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THE LOGIC OF COLLECTIVE ACTION AND AUSTRALIA'S CLIMATE POLICY

by

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Abstract. We analyse the long-term efficiency of the emissions target and of the provisions to reduce carbon leakage in the Australian Government's Carbon Pollution Reduction Scheme, as proposed in March 2009, and the nature and likely cause of changes to these features in the previous year. The target range of 5-15% cuts in national emission entitlements during 2000-2020 was weak, in that on balance it is too low to minimise Australia's long-term mitigation costs. The free allocation of output-linked, tradable emission permits to Emissions-Intensive, Trade-Exposed (EITE) sectors was much higher than proposed earlier, or shown to be needed to deal with carbon leakage. It plausibly means that EITE emissions can rise by 13% during 2010-2020, while non-EITE sectors must cut emissions by 34-51% (or make equivalent permit imports) to meet the national targets proposed, far from a cost-effective outcome. The weak targets and excessive EITE assistance illustrate the efficiency-damaging power of collective action by the 'carbon lobby'. Resisting this requires new national or international institutions to assess lobby claims impartially, and more government publicity about the true economic importance of carbon-intensive sectors.

Key words: climate policy, Australia, targets, emission trading, carbon leakage, lobbying

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1. Introduction

The evolution of the Australian Government's Carbon Pollution Reduction Scheme (CPRS) during 2008-2009 provides a classic example of Mancur Olson's (1965) "logic of collective action" at work. Small groups of carbon-intensive firms, who would inevitably suffer most under a sound, national-interest policy proposal, were able to lobby much more powerfully than large groups like taxpayers or consumers, and arguably changed the proposal into something which better protects their special interests. The lobbying was made more effective by appealing to the free-riding argument that nothing a small nation like Australia does can significantly affect global greenhouse gas emissions (hereafter "carbon emissions" or just "emissions").

Australia's climate policy changed a good deal before and after the November 2007 election of a Labor government under Prime Minister Rudd. In a major departure from earlier policy (summarised by Pezzey et al. 2008), outline plans for a domestic emissions trading scheme (ETS) had already been made under the previous (conservative, Howard) government (PM&C 2007). These were rapidly advanced by the new government, including economic modelling of emission cuts (Australian Treasury 2008) and a government-commissioned yet independent review of climate policy (Garnaut 2008a). The Government's formal CPRS proposals came in a Green (discussion) Paper in July and White (draft policy) Paper in December (Australian Government 2008a, 2008b), with draft legislation presented in March 2009. Further changes were made in May and November 2009 (Australian Government 2009a, 2009b) to try to get the Scheme passed by the Senate (upper house of Parliament, in which the Government has no majority). The Senate still rejected the scheme, but as at January 2010 the Government intends to reintroduce it in its November 2009 form, and its future is quite uncertain.

The above documents contain over 2000 pages, so we can explore only selected issues here, and we choose two: targets for Australian emission "entitlements" (explained below) in 2020, conditional on international policy developments; and special assistance for emission-intensive, trade-exposed (EITE) sectors of the economy. Such sectors are those most vulnerable to carbon leakage, whereby emissions abatement by activities in Australia causes activities abroad to increase output and emissions.¹ Of course, showing how subsequent changes to proposals on these issues favoured the carbon-intensive industries which formed the dominant lobby groups on the CPRS (hereafter "the carbon lobby"²) does not prove consequence. It is hard to see the

¹ We define leakage in the standard way, as the rise in carbon emissions abroad divided by the cut in Australian emissions that causes the rise. "Preventing leakage" (stopping *any* emissions rise abroad) would then be an impossibly restrictive policy goal. By contrast, the Green Paper (p27, and similarly on White Paper p.xxxiii and Australian Treasury 2008 p.xiv) defined carbon leakage as a situation where "EITEs choose to relocate elsewhere, with no consequent global reduction in emissions", i.e. at least 100% leakage by our definition; and preventing this in aggregate is indeed a worthwhile goal.

² This shorthand overlooks differences among several industry lobby groups. In particular, it is implicit below that the carbon lobby relevant to targets includes emission-intensive, *non*-trade-exposed industries (notably electricity generators), and so is broader than the lobby relevant to EITE issues.

behind-the-scenes persuasion which, according to rare, anonymous evidence in Pearse (2007), is the real influence on Australian climate policy. Nevertheless, the changes in proposals highlighted below are so striking that the influence of the carbon lobby – obviously keen on a low target (hence a low carbon price) and/or high levels of assistance – is unmistakable.

