



**Submission to the Senate Select Committee on Climate Policy,
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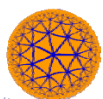
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Improving the proposed Carbon Pollution Reduction Scheme

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Biography

For background and context, this section gives a brief biography of the author of this submission.

Salim Mazouz is the founding Director of the economic consulting firm EcoPerspectives. He has extensive experience in climate change policy and economics as well as policy evaluation more broadly.

Before setting up EcoPerspectives, he was Associate Director with the consulting firm McLennan Magasanik Associates. During his time with MMA, Salim was the Managing Consultant of the Canberra Office and conducted a range of climate change policy assignments for various state and federal government departments as well as private sector clients.

Prior to joining MMA, Salim was a member of the Secretariat to the then Prime Minister's Task Group on Emissions Trading where he managed energy market and economic modelling of climate change policy scenarios, provided analytical input across the secretariat's work program and contributed to the Task Group's report.

Salim has held various Director level positions at the Australian Government Department of the Environment and Water Resources and the Australian Greenhouse Office, including: Director of the Energy and Sustainability Policy Section; Director of the Environmental Economics Unit; and acting Manager of the Emissions Projections and Economic Analysis Team.

Earlier in his career, he was a Senior Economist at The Productivity Commission where he provided advice on the efficiency and effectiveness of various government programs.

Table of Contents

Biography	2
Table of Contents	3
Recommendations and Findings	4
Overview	4
Emissions Target	4
Assistance to Emissions-Intensive, Trade-Exposed (EITE) Sectors	4
International linking	5
Voluntary action	5
Overview	6
1 Emissions Target	7
2 Assistance to EITE sectors	10
Carbon Leakage	11
3 International linking	17
4 Voluntary action	18
References	20

Recommendations and Findings

Overview

Recommendation 0.1: The Senate should seek to amend the proposed CPRS so as to enhance its efficiency, effectiveness and fairness, but should keep in mind that rejecting the proposed CPRS, even if the amendments are not agreed to, is likely to increase the cost of achieving the emission cuts Australia will need to make over the coming decades.

Emissions Target

Finding 1.1: Emissions trading has counter-cyclical properties. When the economy is booming, emissions permits become scarcer and carbon prices rise. Conversely, when the economy is struggling, demand for emissions permits falls and therefore so does their price. Therefore, the adverse effects on carbon intensive industries of introducing emissions trading in a weak economic period (such as the current global financial crisis) are automatically cushioned.

Recommendation 1.1: There is a strong case for early and strong action on climate change mitigation, including on economic grounds. Consistent with Professor Garnaut's recommendations, Australia's emissions reduction target should be tightened to at least 10% below 2000 levels by 2020 in the absence of coordinated global action, and to at least 25% as Australia's contribution to achieving a global stabilisation of atmospheric greenhouse gases at 450 ppm CO₂-e.

Recommendation 1.2: Proposed design features in the CPRS that introduce economic or legal impediments to future tightening of Australia's 2020 emissions reduction target should be kept to a minimum. EITE assistance should be reviewed in this light.

Assistance to Emissions-Intensive, Trade-Exposed (EITE) Sectors

Finding 2.1: The transitional assistance rationale for assistance to EITE sectors, as distinct from the carbon leakage rationale, is not well served by the proposed CPRS design. If the aim was to assist the Australian economy to transition as smoothly and efficiently as possible, transitional assistance would be designed separately to target the most vulnerable sectors and regions. In addition transitional assistance could be designed to avoid muting abatement incentives by being de-coupled from output.

Finding 2.2: The lack of activity-based abatement incentives facing recipients of EITE assistance is likely to substantially increase the economy-wide cost of achieving any given abatement target.

Finding 2.3: Given current evidence about the likely extent of carbon leakage, the proposed EITE assistance package appears excessive.

Recommendation 2.1: In light of technology-based abatement opportunities and the likelihood that historic industry average emission baselines will be inflated, the rates of assistance should be reduced substantially, especially the 90% rate. Furthermore, the 'carbon productivity dividend' should be increased from 1.3% per year to about 4% per year.

Recommendation 2.2: An alternative to *Recommendation 2.1* would be to reinstate the cap to proportion of permits available for free recommended in the Green Paper, ideally at a level well below the 30% suggested in the Green Paper.

Recommendation 2.3: Australia should actively seek to establish an international body to coordinate EITE assistance internationally (perhaps the International Energy Agency given its expertise and independence), and ideally allow this body to design appropriate and coordinated EITE assistance schemes.

Recommendation 2.4: Review the EITE assistance package with a view to finding a more targeted assistance method that is commensurate to the leakage problem and avoids most of the design flaws in the current assistance package. The review should be conducted by an independent body, such as the Productivity Commission, with the analytical firepower to sift through the evidence and industry claims. The review should report within one to two years to ensure that a revised assistance scheme can be implemented around 2015 taking into account the five year notice period for policy change.

International linking

Recommendation 3.1: Proposed restrictions on the export of Australian emissions permits should be removed.

