



# **The economic impact of the CPRS and modifications to the CPRS**

REPORT FOR THE COALITION AND SENATOR XENOPHON

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## About Frontier Economics

Frontier Economics (Frontier) is an economics consultancy specialising in applied microeconomic analysis, including industry regulation, institutional restructuring, private sector participation, competition policy, litigation support and environmental issues.

Frontier was founded in 1999 by a team of highly experienced consulting economists, and has offices in Melbourne, Sydney, Brisbane, London, Cologne, Madrid and Brussels. Frontier provides the highest standards in independent and well-founded economic advice for businesses and for public policy makers.

Frontier consultants have developed a strong analytical and modelling capability in the area of climate change policies, particularly in relation to the energy sector, other large emitters, abatement suppliers and the renewables sector. Frontier's work in the climate change area can be broadly categorised in the following areas:

- **Policy design and implementation:** the most notable example of this is Frontier's contribution to developing, modelling and implementing the NSW Greenhouse Gas Abatement Scheme in 2001-2 – the world's first mandatory broad based emissions trading scheme (ETS). Frontier has been significantly involved in climate change policy developments since then;
- **Policy impact assessment:** Frontier regularly works for governments, industry bodies and private sector clients to assess the impacts of a range of climate change policies. This complements advice on policy design/implementation and the development of strategic response/transaction advice.
  - Emissions trading – including permit auction design and/or permit allocation options, including assessment of the Renewable Energy Targets (RET).
  - Macro-economic analysis - Frontier works with the Monash Centre of Policy Studies (CoPS) to assess the economy-wide effects on climate change policy using computable general equilibrium (CGE) modelling;
- **Strategic response and transaction advice:** Frontier regularly assists private sector clients and potential investors to understand risks and opportunities created by the introduction of new climate change policies, how markets will evolve and how best to respond to these new challenges. This includes advice to energy sector participants (current or potential), offset providers (such as forestry) and energy regulators who must adapt to changing markets.

## Executive summary

### *Importance of an appropriate carbon pricing scheme*

The Australian Government wants to implement a greenhouse gas emissions trading scheme (ETS) they have called the Carbon Pollution Reduction Scheme (CPRS). The effect of the CPRS is to add a cost to as many goods and services as possible to reflect the damage that greenhouse gases are doing to the environment. The Government hopes that adding this greenhouse gas cost will induce people to produce and use goods and services that involve lower production of greenhouse gases.

In terms of the breadth and magnitude of economic effects the CPRS is arguably the most significant policy change in Australia's history. As such there is a substantial onus on the Government to demonstrate that whatever policy is introduced it is the best that can be developed. Moreover, unlike any other reform, the benefits to Australia from pricing and reducing emissions are contingent on global action, and on how Australia manages the interaction between its efforts and the efforts of its international partners. In fact, because Australia is such a small country, in terms of our contribution to global emissions, the environmental benefits from unilateral action by Australia are extremely small, and are unlikely to be measurable. On the other side of the coin, the costs will be both measurable and immediate.

As is widely recognised, concluding a binding agreement to stabilise global concentrations of greenhouse gases is, to use the words of Professor Garnaut, a "diabolical policy problem". This is because access to the benefits of lowering carbon emissions is not restricted to those participating in abatement activities, such as implementation of an ETS. Under these circumstances there is an incentive to free ride. Free riders avoid the adverse impacts on their own economy, but cannot be excluded from the benefits created by the actions of others.

One approach to overcoming free riding has been to negotiate binding international agreements whereby signatories all agree to simultaneously establish their own policies or programs to reduce greenhouse gases. In short, commitments are made to share the pain of meeting global greenhouse targets. Nevertheless, there continues to be reluctance among many countries to introduce domestic measures unless others do. The Government wishes to break this deadlock by introducing the CPRS ahead of securing a wider global agreement to co-ordinate policies to reduce greenhouse gases. While early action can pay off in the long run, it is not without short term risks in the form of adjustment costs, particularly in light of Australia's position as a small, open, energy-intensive economy.

To reinforce the opening remarks, given the potentially significant and immediate costs that will be associated with the implementation of an ETS, policy leadership, no matter how important it may be in encouraging international action, is not costless. It therefore remains the case that the Government should be in the position to reassure the Australian community that the CPRS is the best that we can do.

### ***This report***

This report examines the opportunities to improve the CPRS in terms of lowering the economic costs and, consequently, potentially tightening the emissions target.

Lowering the economic costs of the CPRS will not only aid Australia's economy, but will assist in securing greater political support for a scheme. If some of the cost savings from improving the CPRS can be used to tighten the emissions target, this will increase the chances of securing greater global support for reduction commitments, which is ultimately in Australia's economic interest.