We show lobbying pressure mainly by comparing the Garnaut Review and/or Green Paper to the White Paper, with assistance from the Treasury modelling, since these four documents contain the most detailed analyses. In so doing we seek to learn durable lessons applicable to many countries, whatever the eventual policy outcome in Australia, rather than to be as up-to-date as possible; though where relevant we also touch on the two CPRS changes in 2009.

Section 2 sets the scene by noting the main Australian emission targets during 2008-9, and analysing GDP, employment and carbon emissions by sector. Our contributions then follow. In Section 3 we analyse the diplomatic and economic case for stronger 2020 targets, and the lobbying arguments used to support the White Paper's weaker position. Section 4 describes the greatly expanded EITE assistance proposed in the White Paper, compared with earlier recommendations and proposals. We show how this assistance level is not supported by evidence of sufficient carbon leakage, is demonstrably inefficient and inequitable, and reveals the carbon lobby's influence. Section 5 proposes new institutions for impartially assessing lobbying claims, and more government publicity about the economy's structure, as two ways of producing better climate policy. Section 6 concludes.

2. Developments in Australian emission targets, and their economic context

2.1 Emission targets

The Green and White Papers refer to ‘targets for reducing Australia’s carbon pollution’. But the CPRS allows unlimited permit imports, so Australia's actual emissions can exceed its target. ("Permit imports" here means international Kyoto units from project-based mechanisms, but not permits from other developed countries' ETSS, until further review (White Paper, p.xxx-xxxii).) All emission targets in this paper therefore refer to cuts in total Australian greenhouse emission *entitlements* (called "allocations" in Australian Treasury (2008, Table 1)).

The Green Paper did not propose any targets. The White Paper proposed a Scheme start date of July 2010 and the following conditional targets for cuts during 2000-2020 (p.xix):

- 5% as "a minimum (unconditional) commitment to reduce emissions, irrespective of the actions by other nations"
- 15% as "a commitment to reduce emissions in the context of global agreement where all major economies commit to substantially restrain emissions and all developed countries take on comparable reductions to that of Australia."

The May 2009 CPRS changes deferred the start to July 2011, and added a third target:

- 25% "if the world agrees to an ambitious global deal to stabilise levels of CO2 equivalent at 450 parts per million or lower by mid-century." Requirements of this deal include "a collective reduction [in major developing country emissions] of at least 20% below business-as-usual by 2020, and a nominated peak year for individual major developing economies."

These stringent conditions appear unlikely to be met in practice, and no White Paper scenario modeling is available for the 25% scenario, so we focus our analysis on the 5% and 15% targets.

2.2 The Economic Context

Despite Australia's agricultural and especially mining sectors being relatively large for a rich country, the strong contrast between Australian economic and emission structures shown in **Table 1** is unexceptional. The carbon-intensive sectors (summed in the last column) account for 87% of total direct emissions, but only 29% of GDP and 21% of employment.

This high concentration of emissions in a few, intensive sectors, enhanced by the greater capital intensity, size and geographical isolation of typical workplaces in those sectors, produces the small-group conditions identified by Olson (1965) that foster much stronger collective action by the carbon lobby in its own interest than by many other interest groups. For example, there are about 15 members of the Australian Aluminium Council and 35 of the Minerals Council of Australia, as against 5000 of the Australian Retailers' Association and 200,000 of the Australian Consumers'

Association. So although the main way to cut actual emissions at least overall cost to the nation is to apply a pervasive carbon price with an ETS or a carbon (emissions) tax, this will tend to cause larger percentage cuts in output, employment and profit in carbon-intensive sectors, and they will lobby strenuously for various forms of protection or shielding. Acceding to their demands can easily produce the reverse, perverse effect of larger percentage cuts (or their equivalent in permit imports) being demanded from *non*-carbon-intensive sectors, as we discover in Section 4.