Recommendation 3.2: The proposal to allow unrestricted imports of international emissions permits from countries that have signed up to a binding target is sound and should be supported. However, restrictions should be placed on permits from countries that have not yet signed up to binding targets due to concerns about the quality of permits as well as implications for their ability to agree to targets later,

Voluntary action

Finding 4.1: Voluntary action has already made a difference to Australia's emissions and will continue to do so after the CPRS is introduced. Rather than stifling voluntary action, the CPRS will actually make it easier for individuals to reduce their carbon footprint.

Finding 4.2: While encouraging additional voluntary action could be beneficial, adding a voluntary carbon credit scheme to the CPRS would distort abatement incentives away from their cheapest source and toward whatever is classed as 'voluntary action'. Proposals to pay households for 'voluntary action' rely on a misleading use of the word voluntary

Overview

To ensure the Australian economy can begin to adjust efficiently to what inevitably will be a world with constrained greenhouse gas emissions over the decades to come, there is a need for a broad-based carbon price signal. Such a price signal should be introduced as soon as possible to ensure that the economy can adjust smoothly and at least cost.

The proposed Carbon Pollution Reduction Scheme (CPRS) – while leaving significant room for further refinement and improvement – will introduce such a carbon price signal and should be supported. Calls for radical overhaul of the approach to emissions reduction, such as moving to a tax-based system, are unlikely to deliver net benefits to the community.

There is a strong temptation to compare a pure carbon emissions tax system (or any other theoretical proposal for that matter) to the necessarily compromise-driven implementation of an emissions trading scheme through the CPRS. However, while theoretically potentially more attractive, any emissions tax system would be subject to significant compromises in its own right were it to be proposed as an actual policy instrument. Furthermore, emissions trading has a number of advantages over a tax-based system, not just drawbacks. This is why emissions trading is the instrument of choice as a broad-based price mechanism in most parts of the world; why it has been proposed by all significant Australian reviews on the issue to date, including the National Emissions Trading Taskforce report sponsored by State and Territory governments (NETT 2007), the previous Australian government's Task Group on Emissions Trading (TGET 2007), the Garnaut Review (Garnaut 2008); and why emissions trading is the current Government's instrument of choice, as proposed in the Green and White papers (Australian Government 2008 and 2009).

This is not to say that the proposed CPRS is perfectly balanced and free of flaws. Far from it, there are many possible improvements to the CPRS that would significantly enhance its efficiency, effectiveness and fairness. But these flaws are not sufficient to warrant throwing out the baby with the bathwater, so to speak.

Rejecting the proposed CPRS altogether is unlikely to result in fundamental improvements that cannot be achieved, in due course, after the CPRS is introduced. The main effect of rejecting the CPRS and going back to the drawing board would be to delay the introduction of a price signal and to increase the uncertainty for market participants, while deliberations continue about if, when and what kind of comprehensive policy action may finally be agreed.

That said, amendments are worth pursuing to enhance the efficiency, effectiveness and fairness of the proposed scheme now and into the future. Some potentially worthwhile amendments are discussed in the following sections. They include:

- Setting a tighter emissions target (Section 1);
- Better targeting of industry assistance (Section 2); and
- Resetting the international linkage parameters (Section 3).

Calls for measures to provide credits for 'voluntary action' (see Section 4), and for increased assistance to so called Emissions-Intensive Trade-Exposed (EITE) companies (see Section 2), are not in the public interest and should be resisted.

Recommendation 0.1: The Senate should seek to amend the proposed CPRS so as to enhance its efficiency, effectiveness and fairness, but should keep in mind that rejecting the proposed CPRS, even if the amendments are not agreed to, is likely to increase the cost of achieving the emission cuts Australia will need to make over the coming decades.

1 Emissions Target

In the context of discussions about an appropriate emissions reduction target for Australia, a common view is that if Australia cut emissions on its own by as large a number one cares to name, the risk of catastrophic climate change would not be appreciably affected because Australia produces a very small proportion of total emissions, in the order of 1.3%. This is high in the sense that Australia's population accounts for only about 0.3% of the global population, but the fact remains that even if Australia's emissions contribution dropped instantly by 1 percentage point to 0.3% of global emissions (ie by about 80%), without coordinated international action, the risk of catastrophic climate change would remain largely unaffected.

However, these arguments fail to focus on the main issues. Science tells us that global emissions will need to be cut very strongly if dangerous climate change is to be avoided. Australia will have to contribute significantly to this effort, and will not be allowed the luxury of letting others do the abatement while Australia continues to emit at high levels. This is because Australia is rich (ie can afford it), has very large per capita emissions and therefore even Australia's closest allies are unlikely to let it get away with minimal abatement. In other words, Australia will need to restructure its economy to achieve very significant cuts in the medium to long term.

