



**The Climate Commission is an independent body established earlier this year to provide an open and trusted source of information on climate change science and solutions. This paper is not a comment on current climate change policy. Rather, we recognise that it is in the public interest for the Commission to provide accurate and relevant information to inform public debate. This paper seeks to provide an overview of how a carbon price can reduce carbon pollution and some examples of price influencing behaviour.**

There is no doubt that the climate is changing and that failing to take sufficient action today entails huge potential risks to our society, economy and way of life. Most Australians, most businesses and both sides of politics agree that we need to reduce pollution and address climate change responsibly.

The major science academies around the world advise that if global carbon pollution continues to rise, there is a significant risk of serious and irreversible consequences. This is accepted by the governments of all the major nations, by most of the Australian public and by all the major Australian political parties. The science academies advise we risk reaching the point of no return before the science is precise enough to make the impacts certain.

The most important thing we need to do is to reduce pollution and invest in cleaner forms of energy to power our economy. It is about working together to responsibly transform our economy and build a safe and prosperous future for our children. Acting to achieve our 5% target, which has bipartisan support, is part of our international responsibilities.

Any solution will have costs—what we can do is choose the most cost-effective solutions. Internationally and at home there are a number of examples of how a price can reduce pollution and drive investment in cleaner energy technologies. One example of this is illustrated on page 4 and 5.

### How can carbon pollution be reduced?

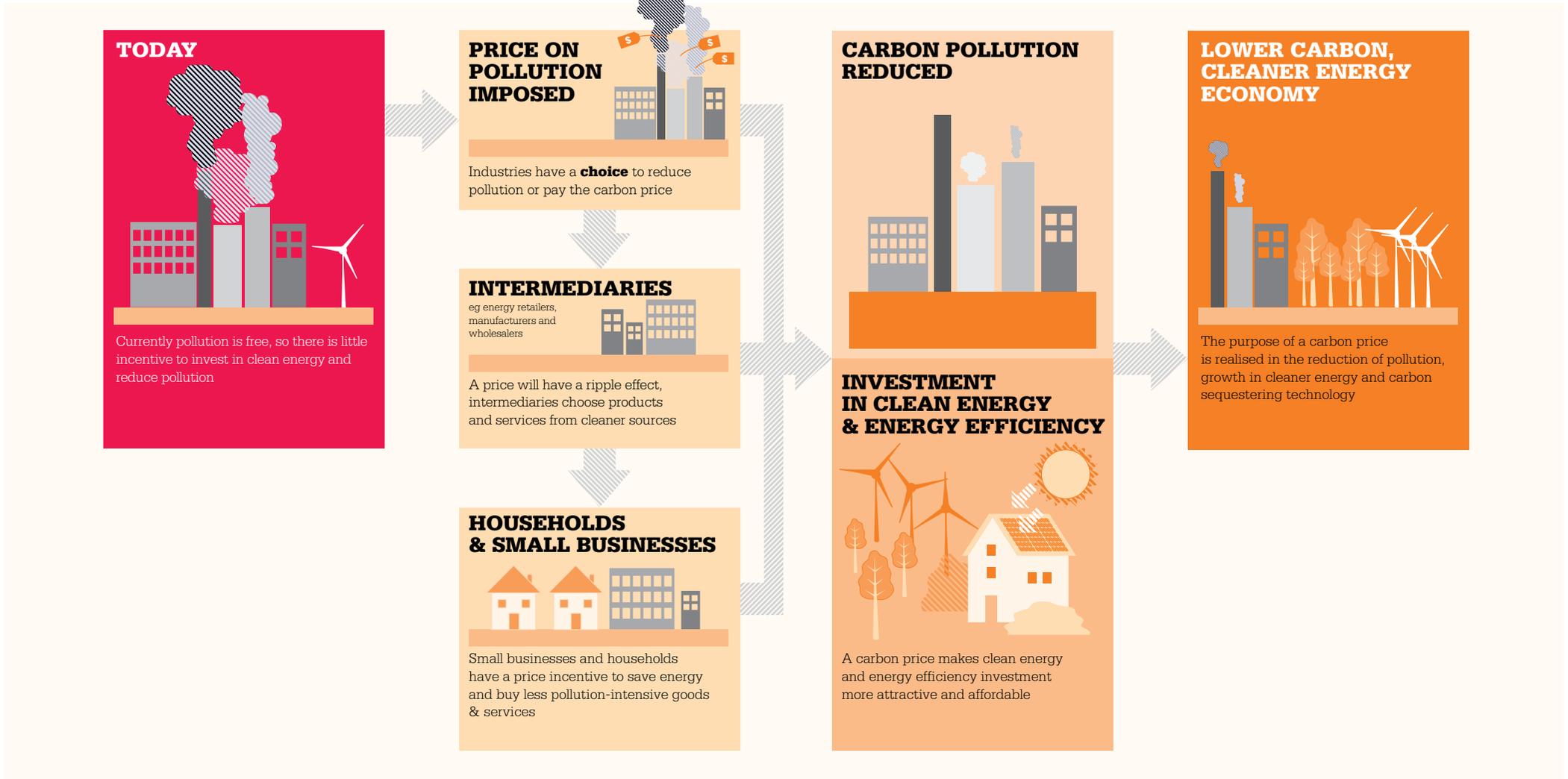
Carbon pollution is a form of pollution that harms the community. Because it is usually more expensive to produce goods and services with low or no carbon pollution it is unlikely that technologies will be developed and deployed without some form of government intervention.