Table 1: Australian GDP, jobs and greenhouse gas emissions by sector in 2006
(percentages are of total for whole economy)

<i>Sector</i>	<i>Agriculture, forestry & fishing</i>	<i>Mining</i>	<i>Manufacturing</i>	<i>Electricity, gas & water</i>	<i>Commercial services & construction</i>	<i>Transport and storage</i>	<i>Residential</i>	<i>Carbon-intensive sectors</i>
<i>ANZSIC code</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E-H, J-Q</i>	<i>I</i>		<i>A-D, I</i>
GDP	3%	8%	11%	2%	62%	5%	8%	29%
Jobs	3%	1%	10%	1%	79%	5%		21%
Direct emissions	24%	9%	12%	36%	4%	7%	9%	87%
Inclusive emissions	24%	12%	25%		12%	7%	20%	68%
Inclusive or (direct) emissions intensity in kgCO ₂ e/\$	5.22	0.87	1.42	(9.20)	0.12	0.88	1.46	1.42
Sources: ABS National Accounts 5206.0 for GDP, and Labour Force 6291.0.55.003 for jobs; DCC National Greenhouse Gas Accounts 2008 for emissions. Inclusive emissions allocate all electricity, gas and water emissions to other sectors in proportion to their electricity use.								

3. Target-setting: different interpretations of self-interest

Here we mount two arguments about targets for stronger cuts in Australian emission entitlements during 2000-2020. The first appeals to short-term, reciprocal, self-interest, assuming Australia has influence. The second appeals to long-term self-interest, recognising that Australia will probably have to make deep long-term cuts (henceforth meaning by 2050) as part of global action to avoid dangerous climate change. Then we discuss key lobbying counterarguments, some tantamount to exhortation to free-riding, which may have been influential in limiting the White Paper targets to 5-15%.

3.1 Short- and long-term considerations for the 2000-2020 target

A commonly discussed upper limit for the global carbon concentration in order to avoid dangerous climate change has been 450ppm CO₂-e (IPCC 2007), though many reputable scientists now call for stabilisation targets well below this (Hansen et al. 2008). But deriving a national emissions target from a global concentration target also depends on the degree of global cooperation envisaged, and on Australia's commitment to be part of that cooperation.

After modelling the global emissions cut physically required, and the different cuts that could reasonably be expected from developing and developed countries, the Garnaut Review made a strong case for a conditional Australian 25% target for 2020 (Garnaut 2008a, where the conditionality would be much easier to meet than for the 25% target proposed in the May 2009 CPRS changes). The case appealed mainly to Australia's short-term, reciprocal, self-interest: "if we are not prepared to pay our fair share in the cost, then we cannot expect other countries to do so". Garnaut (2009) stressed from his own interaction with policymakers in Indonesia and China that the "fair share" argument certainly had diplomatic traction, and rejected the common lobbyist view that Australia has no influence.

There is also a second, rather neglected argument. Even if Australia's policy had no diplomatic influence, long-term self-interest argues for it to begin re-structuring towards a less emissions-intensive economy. Given mounting scientific evidence, deep global cuts, like those required by a 450ppm or 550ppm CO₂-e target – and the White Paper launch continued to support the former (Rudd 2008, p.27-9) – are surely inevitable. Australia will have to contribute significantly to these deep cuts: because it is rich and has very large per-person emissions, even its closest allies are unlikely to let it get away with minimal abatement. Garnaut (2008a, p283) suggested Australia's "full part" of a 450ppm or 550ppm target will respectively be 90% or 80% emission cuts during 2000-2050.

If Australian businesses continue to invest using carbon price assumptions consistent with much shallower short- or long-term cuts, then many investments may turn out to be more costly overall than less emissions-intensive alternatives, and in extreme cases may have to be retired early, at great cost. Of course one could argue that if entities invest in the 'wrong' technology mix and end up paying higher than expected carbon penalties, then that is a matter for them. However, the proposed CPRS would lock in a

path of domestic carbon prices through the combination of the domestic target and the permit import provisions. If this path to 2020 were consistent with the concentrations of 450 to 550ppm discussed above, there would be no problem. But this seems unlikely in the short term, given the low domestic targets likely to be chosen by importing countries (including Australia), and the weak quality control on permit imports to Australia (making such permits likely to be low cost, but contributing to global abatement much less than their face value).