The work presented in this report has been jointly commissioned by the Federal Coalition and Senator Xenophon. This analysis has been requested to assist these parties in their consideration of possible amendments to the CPRS legislation currently before the Parliament.

The following three key CPRS policy alternatives were modelled and compared in this report:

- 1. CPRS:** as proposed by the Government
- 2. CPRS Adjusted:** This adjusts the standard CPRS by increasing and extending the Energy Intensive Trade Exposed Industry (EITEI) shielding proposed by the Government and removing the arbitrary EITEI compensation thresholds. This is modelled with the same unconditional CPRS target (ie 5% reduction on 2000 levels by 2020)
- 3. CPRS–Intensity:** This scenario combines the extended EITEI assistance described in Scenario 2 above with the introduction of an intensity target for permit allocations to the electricity sector. This would operate in the same manner as the EITEI shielding (ie contingent on output), but since this would dampen the harsh rises of electricity prices it would reduce or remove the need for (a) revenue churning to households and (b) EITEI assistance for indirect electricity price effects. This would mean that fewer permit funds are required to compensate for the losses incurred due to created by the CPRS. This is broadly consistent with the Waxman-Markey Bill in the United States, which proposes to distribute permits to electricity companies to offset increases in electricity prices.

The modelling presented in this report takes into account the effects of the global financial crisis and the most recent, of many, changes to the CPRS.

### **Summary**

The analysis presented and discussed in this report has found that the CPRS can be greatly improved with relatively simple changes. Amendments to the Government's proposed CPRS would lead to the scheme becoming cheaper, greener, fairer and more secure.

Using the CPRS-Intensity combination (described above) it was found that the Real GDP costs can be cut by around \$49b, or a third *even with a doubling of the Government's unconditional emission reduction target* of 5% below the level in 2000. Cutting emissions by 10% of the 2000 level will mean that by 2020 greenhouse gases will have been cut by nearly 28% compared to doing nothing, and by 2030 emissions will have been cut by 46%.

In other words, it is possible and relatively simple to amend the Government's CPRS so it is twice as 'green' and one third cheaper. To understand this how this can be achieved, it is necessary to understand that the direct cost of abatement represents only a proportion of the overall economy-wide costs. Emissions trading ensures that the direct abatement costs are low. However, other costs stem from a number of sources, primarily distortions to investment and savings decisions that can arise from introducing a new tax; the interaction between higher prices and existing tax-induced distortions (known as the "tax interaction effect") and inefficiencies and distortions that arise from recycling revenue to finance lump sum transfers.

The improvement in the economics of the CPRS reported below is mostly due to a reduction in the economic distortions arising from Government's revenue churning, as described above. This churning occurs, for example, when the Government charges electricity consumers for the full cost of greenhouse gas emissions from electricity production and then returns the money it collects to various groups it believes are deserving of Government support to compensate for the financial hardship arising from the CPRS. If this reallocation of funds is made an in-built feature of the trading scheme, rather than a distinct exercise that relies on the Government to intercept and reallocate permit funds, this ensures lower electricity price increases, which is better for the economy.

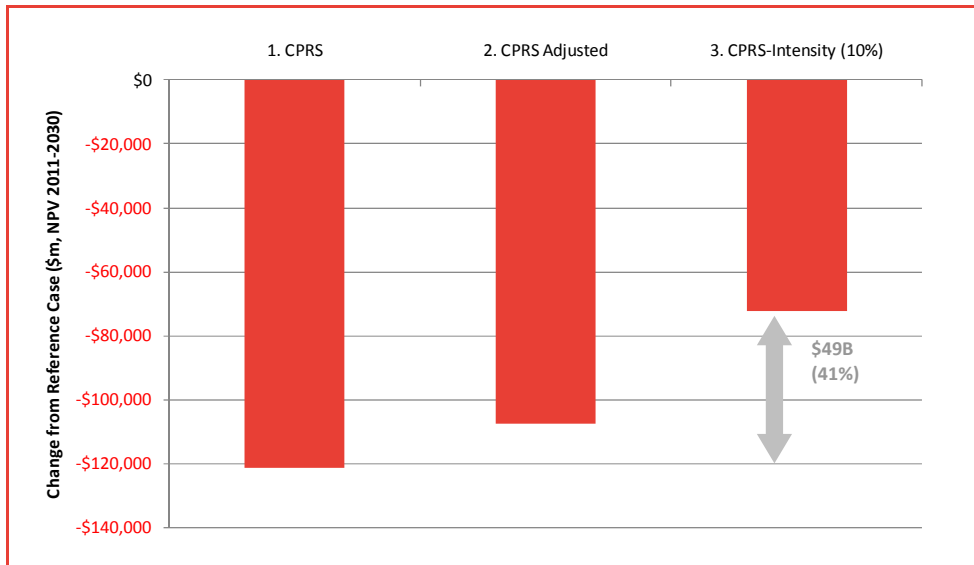
Furthermore, if the reallocation of funds is an in-built design feature of the trading scheme it further removes the Government from the carbon market and this will give investors greater certainty since the hand out of permits will not be at the discretion of the Government, as it is in the CPRS. This will increase the probability that investors will commit the funds to build the infrastructure necessary to efficiently achieve the emissions target.