Thus, when the Government is balancing the costs of action on climate change mitigation against the emissions reductions it proposes to put in place in the short run, it needs to bear in mind that the longer significant action is delayed, the higher is the economic cost of decarbonising the economy in the long run (and also the higher is the risk of international negotiations failing). This point is often lost on those advocating delay or weak targets over the coming years. Delayed action and weak short term targets actually *increase* rather than reduce the overall cost of achieving the longer term emissions reduction task facing Australia. This is consistent with economic theory (acting later truncates the early parts of the inter-temporal abatement cost curve and hence leads to a more constrained space over which abatement can be optimised) and is also supported by modelling (eg Australian Treasury 2008)

The 5 to 15 % target range proposed in the CPRS is likely to provide a weaker price signal than needed to achieve efficient long term abatement. Shorter term political considerations make tightening the target difficult, but if the Senate can do anything to achieve tighter targets, it can help *reduce* the overall economic cost of the abatement task Australia is likely to face over the coming decade, in addition to making Australia's contribution to international negotiations more credible and productive. The Garnaut review made a strong and compelling case for a target range of 10% below 2000 levels by 2020 in the absence of coordinated global action, and 25% as Australia's contribution to a global effort to achieve a stabilisation of CO₂-e at 450 parts per million.

It is worth noting in this context that a 450 ppm target is not as risk-averse as it may first seem. Observed climate outcomes are consistently on the upper bound of the expected distribution, and highly reputable scientists are increasingly calling for stabilisation targets well below 450ppm (eg. Hansen et al 2008, p1):

If humanity wishes to preserve a planet similar to that on which civilization developed and to which life on Earth is adapted, paleoclimate evidence and ongoing climate change suggest that CO₂ will need to be reduced from its current 385 ppm to at most 350 ppm, but likely less than that.

Given uncertainty about both the science and what the international community may commit to and when, it appears prudent to ensure that Australia maintains the flexibility to tighten its future target at reasonable cost.

An argument that has arisen since Professor Garnaut's report is that the global financial crisis (GFC) provides a case for delay. There are arguments both ways about climate change policy that follow from the GFC and associated economic hardship. On the one hand, the GFC is squeezing many employers and causing job losses that will be exacerbated by the CPRS. On the other hand, the CPRS provides strong investment signals to lower emission activities in the economy and can therefore provide an employment and investment engine to lead the economic recovery, especially if coupled with targeted stimulus packages (see for example Bowen et al (2009) and Edenhofer and Stern (2009)).

A point that is often missed in the GFC-related debate on climate change policy is that emissions trading has counter-cyclical properties. When the economy is booming, emissions permits become scarcer and carbon prices rise. Conversely, when the economy is struggling, demand for emissions permits falls and therefore so does their price. In other words, the introduction of emissions trading would have stronger contractionary impacts on high emissions industries in strong economic times than in weak economic times, and therefore is less likely to have net negative effect on overall output and employment.

Finding 1.1: Emissions trading has counter-cyclical properties. When the economy is booming, emissions permits become scarcer and carbon prices rise. Conversely, when the economy is struggling, demand for emissions permits falls and therefore so does their price. Therefore, the adverse effects on carbon intensive industries of introducing emissions trading in a weak economic period (such as the current global financial crisis) are automatically cushioned.

The jury is still out on the merits of delay as a result of the GFC, whereas the case for a carbon price signal to be introduced as quickly as possible is very strong. Unless clear evidence is provided to show that the CPRS will adversely affect the Australian economy overall (rather than just high-emissions sectors of the economy) the GFC should not be used as an excuse to delay the CPRS.

Recommendation 1.1: There is a strong case for early and strong action on climate change mitigation, including on economic grounds. Consistent with Professor Garnaut's recommendations, Australia's emissions reduction target should be tightened to at least 10% below 2000 levels by 2020 in the absence of coordinated global action and to at least 25% as Australia's contribution to achieving a global stabilisation of atmospheric greenhouse gases at 450 ppm CO₂-e.

Because the emissions reduction target proposed in the CPRS is, as argued above, weaker than it should be, it is vital to remove any economic or legal impediments to tightening the target once the CPRS is passed. Such flexibility is particularly important given the Australian Government's continued willingness to be part of a global solution to achieve a stabilisation of greenhouse gases in the atmosphere of 450 ppm CO₂-e (Rudd 2008, pages 27-28 and 29). To be part of such an effort, Australia would likely have to cut its emissions by at least 80% relative to 2000 levels by 2050. The economic cost of having a 15% upper bound on the 2020 target while aiming for over 80% by 2050 would be very large.

The proposed design of the CPRS does hamper the flexibility to tighten the 2020 target, especially through the proposed industry assistance components (as argued below in Section 2). This would significantly increase the cost of tightening the 2020 target and therefore

compromise Australia's ability to achieve the cuts required to achieve the 450 ppm stabilisation goal at least cost, let alone more ambitious targets, should these become necessary.

Proponents of locking in a carbon constraint argue that this is necessary to provide investment certainty. This argument relies on the notion that governments should not change policy lightly because this introduces 'sovereign risk' and makes a country a less desirable investment location. However, this overlooks the benefits of allowing risk premiums in the market to reflect real uncertainty when governments are not changing their minds randomly but rather in reaction to relevant scientific and economic information. For example, if the Australian government found that an international agreement was in the offing and wanted to play its part in sealing the deal by agreeing to tighter targets, having had industry evaluate the chance this would happen ahead of time – while increasing risk premiums – would enhance economic efficiency rather than detract from it. In fact, any action by governments to constrain price movements in any part of the economy would reduce risk premiums, but no economist would argue that this would enhance economic output overall.