It is important for government to consider the longer term costs that may arise from keeping short- to medium-term carbon prices low. For instance, the economic cost of abating by no more than 15% by 2020 while aiming for 80% or more by 2050 would be great, as supported by modelling, for example:

"There are advantages to early action if emission pricing expands gradually across the world. Economies that defer action face higher long-term costs, as more emission-intensive infrastructure is locked in place and global investment is redirected to early movers." (Australian Treasury 2008, p.89)

These considerations argue strongly for tougher emission control in Australia, combining a tighter domestic target, and permit import restrictions. Given uncertainties about the emission cuts needed to avoid the worst impacts of climate change and what the international community may commit to and when, and these arguments for a tighter target, it is vital to remove any legal or economic obstacles to tightening the target later. The White Paper's CPRS design was such an obstacle, both directly by proposing to **lock in a maximum 15% target for 2020**, and indirectly through the proposed EITE assistance, as argued below.

3.2 Carbon lobby arguments for a lower, more rigid target

Public lobbying about the targets was vigorous (the Green Paper stimulated around 1000 submissions). Two issues which received much emphasis (as did carbon leakage, discussed later) were the supposed futility of Australian abatement, even if carbon leakage is minimised, and the long-term unaffordability of cuts in the region of 25%.

The first point, on effectiveness, is simply that if Australia cuts emissions on its own, even savagely, the risk of catastrophic climate change would be barely affected because Australia produces only about 1.3% of global emissions (CAIT 2009). As a naive argument for Australia to free-ride on other countries' abatement efforts, or at least to wait for countries like the USA and China to show a lead, this is countered by our above discussion of the country's short and long-term self-interest, given the realities of climate diplomacy and the long-term cost of delaying the restructuring of its economy. Nevertheless, this argument is regularly repeated by carbon lobbyists – for example, "a unilateral 20 per cent reduction in Australian emissions by 2020 will impose real pain on the Australian economy but reduce global emissions by only 0.2 per cent" (MCA 2008) – and clearly weakens public support for any given level of cuts.

The second point, on cost, is that compared to a business-as-usual, 'Reference' case of a 40% rise in emissions during 2000-2020 (as in Australian Treasury 2008, Table 1), a

25% cut during 2000-2020 is a 46% cut on business-as-usual, and hence self-evidently unaffordable. Even a 10% cut was held to be "extremely challenging for the electricity sector" because it would be "in effect, a reduction...of 34% from business-as-usual levels" (BCA 2008, p11). Yet the Treasury's calculated difference in per-person GDP in 2020 between the 25%-cut and Reference scenarios is less than 2.2%! However, this assumes cuts are achieved at minimum national cost, which Section 4 shows to be far from true under the White Paper proposals.

Also, many argued that supposed job losses caused by the CPRS justify delaying the Scheme's start until the global financial crisis starting in 2008 has passed. The net effect of delay on jobs is complex, since uncertainty from delay could itself harm investment and other jobs. We do not discuss this issue further, other than to note that the May 2009 decision to delay the CPRS start (and also add a low price cap for 2011-12) serves the carbon lobby's interests; and to contend that the "recession" rationale for this was weak, in view of Budget forecasts of significant economic growth during 2010-11 and beyond (Australian Government 2009c).

A further exaggeration of abatement costs comes from (often implicit) suggestions that tighter Australian targets would cause much higher carbon prices. This would not happen under current proposals because, as noted in Section 2.1, the CPRS allows unlimited permit imports. So the CPRS carbon price will eventually be capped by a global price that is unaffected by actions of a country as small as Australia.³ A tighter target will therefore cause not extra domestic abatement, but extra permit imports at a constant price, though excessive protection of EITEs (defined in Section 4.1 below) means both imports and the overall cost to Australia will be excessive for any given target.

The White Paper's asymmetry in allowing unlimited permit imports while banning permit exports is further evidence of carbon lobby power. Importing permits caps the Australian carbon price, while not exporting permits would allow the price to fall below the world price: both are favourable to the carbon lobby. Tellingly, the government has shown little concern about leakage from low-quality permit imports – which, coming from the Kyoto Protocol's project-based mechanisms like the Clean Development Mechanism, may represent actual emission cuts much less than their face value (Schneider 2009), hence the case for permit import restrictions – yet strenuous concern to minimise leakage from EITE emission cuts.