Government intervention can take a range of forms including regulation, taxes, subsidies and market-based instruments like emissions trading. There is no cost-free way to reduce carbon pollution. All policy options have a cost associated with them which is passed on to consumers. A carbon price is supported by economists because it minimises costs and brings them into the open (1).

When looking at how successful different programs have been, it's important to understand exactly how much a program costs, and by how much it reduces emissions. As an example, for each tonne of carbon dioxide avoided as a result of rooftop solar panels, the cost is around \$400. By contrast, Australia's mandatory renewable energy target – which obliges energy retailers to purchase a set amount of renewable energy – reduces emissions at a cost of between \$30 and \$70 per tonne (2). The Productivity Commission has estimated that a carbon price facilitates reduction in carbon pollution at a lower price (3).

So there are many ways to reduce emissions, and some methods are cheaper – sometimes much cheaper – than others. Economic studies have consistently demonstrated that a broad-based carbon price (such as a carbon tax or emissions trading scheme) is the most cost-effective way for Australia to achieve the reductions required to meet its 2020 commitments (1).

Figure 1. Carbon pricing – how it works



## Carbon pricing: A brief overview

### How does a carbon price work?

There are costs to our society from carbon pollution including risks to our economy, environment and health.

Currently no one pays for the carbon pollution in the short term. However, in the long term we will all pay for the impacts of climate change. That means that the full cost of doing business is not currently factored into production—but someone does pay for it: us, our environment, and future generations.

Putting a price on carbon pollution is about creating an incentive across the economy to reduce pollution and invest in clean energy. Most schemes impose a price on a small number of large polluters. This creates a strong incentive for them to rein in pollution and become more efficient, as well as to invest in clean energy.

Costs are passed through to businesses and finally to consumers. This means that everyone has a financial incentive to save energy and shift to cleaner alternatives. The pool of funds raised by a carbon price can then be recycled to assist households, workers and regions with the transition, as well as to support clean energy technologies. Usually care is taken to ensure that jobs and investment in export businesses or those competing with imports (the 'trade exposed' industries) are not unfairly disadvantaged compared to their international competitors.

Figure 2. Where can the funds raised from a carbon price go?



## Carbon pricing: A brief overview

### Where has pricing pollution worked?

Pricing pollution is a fundamental economic reform—but it is not a new concept. Initiatives to reduce pollution using a price mechanism have been implemented overseas and in Australia, often, with great success. The classic example of a price-based scheme to reduce pollution is the Acid Rain Program in the United States.