On balance, the above arguments do not justify rejecting the CPRS overall, because this is likely to delay the introduction of a price mechanism for many years, with uncertain outcomes as to what target would be adopted then. In all likelihood, rejecting the CPRS in favour of an uncertain mechanism to be introduced at an uncertain date in the future will increase the cost of achieving deep cuts even further.

Recommendation 1.2: Proposed design features in the CPRS that introduce economic or legal impediments to future tightening of Australia's 2020 emissions reduction target should be kept to a minimum. EITE assistance should be reviewed in this light.
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2 Assistance to EITE sectors

The price mechanism introduced by having an emissions trading scheme promises to deliver abatement at lowest overall cost by equalising the marginal cost of abatement across the economy. However, due to non-price market failures and behavioural issues, the price mechanism on its own does not deliver an equalisation of the social costs of abatement across the economy under all circumstances. Indeed, while a broad based price mechanism is the right foundation upon which to base abatement policy, information failures, collective action problems, the public good nature of some research and development, behavioural issues and carbon leakage respectively provide a strong case for *well designed and evidence-based* complementary measures.

For example, information failures and behavioural barriers to the uptake of energy efficiency opportunities provide *a prima facie* case for energy efficiency measures to complement emissions trading. Similarly, the public good aspects of technology development and deployment, on the face of it, justify technology related interventions. In the same vein, carbon leakage provides a *prima facie* case for assistance to emission-intensive, trade-exposed (EITE) sectors of the economy. As with all interventions, care should be taken to ensure that any assistance provides net benefits to the community overall and this requires impartial and evidence-based analysis.

Unfortunately, as will become apparent in the sub-section on carbon leakage below, it appears that the proposed EITE assistance scheme is too generous in the overall level of assistance it commits, and not well targeted enough to avoid imposing higher costs than necessary to achieve any domestic emissions target.

In addition to the carbon leakage rationale, transitional assistance is sometimes cited as another justification for EITE assistance (Australian Government 2008a and 2008b). However, the design features that allow the EITE assistance package to avoid carbon leakage also come at a high cost. They favour a small set of sectors, chosen on the basis of their trade exposure and emissions intensity, over legitimate regional needs as well as over other sectors in the economy that may actually be more vulnerable to transitional pressures. If the aim was to assist the Australian economy to transition as smoothly and efficiently as possible, transitional assistance would be designed separately to target the most vulnerable sectors and regions. Furthermore, as discussed in the sub-section below on carbon leakage, the EITE assistance package greatly reduces incentives for *activity-based abatement* from the assisted sectors.¹ This shifts a higher abatement burden onto the rest of the economy and hence makes its transitional task harder. While removing activity-based abatement incentives may be necessary to avoid emissions leakage, transitional assistance could be designed to preserve all abatement incentives, technology-based as well as activity-based.

Finding 2.1: The transitional assistance rationale for assistance to EITE sectors, as distinct from the carbon leakage rationale, is not well served by the proposed CPRS design. If the aim was to assist the Australian economy to transition as smoothly and efficiently as possible, transitional assistance would be designed separately to target the most vulnerable sectors and regions. In addition transitional assistance could be de-coupled from output, and thus avoid muting abatement incentives.

¹ *Activity-based abatement* opportunities, are opportunities to reduce emissions intensive output and consumption in the economy as opposed to *technology based abatement* opportunities which relate to installing more efficient production technologies.

Carbon Leakage

The carbon leakage rationale for assistance is that, in the absence of a worldwide carbon constraint, reduced production of emissions-intensive and trade-exposed (EITE) outputs in a carbon-constrained Australia may simply give rise to additional production, and hence emissions, in other countries that are not carbon-constrained. This undermines the efficiency of the price mechanism by setting a carbon price signal that is too strong for goods that can be traded internationally.² At the extreme, carbon leakage may perversely even lead to higher overall global emissions. This can occur when production in a carbon-constrained country is replaced by more carbon-intensive production in a country that is not carbon-constrained.

This amplified carbon price signal can cause more output reduction in EITE sectors than is efficient, leading to too much adjustment of the economy away from such sectors in the lead-up to a more comprehensive global effort to reduce emissions. Assuming that Australian EITE sectors have no influence on the international prices of the commodities they produce, the government would ideally provide EITEs with exactly the difference between the output price they would face if all competitor economies had the same carbon constraint as Australia, and the price they actually face (Garnaut 2008).

But conversely, giving EITE industries *more* than the price differential proposed by Garnaut would lead to *too little* adjustment in EITE sectors and an over-adjustment in the rest of the economy – or to an increased need to purchase international permits – to compensate for the loss of efficient adjustment from EITE sectors.

While it is important to keep this balancing act in mind, practical implementation issues and costs are also important considerations. The government's judgement, as expressed in the White Paper, is (Australian Government 2008b, Volume 2, page 12-6):

“while it would be desirable for the EITE assistance program to support production and investment decisions that would occur in a [globally] carbon constrained future, the Government's assessment is that there are significant limitations on the extent to which such a policy could be implemented...”.