Emissions-intensive sectors lobbied hard for rigid targets like the White Paper's upper, 15% target. For example, "the energy industry considers that as a minimum, annual scheme caps should be set [i.e. rigid] for a 10-year period" (ESAA 2008, p13). Lobbyists claimed rigidity is needed for investment certainty: that if the target is shiftable instead, this introduces 'sovereign risk' which deters investors. However,

³ Despite our argument that Australia's CPRS targets are weak, modelling of comprehensive international mitigation and emissions trading showed that for the 5% or 15% targets, Australia will probably be a net importer of permits (Australian Treasury 2008). The "eventually" qualification is because in the short term the carbon price will be capped directly anyway (White Paper p.xxxi).

allowing market risk premiums to reflect real uncertainty, when governments shift targets not randomly but in reaction to relevant scientific and economic information, enhances rather than detracts from economic efficiency. By contrast, sovereign risk arises from governments arbitrarily changing regulatory parameters, which would cause inefficient risk premiums and is to be discouraged.

4. Assistance to emission-intensive, trade-exposed industries

4.1 The devilish dilemma of dealing with carbon leakage

In any trading economy, the uniform carbon price created by a simple ETS will not deliver *global* abatement at least cost to the domestic economy, because of carbon leakage to non-carbon-constrained economies, where firms expand output and emissions in response to falling output and emissions from carbon-constrained domestic firms. Such leakage is worst from (carbon-)emission-intensive, trade-exposed domestic sectors in the economy, so there is a *prima facie* case for assistance (such as output-related free permits, or many alternatives) to EITE sectors. But because of unavoidable limitations on data, and the inevitable collective lobbying by those sectors, policymakers face huge difficulties in devising good EITE assistance. The data limitations spring from the wide range of potentially EITE "activities" like aluminium smelting and liquid natural gas (LNG) production,⁴ and from firms often not knowing their abatement costs accurately, while having a strong incentive to hide or distort what they do know. These limitations make it almost impossible to avoid a devilish dilemma (strictly a continuum): *either* one can limit total EITE assistance so it remains of net benefit to the economy, but allows the inefficiency and injustice of excessive carbon leakage from just a few sectors; *or* one can prevent excessive carbon leakage from any EITE sector, but only by giving harmfully excessive total EITE assistance, particularly as conditions change over time. Such harm can arise in three separate ways:

- (a) the direct distortion from abatement incentives (the effective carbon price after assistance) in EITE sectors being too weak, so that too little abatement occurs there, while too much occurs in the *non*-carbon-intensive sectors of the economy, and/or too many permits are imported;
- (b) two indirect effects, that excessive total assistance leaves insufficient revenue for:
 - (i) efficiency-raising incentives needed to correct market failures in innovating low-emissions technologies, and in energy-saving by households, especially low-income ones; and
 - (ii) compensation to households for higher energy prices caused by carbon pricing.

Given the tendency for EITE assistance to be increased by strenuous lobbying, and the harm just described, total EITE assistance needs to be well-justified by expert, impartial evidence about the likely carbon leakage. This has not happened in Australia, as we note later.

4.2 The Garnaut, Green Paper and White Paper proposals

Garnaut's preferred solution was (Garnaut 2008a, p.345):

"For every unit of production, eligible firms receive a credit [from the government] against their permit obligations equivalent to the expected uplift in world product prices that would eventuate if our trading competitors had policies similar to our own."

⁴ So as to better target EITE assistance, activities are the proposed basis of assistance, not the usual industrial sub-classifications aggregated in Table 1.

One can broadly divide abatement into *activity-based* opportunities, to reduce emissions-intensive production and consumption types, and *technology-based* opportunities, to install more efficient production technologies. The production-based credits proposed by Garnaut give a strong incentive for technology-based abatement and little incentive for activity-based abatement; but that is their purpose, to minimise carbon leakage. However, if the eligibility criteria are too lax, so that many firms subject to little carbon leakage get such credits, direct distortion (a) would indeed happen.

One can never know whether inevitable data limitations and lobbying pressures would have stopped the Garnaut proposal from avoiding the devilish dilemma, since the proposal was discarded by the Green Paper as impractical, and again by the White Paper (White Paper p.12-6). Instead, the Government proposed output- (production-) related free permits to EITE sectors (henceforth just "EITE permits"). There is no space here to summarise the hugely complex EITE proposals in both the (524-page) Green and (820-page) White Papers and then compare the two, so in **Box 1** we summarise just the White Paper proposal.⁵ We contend that, while this will still induce some technology-based abatement, it will give excessive total assistance, leading to both direct distortion (a) and insufficient revenue (b).