## Cheaper

The analysis found that the CPRS would result in a net economic cost, measured in terms of a reduction in the cumulative discounted dollar value in real GDP<sup>1</sup> over 20 years compared to a Reference Case where no action is taken, of \$121b<sup>2</sup>. With relatively minor changes to the shielding arrangements to the CPRS (Scenario 2 described above) the GDP costs can be reduced to \$108b.

By contrast, the CPRS-Intensity approach can reduce the GDP costs, *even with a doubling of the Government's emissions reduction target*, to \$72b. While this still is a large cost, it represents a 41% cost saving compared to the Government's CPRS scheme, including the cost of achieving a more ambitious target.

Figure 1: Cumulative GDP comparison



## Greener

The reduction in scheme costs obtained by moving to the CPRS-Intensity approach allows the Government to adopt a more ambitious target or to make the introduction of the CPRS more economically palatable, or both. The 41% reduction in economic costs from adopting the CPRS-Intensity approach includes the costs of doubling the Government's unconditional 5% abatement

<sup>1</sup> The Commonwealth Treasury uses GNP (rather than GDP) as an indicator of welfare changes. GNP accounts for that part of domestically generated income that accrues to non-residents, including that part required for the purchase of emissions permits from the international market. It also accounts for foreign generated income that accrues to domestic residents. Qualitatively, the effects on GNP are similar to the effects on GDP but GNP declines more than GDP because under all of the CPRS scenarios a substantial number of permits are imported.

<sup>2</sup> Discounted at 4%

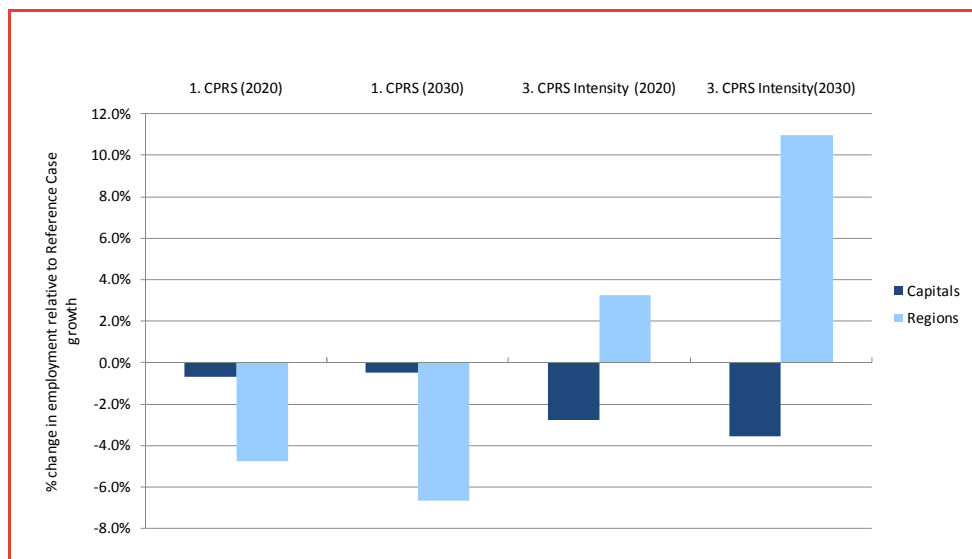
target to 10% of 2000 levels by 2020. The CPRS Intensity scheme includes a firm target; any increase in allocation to the electricity sector (as a result of higher levels of generation) or EITTEI requires a reduction in permits auctioned by Government or an increase in imports of international permits to meet the target. This does not increase costs to, or require further emissions cuts from, other sectors because, under all variants of proposed design, international permit trade means that domestic emissions are not limited to the permits issued by the Australian Government. Liable parties are indifferent as to the source of permits. This is fully accounted for in the modelling.

### Fairer

This study found that even taking into account Government measures to mitigate the effects of the CPRS the costs of introducing the scheme will be unevenly distributed across the Australian community. In particular, sectors and regions that rely on the use of large amounts of energy and produce large amounts of greenhouse gases, from which the entire economy benefits, will bear the majority of the burden of reducing Australia’s greenhouse gas emissions.

