2020 climate policy. The Authority's Special Review comes at an important time. The Paris Agreement means Australia, along with other countries, aims to strengthen the ambition of its emissions reduction goals over time.

This report and Report Three of the Special Review build on the Authority's *Draft report on Australia's climate policy options* ('Report Two' of the Special Review). That report, released for consultation in November last year, set out possible emissions reduction policies for Australia.

More than 65 individuals and organisations made submissions on Report Two. There was strong support for the Authority's proposed approach to evaluating policies, and support from across the community for clear, stable, long-term climate policy that can be scaled up over time to deliver Australia's commitments under the Paris Agreement. On the electricity sector, most of the submissions supported a market mechanism of some form to reduce emissions. There were some proposals, including from electricity supply businesses, for implementing additional policies—for example, retirement of existing high-emissions coal-fired generation.

Why the electricity supply sector?

As Australia's largest source of emissions and a significant source of emissions reduction opportunities, the sector is important for realising Australia's overall emissions reduction goals. The big opportunities for reducing emissions rely on investors having the confidence to take different investment decisions—for example, choosing zero- or low-emissions generation over high-emissions generation. Without climate policy, the lower emissions options are often more expensive overall so, to change their decisions, investors need to be confident that climate policy can 'switch' the economics of these types of generation over the life of the investment, which can be decades.

Climate policies should also be flexible enough to perform well in a range of circumstances as the sector and wider economy could change over coming decades.

Where does this report fit in?

This report focuses on policies in the large-scale electricity supply sector (the 'supply side'). There are several important, related policy areas—such as electricity demand including energy efficiency and innovation—which are not considered here. These are considered in Report Three of the Special Review, in addition to the potential impacts on the competitiveness of Australian businesses that could result from emissions reductions policy. This analysis does not assess current policies to reduce

emissions, including the current Renewable Energy Target, Emissions Reduction Fund and safeguard mechanism.

The terms of reference for the Special Review required the Authority to consider, among other things, whether Australia should introduce an emissions trading scheme. As outlined in Report Three, the Authority has sought to answer this question by comparing the performance of emissions trading schemes with other possible policies and considering how policies could interact with each other, particularly in the key sector of electricity generation.

To that end, this report assesses possible emissions reduction policies for the electricity supply sector against the Authority's evaluation principles. Given the importance of long-term, stable policy architecture in a sector facing other changes and challenges over the coming decades, the Authority has placed particular emphasis on policies being able to respond flexibly to changes and their ability to be scaled up over time.

To make this assessment the report draws on analysis—including new modelling of the electricity sector and the Australian economy commissioned for the Special Review—as well as submissions to Report Two.

The Authority has assessed three broad 'families' of possible electricity sector policies:

- 'Market mechanisms', in particular carbon taxes, cap and trade schemes and emissions intensity schemes.
- 'Technology pull policies' policies that encourage the deployment of additional renewable and/or low-emissions generation. These policies vary in their technology eligibility (for example whether they support only renewable generation or also allow other zero- or low-emissions sources) and their design (for example whether eligible generators receive tradable certificates or a payment from the government).
- Regulation: on entry and/or exit of generators, such as standards for the emissions performance of new or existing power stations, regulated closure of old, emissions-intensive generators, and facility-level absolute emissions baselines for emissions-intensive generators.

The Authority's assessment is structured around the following questions:

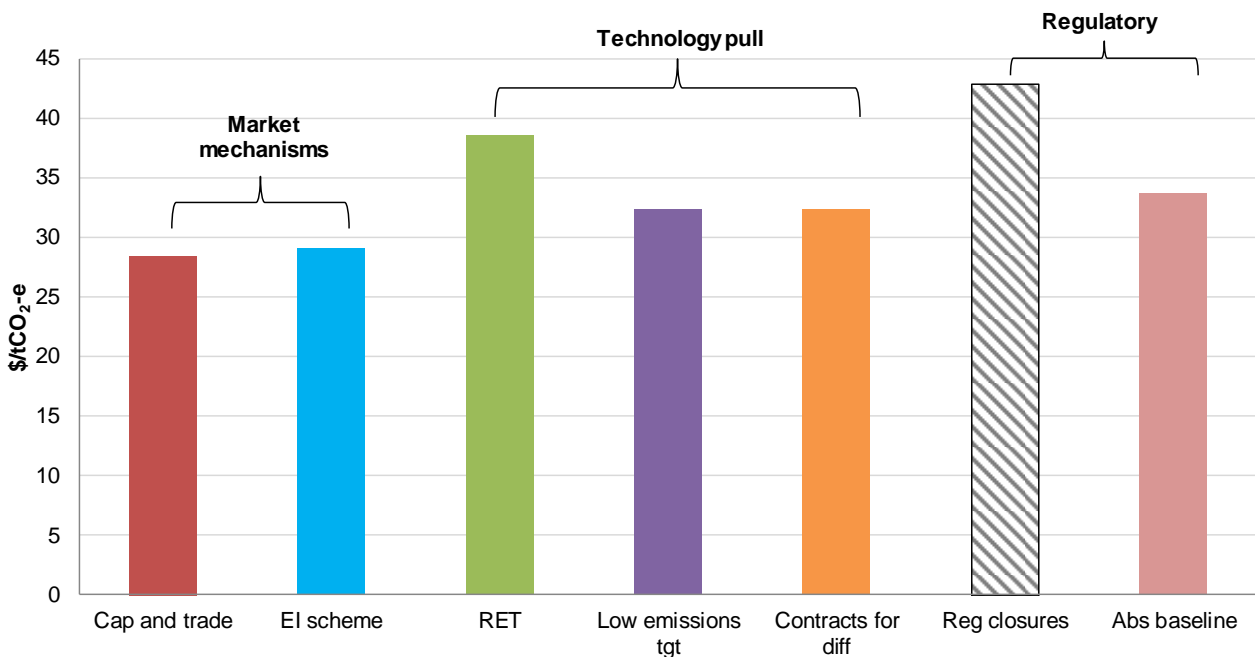
- Is meeting a 2 degree consistent emissions budget in the electricity sector feasible and what might this cost?
- Should there be a market mechanism of some kind in the electricity sector? If not, what policy or policies should be used to reduce emissions?
- If there is a market mechanism in the sector, what are the relative strengths and weaknesses of different market mechanisms?
- If there is a market mechanism, should there be other climate policies in the electricity supply sector?
- If so, which policy or policies and why?