[continued...]

⁵ The May 2009 changes boosted the 90% and 60% rates of assistance in Box 1 to 94.5% and 66% for the first 5 years as a "Global Recession Buffer". The November 2009 changes made these higher rates permanent. So the latest EITE provisions would be even more distortionary and unaffordable than in our analysis below, which is necessarily based on the White Paper assistance rates.

Box 1: Key elements of White Paper proposals for assistance to EITE activities
[page numbers refer to the White Paper]

If an activity has both a trade share (the ratio of the value of imports and exports to the value of domestic production) > 0.1 in any one of 2004-5, 2005-6, 2006-7 or 2007-8 [p.lxxv],
and has an emissions intensity in one of two ranges below,
then in year t (with $t = 0$ in 2010), entity i undertaking activity a gets:

$$A_t^{ia} = O_{t-1}^{ia} \times EI^{a+} \times k_t^a \text{ tCO2-e of free permits}$$

where

O_{t-1}^{ia} tonnes = output of activity a by entity i in year $t-1$;

EI^{a+} tCO2-e / tonne (of activity output)

= EI^a tCO2-e/tonne, the historic, direct *emissions-intensity baseline* for activity a
+ allocations in tCO2-e/tonne for indirect electricity emissions and upstream natural gas
feedstock emissions for activity a ; and

either $k_t^a = 90\% / (1.013)^t$ [p.12-55]

if EI^a/RI^a tCO2-E/\$m, the historic *emissions intensity* for activity a , with RI^a being the
historic revenue or value-added in \$ per tonne of activity, is such that

$$EI^a/RI^a \geq 2000 \text{ tCO2-E}/(\$m \text{ revenue}), \text{ or}$$

$$EI^a/RI^a \geq 6000 \text{ tCO2-E}/(\$m \text{ value-added}) \text{ [p.12-58];}$$

or $k_t^a = 60\% / (1.013)^t$ [p.12-55]

if EI^a/RI^a tCO2-E/\$m is such that

$$1000 \leq EI^a/RI^a \leq 2000 \text{ tCO2-E}/(\$m \text{ revenue}), \text{ or}$$

$$3000 \leq EI^a/RI^a \leq 6000 \text{ tCO2-E}/(\$m \text{ value-added}) \text{ [p.12-58].}$$

Activities which are formally assessed as eligible for EITE assistance will be listed publicly in the Scheme regulations. Two likely 90% examples are aluminium smelting and cement clinker production, and two likely 60% examples are alumina refining and LNG production. [p.12-45]

Five years' notice will be provided of any modifications to the EITE assistance program, unless required for compliance with Australia's international trade obligations. [p.lxxix]

By contrast, the Green Paper proposals were neatly summarised in the White Paper as:

"Assistance would be calibrated over time such that the share of assistance provided to the EITE sector does not increase significantly over time. Assistance would be withdrawn in the event of acceptable international action. ...Overall, allocations to EITE activities could be up to around 30 per cent including agriculture." (Australian Government 2008b, p.B-11)

In addition, the Green Paper had no value-added options for the emissions-intensity tests, and a lower limit of 1500 tCO2-E/(\$m revenue) to qualify for 60% free permits.

Though the Green Paper and the Garnaut Review proposed different mechanisms, the latter also (p.xxxii) judged that EITE assistance should be worth significantly less than 30% of total permit value, and in addition should fall automatically over time as other countries adopted comprehensive or sectoral carbon pricing. The big changes occurred from the Green to the White Paper, with the three most important being:

- the Green Paper 30% limit on total EITE permits, albeit approximate and with no mechanism for enforcing this limit, disappeared in the White Paper;
- the replacement was a 1.3% per year withdrawal of assistance rates (but a probable 5 years notice of any faster withdrawal);
- the minimum emissions intensity needed to qualify for 60% free permits dropped from 1500 to 1000 tCO₂-E/(\$m revenue), and new value-added options appeared.