The effect on these sectors and regions is more dramatic than the overall negative effect on the economy. This report shows there is also significant scope to better address the needs of rural Australia. Relieving farmers from the burden of having to acquire emissions permits but allowing them to sell credits from abatement under the CPRS-Intensity approach goes a considerable way to alleviating the harshness of the CPRS on rural and regional communities. However, even with these changes, more work may need to be done to help relieve the burden of the emissions reduction scheme on regional communities.

Figure 2: Employment effects by policy: capitals versus regions



Aside from the relief to the regions, the CPRS-Intensity approach delivers a less severe, more orderly transition of electricity prices. This better reflects the ability of households and businesses to adapt to the energy price signal and significantly reduces revenue churn passing through Government. This is a decisive factor in maintaining improved investment (and hence 'green' growth), compared with the CPRS. This treatment also alleviates the regressive nature of increased electricity prices on the community (and food prices, if agriculture is included), while the inclusion of the ability to incorporate credits for consumer abatement into the CPRS-Intensity scheme ensures a more positive, encouraging approach for securing customer demand response for the benefit of the environment.

In the short-term, the CPRS is expected to increase average household electricity costs by approximately \$260-280 per year (as a direct result of the CPRS). Most of this increase would be avoided in the short-term under the CPRS-Intensity approach, where annual household electricity costs are likely to rise by \$8 (2012) to \$44 (2016).

### ***More secure***

The CPRS will not achieve its aim unless investors commit to undertake the necessary investments in new technology and infrastructure. Investors have indicated that they will be wary about making such large and long lived investments if the profitability of these investments is subject to a world in which rules and regulations are uncertain. This is particularly the case when many of these potential investors regard the proposed compensation arrangements as inadequate. Although some dispute these claims, they have not yet been tested under any comparable scheme in the world (since the European Emissions Trading Scheme provided more substantial compensation). Given the critical importance of a reliable electricity supply at a time when Australia needs to commit to significant new investment in supply for the first time in many years, it will be important to have practical policies in place to ensure investors will commit to the development of new capacity.

Some of the economy-wide cost savings identified in this report could be used to safeguard against this risk. This could encourage and enable generators to source and spend the necessary capital to produce 'greener' energy, and ensure that Australians will have continued access to reliable and competitively priced energy.

### ***The proposed changes to the CPRS***

The key proposed changes to the CPRS are summarised in the following table. The centrepiece of these changes is the adoption of an intensity based approach for electricity; removing the arbitrary thresholds for EITEIs; relieving farmers from the burden of having to acquire permits, but allowing them to compete with farmers in the US and Europe by providing them the same ability to create

and sell abatement credits to the market; and allowing consumers to sell credits to positively reward them for undertaking abatement activities.

Combined, the above measures allow the Government to **double** the unconditional emission abatement target, appropriately compensate generators and encourage investment in 'greener' technologies, while still delivering very significant cost savings compared to the Government proposed CPRS.

Feature	CPRS	Proposed change
Targets	Unconditional target of 5% reduction on 2000 levels by 2020	Unconditional target of 10% reduction on 2000 levels by 2020
Agriculture	Subject to coverage from 2015	Included only as a potential offset provider
Emissions Intensity Trade Exposed Industry (EITEI) thresholds	<p>Emissions intensity thresholds:</p> <p>“High” indicatively includes            Sheep and cattle, Dairy, Rice, Cement, Steel and Aluminium</p> <p>“Low” indicatively includes            Pigs, LNG, Paper products, Chemicals, Ceramics, Alumina and Other non-ferrous metals</p> <p>Coal mining technically eligible but excluded</p>	<p>Remove the distinction between high and low “thresholds”</p> <p>Standard EITEI treatment applied to fugitive emissions from coal (as per other sectors)</p>
EITEI baseline allocations	<p>Baseline allocation rate of 94.5% (high)/66% (low) of current emissions levels</p> <p>Baseline rate declines by 1.3%/year</p> <p>4.5%/6% reduction after year 5 (recession buffer expires)</p> <p>Removed between 2020 and 2024.</p>	<p>Increase baseline to 100% (of best practice) for all above low threshold</p> <p>No decline in baseline rate until comparative global action</p> <p>Replace indirect shielding measures with electricity baseline (below)</p>
Electricity sector	<p>N/a (compensation is required to offset rising energy costs)</p> <p>Electricity Sector Adjustment Scheme (ESAS) to provide estimated \$3.5B in compensation to electricity generators</p> <p>ESAS distribution mechanism directs most compensation to brown coal generators</p>	<p>Introduce electricity baseline (to replace indirect shielding, reduce revenue churn): reduces price effects for consumers</p> <p>Removes the need for compensation to households/businesses</p> <p>Increase ESAS pool to ensure energy security and new investment</p> <p>Revise ESAS distribution baseline to better reflect damages to black and brown coal</p>
Energy efficiency	Voluntary action and energy efficiency not recognised	Allow creation of credits

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