The Government proposed to base eligibility for assistance on measures of trade exposure and historic emissions intensity (as a function of output or value added, whichever is more favourable to industry), and to set two threshold based rates of assistance as a function of emissions intensity alone (again as a function of output or value added, whichever is more favourable to industry). Key features of the proposed EITE assistance package are reproduced in Table 2.1 below.

² To elaborate: Suppose a company shuts down production after the introduction of a carbon price in Australia and thereby avoids x tons of carbon emissions domestically at a cost of c dollars. At first glance, this reduced domestic production provides abatement at a cost of c/x dollars per tonne. However, when carbon leakage is present, (some of) the domestic output reduction is offset by additional production elsewhere in the world and gives rise to carbon emissions there. This leakage needs to be taken into account when calculating the cost of abatement in Australia. So, if the additional international emissions are y tonnes, then the actual (leakage adjusted) abatement cost is $c/(x-y)$ dollars per tonne rather than the lower value of c/x . Thus, when emissions leakage occurs (i.e. $y > 0$) the market gives a price signal that is too strong and may lead to more activity reduction than is efficient.

Table 2.1 Summary of EITE assistance features proposed in the CPRS

Feature	Policy
Form of assistance	Allocation of permits at the start of each compliance period Based on individual entity's previous year's level of production Upon closure, must relinquish permits for production that did not occur in that year
Basis of assistance	Provided to new and existing entities undertaking an eligible EITE activity prescribed in regulations
Scope of assistance	Direct emissions covered by the Scheme Scheme related cost increase for electricity and steam use Scheme related cost increase for upstream emissions from natural gas and its components (e.g. methane and ethane) used as feedstock
Eligibility for assistance	Eligibility of activity based on an assessment of all entities conducting an activity Trade exposure assessed through quantitative and qualitative tests Emissions intensity assessment based on average emissions per million dollars of revenue or emissions per million dollars of valued added Time period for assessment: - emissions data: 2006-07 to 2007-08 - revenue/value added data: 2004-05 to the first half of 2008-09
Initial rates of assistance	90% for activities with emissions intensity of at least 2000t CO ₂ -e/\$m revenue or 6000t CO ₂ -e/\$m value-added 60% for activities with emissions intensity between 1000t CO ₂ -e/\$m and 1999t CO ₂ -e/\$m revenue or between 3000t and 5999t CO ₂ -e/\$m value-added
Carbon productivity contribution	Initial rates of assistance will be reduced by a carbon productivity contribution of 1.3% per annum
Allocative baselines	Allocative baseline for activity based on historic industry average level of emissions per unit of production for all entities conducting activity Electricity allocation factor set at 1t CO ₂ -e per MWh nationwide, may be adjusted in respect of existing large electricity supply contracts Natural gas feedstock allocation factor set state by state
New entrants	New entities conducting an existing EITE activity will receive the same assistance as existing entities conducting the activity Activities new to Australia will be able to apply for EITE eligibility -- assessment and baselines made on the basis of international best practice Allocations to existing entities conducting EITE activities will not be adjusted for allocations to new entrants
Quantum of assistance	Government expects allocations to EITE sector to be around 25% initially (35% including agriculture), increasing to around 45% by 2020
Review of assistance	EITE assistance program to be reviewed by independent body at each five year review point, or at request of Minister Review would consider: - inclusion of additional activities in light of commodity price changes and expansions in Scheme coverage - consistency of EITE program with overall rationale and principles - existence of broadly comparable carbon constraints applying internationally Five years' notice of any changes to EITE program to be provided, unless required for compliance with Australia's international trade obligations

Source: Australian Government 2008, Volume 2, p12-2

A desirable element of the proposed CPRS is that it creates full incentives for *technology-based abatement*, that is, abatement resulting from improved production technology. This is because free permit allocations are based on the historic emissions intensity of output, and not on current or future emissions. This is very important because it ensures that the price mechanism can provide the appropriate abatement signals for production methods in assisted sectors. In other words, the CPRS design ensures that EITE sectors face the full carbon price incentives for improving technology used in production.

However, the same design feature, by linking free permit allocation to output, inhibits the price mechanism's incentives for *activity-based abatement* in the EITE sectors. That is, incentives for consumers and investors to substitute away from emissions-intensive goods and services are largely removed from EITE sectors. Of course, removing any activity-based abatement incentives is precisely how the assistance package is intended to avoid carbon leakage and would not be an issue if all EITE assistance actually prevented leakage.³ However, to the extent that at least some of the assistance is provided to firms that would not have leaked production and associated emissions overseas, the muting of activity-based abatement incentives can have detrimental effects on the efficiency of the CPRS.

As discussed above, the Government chose rough surrogate measures (emissions intensity and trade exposure) to determine eligibility for assistance, due to real difficulties in implementing more targeted assistance. This, and the very weak evidence for leakage in the first place (discussed below), combine to suggest that a significant proportion of EITE assistance is in fact likely to go to firms that would *not* have leaked production (and associated emissions) overseas. The lack of activity-based abatement incentives is therefore likely to have highly distorting effects, and to overlook low-cost abatement opportunities available in some of the most emissions-intensive activities in the economy.

Finding 2.2: The lack of activity-based abatement incentives facing recipients of EITE assistance is likely to substantially increase the economy-wide cost of achieving any given abatement target.