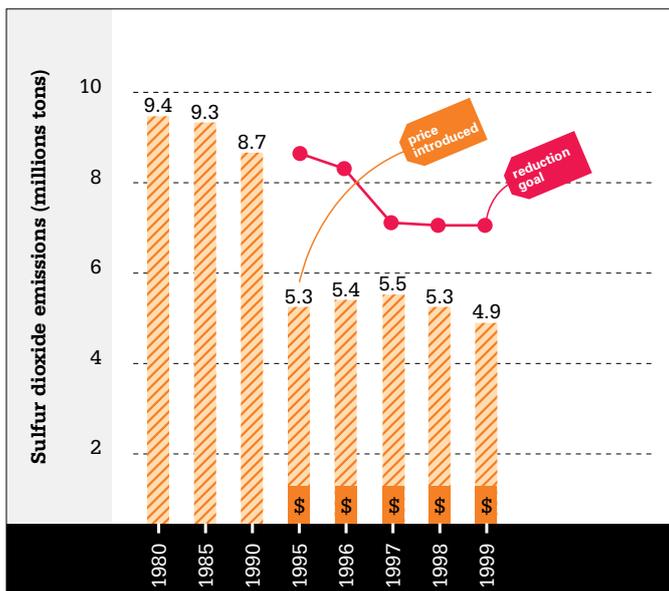
After acknowledging that acid rain was causing substantial damage and harm, the US Government implemented a price-based scheme to reduce pollution causing acid rain: sulphur dioxide and nitrous oxide. The program reduced emissions faster than anticipated, yielding wide-ranging health and environmental improvements (4).

An acid rain pollutant, sulphur dioxide, was priced in 1995. In the first year, sulphur dioxide pollution from power plants dropped by 3 million tonnes and by 2002 pollution levels were 41% lower than in 1980 (4).

The scheme reduced emissions faster than anticipated and well below the pollution reduction goals set by the Federal government.

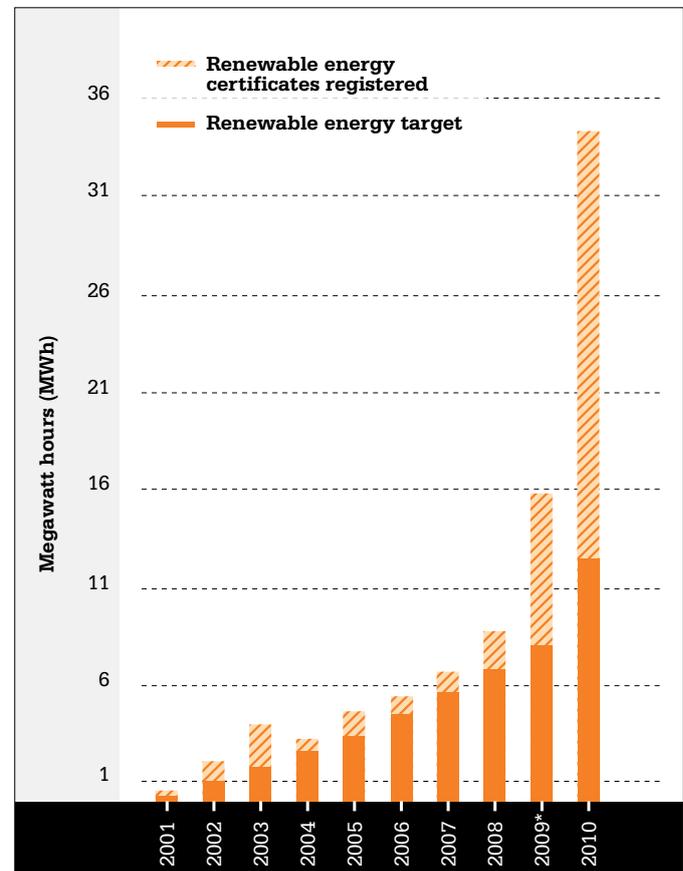
Later, an emissions limit was introduced to reduce nitrous oxide pollution.

**Figure 3. Reducing acid rain pollution: Price on sulphur dioxide**



The Mandatory Renewable Energy Target was designed to create a price incentive to increase renewable energy. The scheme provides Renewable Energy Certificates to producers of renewable energy. Electricity retailers are then required to purchase these certificates in order to meet a government-specified target and avoid penalty. The price signal successfully drove increased investment in renewable energy and the renewable energy target was exceeded.

**Figure 4. Increased renewable energy generation from price incentive.**



\* Renewable Energy legislation was updated in July 2009 to allow small-generation units, like rooftop solar panels, to receive the benefits of the solar credits multiplier.

Source: Office of the Renewable Energy Legislator.

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### Conclusion

Recently the Climate Commission released a report called *The Critical Decade*. The Commission's core message to the Australian community is that this is the critical decade for action, we cannot afford to delay.

It is clear that decisions we make from now to 2020 will determine the severity of climate change our children and grandchildren experience.



**Roger Beale AO**  
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**Gerry Hueston**  
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### References

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4. United States Environmental Protection Agency, *Cap and Trade: Acid Rain Program Results* (<http://www.epa.gov/capandtrade/documents/ctresults.pdf>)