[A market mechanism should be implemented in the electricity sector](#)

The Authority's view is that Australia should implement a market mechanism of some form in the electricity sector. This is based on the assessment of the performance of policies against the three core evaluation principles of cost effectiveness, environmental effectiveness and equity (Chapter 4). Overall, the Authority finds that:

- All policy options are capable of achieving deep emissions reductions in the electricity sector, but market mechanisms are more flexible and scalable.
- Among the policies, technology pull and regulatory policies have greater costs and risks than market mechanisms, especially when used alone or to meet demanding targets.
- Economic analysis, including the Authority’s modelling, suggests that a market mechanism for electricity would allow Australia to meet its targets at a lower cost to the community than would be possible without such a policy in the toolkit. For example, based on the direct cost of reducing emissions using each policy, market mechanisms are projected to have the lowest costs (Figure 1).
- All supply-side emissions reduction policies will affect some groups, however these impacts can be addressed in a number of ways (Chapter 4). For all possible policies, before any assistance is provided, achieving Australia’s long-term emissions reduction goals is likely to increase electricity prices for consumers to some extent and change the relative value of generators’ plant.
- This analysis and modelling considered action in the electricity sector only. The costs in the electricity sector would likely be lower if a market mechanism was part of a broader policy toolkit that included other targeted measures to reduce emissions in other sectors of the economy including measures like energy efficiency, offsets and regulation. Furthermore, in practice, emissions reductions can be lower cost than modelling suggests.

Figure 1 Average cost of abatement by policy, 2 degrees, 2020–2050



Note: See Table 3 in Chapter 3 for a summary of the policies. ‘EI scheme’ = emissions intensity scheme; ‘RET’ = Renewable energy target; ‘Low emissions tgt’ = Low emissions target; ‘Contracts for diff’ = contracts for difference; ‘Reg closures’ = regulated closures, ‘Abs baseline’ = absolute baselines. Average direct cost of abatement over 2020–2050 using a seven per cent discount rate for resource costs. Direct costs are the additional costs arising from the policy in the electricity sector. Emissions not discounted. Figures account for the reduction in welfare from a fall in electricity demand compared to the reference case resulting from increased retail electricity prices. The regulated closures policy breaches the common cumulative emissions budget by about 200 Mt CO₂-e or 15 per cent, so the cost of abatement here is not directly comparable with other policies. See Appendix C.1. All dollar figures in this report are in 2014 Australian dollars unless otherwise specified.

Source: Climate Change Authority based on Jacobs 2016c.

A market mechanism could cover sectors other than electricity supply, and submissions to Report Two noted the importance of coverage choices for the effectiveness of market-based schemes. The

Authority has considered the use of market mechanisms in other sectors, as well as other important design features such as the use of international credits and permits and issues of transition, in Report Three.

Which type of market mechanism?

While there are differences between the market mechanisms assessed in this report, they have much in common in terms of operation and impacts. In particular, each can readily be scaled to drive stronger emissions reductions in electricity supply at lower cost than alternative policies.

The Authority's economy-wide modelling compared the relative performance of cap and trade and emissions intensity schemes and assessed the impact of these schemes on both direct and indirect costs. Direct costs are the additional costs above those that would have occurred in the absence of the policy, such as the added cost of investing in a low-emissions electricity generation plant rather than a high-emissions one. In addition to their direct costs, policies often involve indirect costs, including those due to interactions with the tax system. Taxes and price rises generally dampen economic activity. These indirect costs are more important to the cost effectiveness of policies than has been generally recognised (Goulder 2013). The modelling suggests that the performance of different policies with respect to indirect costs depends in part on how revenue is recycled. Overall:

- Cap and trade schemes, carbon taxes and emissions intensity schemes have similar cost effectiveness. Recycling revenue through tax cuts is likely to be somewhat more cost-effective than an emissions intensity scheme, while 'lump sum' revenue recycling (for example through increases in government payments) is likely to be the least cost-effective of the three.
- An emissions intensity scheme tends to have a smaller impact on electricity prices than a cap and trade scheme, and so is likely to cause smaller tax interaction effects, and a smaller effect on economic activity.
- In contrast, a cap and trade scheme with auctioning or a carbon tax can raise significant amounts of revenue and, in that case, the equity effects will depend heavily on how this revenue is recycled.

Possible additional policies

The report considers the case for adding other policies to a market mechanism in the electricity generation sector. Such policies could include technology pull policies that target the entry of low-emissions generation, or policies that regulate the entry or exit of high-emissions generators.

In principle, additional regulatory or technology pull policies can reduce the costs of new low emissions technologies through targeted support and provide additional investor confidence. On the other hand, adding policies to a market mechanism can increase costs and the complexity of the regulatory environment. The prospect of new policies being implemented can also add to uncertainty as investors may delay new investment until the measures are designed and in place. Chapter 5 uses the Authority's evaluation principles to compare possible additional policies, drawing on the Authority's and other recent modelling.