Before discussing specific design features and recommending changes to the proposed EITE assistance package, it is worth briefly reviewing the evidence relating to emissions leakage. Modelling by the Australian Treasury suggests that fears of carbon leakage are overplayed (Australian Treasury 2008, p 169):

The results show little evidence of carbon leakage. Where shielding is not applied, there is a small change in the emissions and output from EITES in non-participating regions. This suggests the emissions prices in these scenarios are not high enough to induce significant industry relocation. Noticeable impacts only occur at higher emission prices (roughly double the price of the CPRS -5 scenario [CPRS -5 scenario real prices: \$20/t CO₂-e at 2010; \$35/t CO₂-e at 2020; and \$115/t CO₂-e at 2010]).

These modelling results occur despite the fact that “both GTEM and MMRF [the models used by Treasury in this modelling exercise] are likely to overestimate carbon leakage and the relocation of production activities” (Australian Treasury 2008, p 170).

A further sign that ‘shielding’ EITE activities from the carbon price is unlikely to yield net economy-wide benefits is that (Australian Treasury 2008, p 169);

The very emissions intensive non-ferrous metal sector (aluminium) benefits most from shielding, ... However, once the sector is no longer shielded, as the rest of the world joins the scheme, aluminium sector output falls.

This is problematic because it shows that the sector is over-protected from carbon price rises through shielding, and therefore likely to receive more than the efficient price differential proposed by Garnaut as EITE assistance.

The Business Council of Australia report (BCA 2008) provides rare evidence that even investments in highly affected industries can have significant margins before they would

³ This is because, to the extent that the production would have happened overseas anyway and that this would have had no impact on world or Australian prices, there would be no activity-based abatement anyway.

relocate to the next best alternative. As pointed out by McLennan Magasanik Associates, “in the example provided by the BCA, no leakage would occur at carbon prices below \$28 per tonne” (MMA 2008, p15). This result applies despite a number of unrealistic assumptions made in the BCA report to support the case for increased and broadened assistance to industry. Overall, MMA concluded that (MMA 2008, p.4):

... the proposed compensation schemes [by the BCA and in the CPRS] for EITE activities are likely to impose significant additional costs on non-EITE sectors and EITE activities that fall below the relevant thresholds. Additional, detailed economic analysis of the magnitude of the leakage problem, as well as a detailed analysis of policy design options to avoid emissions leakage is necessary before a policy program of the proportions suggested in the CPRS paper is implemented.

The main economic analysis regarding leakage undertaken since the MMA’s 2008 paper was the Treasury modelling described above; and yet the Government proceeded to propose even higher rates of assistance than were offered in the Green Paper.

Given the lack of evidence in support of significant emissions leakage, at least at the prices likely to result from the proposed CPRS targets, the Government’s proposal to provide about \$45 billion of assistance to EITE sectors over the coming decade for the 5 percent reduction target (in today’s dollars) appears wasteful and unfair. MMA also highlighted the magnitude of the assistance package and, as discussed above, concluded that the assistance was excessive given the evidence (2008, p. 13):

Were 30% of permits allocated freely to EITE activities as proposed in the Green Paper, then assuming a carbon price of \$20 per tonne, the assistance could be worth around \$3 billion per year. At \$40 per tonne – the figure used in the BCA report – this would increase to around \$6 billion per year; more than half the total Australian Government spending on infrastructure, transport and energy or about a third of the total spending on education.

Finding 2.3: Given current evidence about the likely extent of carbon leakage, the proposed EITE assistance package appears excessive.

The CPRS proposal to provide less than 100 percent of sector emissions for free to EITE sectors (namely 60 and 90 percent depending on the emissions intensity of the sectors, falling by the proposed ‘carbon productivity dividend’ of 1.3 per cent per annum) preserves some activity-based abatement incentives.

However, technology-based abatement options available to EITE sectors may in fact reduce their emissions relative to the historic industry average by enough to leave some recipients of the 90 percent assistance with no actual loss, and potentially even net gains. At the extreme, therefore, the EITE assistance package could actually provide a perverse output *subsidy* to some firms within EITE sectors, potentially subsidising production of some of the most emissions-intensive goods in the Australian economy.

In any case, abatement opportunities over time are likely to outstrip the 1.3 percent annual ‘carbon productivity dividend’, especially for new investments, negating at least some of the benefits of the dividend and increasing the risk of eventually ending up with some perverse subsidies. In addition, the industry-average, historic emissions used as a baseline for assistance in the CPRS are subject to asymmetric information. The government will need to obtain the numbers from the very industries that stand to gain from having high baselines. Given the potent combination of 1) the concentration of assistance on a small number of large firms (see TCI 2009); 2) the highly organised nature of the main sectors that stand to benefit from EITE assistance; and 3) the Government’s not requiring all relevant firms in a given industry to provide emissions intensity data from their operations, there is a strong likelihood that the baselines Government will agree to will be inflated.

Recommendation 2.1: In light of technology-based abatement opportunities and the likelihood that historic, industry-average emission baselines will be inflated, the rates of assistance should be reduced substantially, especially the 90% rate. Furthermore, the ‘carbon productivity dividend’ should be increased from 1.3% per year to about 4% per year.

The magnitude of assistance is particularly worrying in light of the fact that it is not a pure transfer, but rather an intervention that changes relative prices and that favours emissions-intensive sectors over less emissions-intensive sectors of the economy. In addition to the effects on activity-based abatement incentives and the higher overall costs of achieving any particular abatement target described in *Finding 2.1* above, the assistance package will make it harder to tighten targets in the period to 2020. This is because the package increases the economic cost of tightening the target substantially. Indeed, for every percentage point tightening of the target under the proposed CPRS design, non-EITE sectors are likely to need to reduce their emissions by about one and a half percentage points, or purchase international permits to make up the difference. This is because, the tighter the target is, the higher is the proportion of free permits given away for free to EITEs, and thus the more costly is the muting of activity-based abatement incentives for EITEs.

It was to overcome this problem, amongst other things, that the Green Paper proposed to cap the proportion of free permits to 30% of emissions from sectors covered by the scheme. However, subsequent lobbying led to the Government removing this design feature and replacing it with the much weaker ‘carbon productivity dividend’ of 1.3 percent per year.

Recommendation 2.2: An alternative to *Recommendation 2.1* would be to reinstate the cap to proportion of permits available for free recommended in the Green Paper, ideally at a level well below the 30% suggested in the Green Paper.

Another problem with the lack of narrow targeting of the EITE assistance is that it is likely to be seen as protectionist by other countries, and thus fuel the use of emission reduction measures for trade protectionism worldwide. This would not be in Australia’s national interest.

Country-specific measures to curb leakage, such as the allocation-based assistance package proposed in the CPRS, and unilateral border tax adjustment proposals floated in the EU and the USA, will make it difficult for the whole world to move away from EITE assistance over time. This is because the assistance measures implemented in one country make it more difficult to avoid leakage by all other countries by, in effect, providing a carbon emissions safe-haven even in countries that otherwise do have significant measures to curb emissions domestically. A system of unilateral EITE assistance schemes will therefore let EITE industries ‘off the hook’ for the foreseeable future.

Unilateral EITE assistance measures render more difficult efforts to pursue internationally coordinated action to redress any leakage problems, such as attempts at sectoral agreements. This is because EITE industries have a strong incentive to oppose such moves if the alternative is being let off the hook.

Recommendation 2.3: Australia should actively seek to establish an international body to coordinate EITE assistance internationally (perhaps the International Energy Agency given its expertise and independence), and ideally allow this body to design appropriate and coordinated EITE assistance schemes.

Overall, given the amount of assistance at stake and its potential to significantly increase the cost of achieving any particular target, as well as the lack of supporting evidence and all the other design features discussed above with their potential to produce adverse effects, the whole EITE assistance scheme should be reviewed. An independent body with the analytical capacity to sift through the evidence, industry claims and the subtle and intertwined effects of EITE assistance features – such as the Productivity Commission – should review the assistance design. The review should report within one to two years to ensure that a revised assistance scheme can be implemented around 2015, taking into account the five year notice period for policy change.

Recommendation 2.4: Review the EITE assistance package with a view to finding a more targeted assistance method that is commensurate to the leakage problem and avoids most of the design flaws in the current assistance package. The review should be conducted by an independent body, such as the Productivity Commission, with the analytical firepower to sift through the evidence and industry claims. The review should report within one to two years to ensure that a revised assistance scheme can be implemented around 2015, taking into account the five year notice period for policy change.

3 International linking

A well established result in economics is that free trade is advantageous by allowing countries to exploit their respective comparative advantages. While the maximum benefits of free trade occur if no country imposes trade barriers, individual countries can benefit from unilateral trade liberalisation as well. This same result also applies in the context of emissions permits, so that fewer restrictions on the trade of emissions permits will generally yield better economic outcomes for both importing and exporting countries.

The acceptance of international permits in the CPRS is therefore, on the face of it, beneficial and likely to reduce the cost of any particular emissions target. The proposed restriction on the export of permits, on the other hand, is not. The justification for restricting the export of permits is that this keeps domestic prices from rising, should the international price of permits rise, and thereby protect domestic industry from one potential source of higher carbon prices. The same protectionist logic applies to any other export – for example, if Australia restricted exports of bauxite, this would be beneficial to the domestic Aluminium industry – but few would argue that this approach would be in the national interest!

Recommendation 3.1: Proposed restrictions on the export of Australian emissions permits should be removed.

As argued above, allowing free trade gives overall welfare gains, and this applies to emissions permits as well. However, there are two caveats that make a compelling case for restrictions on the import of emissions credits derived from the Clean Development Mechanism (CDM). Unlike credits from countries that have signed up to binding targets, CDM credits derive from offsets: that is, from projects in developing countries that can show they save emissions relative to a baseline. However, the baselines are notoriously difficult to establish. There are therefore real doubts about the 'additionality' of emissions savings associated with CDM credits. In other words, one CDM credit may, in reality, be worth less, in some instances a lot less, than one avoided tonne of global emissions.

In addition, if a country has already exploited its cheapest abatement opportunities and sold them via the CDM, but has not yet signed up to an emissions target, this compromises their ability and willingness to commit to stringent targets. This is because each country will balance the expected cost of achieving a particular target with their international responsibility (and international pressure) to contribute to the global abatement task, just as Australia is doing. However, by selling the cheapest abatement opportunities available, achieving a specific target (netting out any abatement already sold via the CDM) becomes more costly.

There are also a number of benefits to purchasing CDM credits; these are outlined in the White Paper and will not be repeated here. On balance, the arguments for permitting the import of CDM credits are strong enough to warrant allowing at least some to enter the market. The arguments against are, however, also strong enough to warrant restricting the amount of CDM permits allowed to enter the market.

Recommendation 3.2: The proposal to allow unrestricted imports of international emissions permits from countries that have signed up to a binding target is sound and should be supported. However, restrictions should be placed on permits from countries that have not yet signed up to binding targets, owing to concerns about the quality of permits as well as implications for their ability to agree to targets later,

4 Voluntary action

A criticism of the CPRS that has featured prominently in public debate recently is that 'voluntary action' by individuals and firms to reduce their emissions will make no difference once an economy-wide emissions target is set. Essentially, the argument is that given a fixed cap, anything anyone does to reduce their emissions has no effect on overall emissions (since the cap sets the permissible amount of economy-wide emissions), and only redistributes the burden of emissions reductions from one party to another.

However, this criticism is misguided, what individuals do has already made a difference to Australia's emissions and will continue to do so under the CPRS. The Government already took into account the good work done by those who have reduced emissions voluntarily in setting the target by balancing the expected cost of achieving any particular target against the desire to reduce emissions. This is because voluntary action has reduced emissions already and the models that assessed the expected future costs of cutting emissions derived their parameters from a world with voluntary action. Therefore the expected cost of achieving the targets set in the CPRS are lower than they would have otherwise been and this contributed to the Government's willingness to set the target they have chosen.

And when Governments set targets in the future, they will again balance the economic costs against the desire to be part of the global solution to the climate change problem. Any voluntary action that happens before a new target is set contributes to the Government's ability to commit to deeper cuts than would otherwise be the case.

To suggest that what individuals do makes no difference is misleading and counterproductive. It undermines the confidence with which concerned individuals take action to reduce their carbon footprints. The CPRS, by imposing a price on carbon and thereby changing relative prices in favour of low-emissions goods and services, will actually make it easier for individuals to reduce their carbon footprint.

Far from being irrelevant once the CPRS is introduced, the actions undertaken by individuals will continue to be vital to the success of the CPRS in achieving the goals set, and will contribute to the ability to set more ambitious goals in future. In addition to helping achieve better environmental outcomes, voluntary action also helps reduce the cost of achieving emissions reductions in the economy and thereby helps the economy to transition with less disruption and job losses.

Finding 4.1: Voluntary action has already made a difference to Australia's emissions and will continue to do so after the CPRS is introduced. Rather than stifling voluntary action, the CPRS will actually make it easier for individuals to reduce their carbon footprint.

Having a scheme in place that fixes targets is not a problem as such, and is in fact consistent with the international architecture under Kyoto. What really matters is the stringency of the current target and the ability to make the target more stringent later. So the more relevant question in relation to voluntary action is: can more voluntary action be encouraged? The answer to this question is yes: better information on how to achieve a lower carbon footprint, encouraging innovation over and beyond incentives provided by the carbon price signal, demonstration of technologies and methods through Government procurement can all be efficiency-enhancing ways of encouraging additional voluntary action.

In contrast, proposals to create a market for voluntary action are likely to increase the cost of achieving any specific target, by essentially double-counting abatement from 'voluntary action'. That is, the CPRS provides a price incentive for all market participants to reduce

their carbon footprints, all the way down the production chain to the final consumer. Adding additional incentives via tradable carbon credits, as has been suggested (eg Denniss 2008), would lead to 'voluntary actors' being paid to reduce their emissions rather than letting them do it 'voluntarily'. That is, in addition to having an incentive to reduce their emissions as a result of CPRS-induced rises in the prices of energy and other carbon-intensive goods, proponents of a voluntary action scheme within the CPRS are advocating that people should be paid to undertake 'voluntary' abatement. This seems a rather misleading use of the term voluntary

Furthermore, adding a voluntary action scheme to the CPRS would distort abatement incentives away from their cheapest source and toward whatever is classed as 'voluntary action'. Of course, where the Government has exempted goods such as petrol from the price signal, some other incentive might be useful; but this applies regardless of the kind of action, voluntary or otherwise. In such cases it would be far better to include exempted sectors or commodities in the scheme, rather than try to redress inefficiencies arising from imperfect coverage through measures that would introduce distortions of their own, and only rectify the problem for a small subset of emitters (and voluntary action accounts for a very small fraction of expected abatement).

Finding 4.2: While encouraging additional voluntary action could be beneficial, adding a voluntary carbon credit scheme to the CPRS would distort abatement incentives away from their cheapest source and toward whatever is classed as 'voluntary action'. Proposals to pay households for 'voluntary action' rely on a misleading use of the word voluntary

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