The last difference increased the eligibility to EITE permits, while the first two provided no means of avoiding excessive total assistance. Two less obvious domestic features add to such concerns:

- (a) The less-than-100% rates of initial assistance (k_t^a), and the 1.3%/yr fall in these rates, appear to maintain some activity-based abatement incentives. However, technology-based abatement may cut actual emission intensities in such sectors (EI_t^{ia} in a consistent notation) far enough below the historic activity average (EI^a in Box 1) to leave some recipients with net gains, not losses. So at the extreme, EITE assistance could provide a perverse output *subsidy* to some of the most emissions-intensive goods, an example of the "potential for abuse in practice" warned against by Fischer and Fox (2007).
- (b) The EI^a baselines are subject to asymmetric information. The government will need to get these data from the very sectors that will gain from them being high. Since most such sectors are highly organised, and the Government does not require all firms in a given activity to report their EI^a 's, the baselines the Government agrees to will probably be inflated: the logic of collective action in operation yet again.

Two less obvious international features of the proposed EITE assistance also deserve mentioning:

- (c) The lack of both a cap on total free permits, and any means of making a cap respond to international policy developments, will make it harder to tighten targets leading up to 2020. As shown below, the tighter the target is, the higher is the EITE free permits share, and the greater is the burden on the non-carbon-intensive sectors.
- (d) The broad range of EITE assistance is likely to be seen as protectionist by other countries, and thus fuel the use of abatement measures for trade protectionism worldwide. Country-specific measures to curb leakage, such as the Australian free permit proposal, and the unilateral border tax adjustment proposals floated in Europe and America, will make it difficult for the world to lower EITE assistance over time (Weber and Peters 2009). Such measures effectively provide emissions safe-havens for the foreseeable future, even in countries that otherwise have significant measures to curb emissions domestically. This would not be in Australia's national interest.

4.3 What is the evidence for carbon leakage?

Given the additional cost to the Australian economy of excessive EITE assistance, and the large quantities of assistance discussed below, one would hope that the Government can justify such large EITE permit totals by pointing to correspondingly large amounts of likely carbon leakage (recall our definition in footnote 1), but the available evidence suggests otherwise. International modelling studies of carbon leakage are inconsistent (for example, Babiker 2005 found significant leakage, while Barker et al. 2007 found little), but the Australian evidence is less equivocal. Treasury modelling suggested fears of carbon leakage are overplayed (Australian Treasury 2008, p.169), even though “both GTEM and MMRF [the models studied] are likely to overestimate carbon leakage and the relocation of production activities” (p.170). A further sign that ‘shielding’ EITE activities from the carbon price is unlikely to yield long-term net economy-wide benefits is that (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."

So EITE aluminium protection is expected to exceed that from the appropriate, leakage-related price ‘uplift’ (using Garnaut’s terminology); that is, aluminium is over-protected under the Treasury shielding scenario. And the Business Council of Australia (BCA 2008) provided rare evidence that even investments in highly affected industries may be quite resistant to relocating overseas: "in the example provided by the BCA, no leakage [using the White Paper definition] would occur at carbon prices below \$28 per tonne", despite a number of unrealistic BCA assumptions which support higher and wider assistance to industry (MMA 2008, p.15).

4.4 The unaffordable quantities of proposed EITE assistance

The CPRS proposals for EITE assistance thus fly in the face of Treasury and MMA modelling evidence that significant carbon leakage in Australia is unlikely, and certainly unproven. Various criticisms were made that the Green Paper EITE proposals were excessive, for example (MMA 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."

Under the more generous White Paper proposals in Box 1, this assistance would be much higher, as shown in **Table 2**. This combines basic sectoral emission data, the estimates of the share of EITE free permits in 2010 and 2020 given in the White Paper, and an assumed average assistance rate to EITE sectors, with EITE emissions being free permits divided by this rate. We assume this starts halfway between the 60% and 90% rates, and stays constant over the next 10 years, because actual EITE emission intensities (EI_t^{ia}) decline at the same 1.3%/yr as the assistance rates (k_t^a). (If the EI_t^{ia} decline faster, this makes the Table's calculations better in terms of efficiency, but worse in terms of equity.)

Table 2. White Paper scenarios for total emissions, EITE free permits and emissions, and non-EITE emissions, 2000-2020 ("emissions" here means "emission entitlements", as defined in Section 2.1; levels of emissions and permits are in millions of tonnes of CO₂-equivalent)

Year (and 2000-2020 national abatement target)	2000	2010	2020 (-5%)	2020 (-15%)
Total emissions	550	594	523	468
Emissions covered by permits*	-	538	473	424
EITE free permits (share)**	-	35%	45%	50%
EITE free permits (level)	-	188	213	213
EITE emissions (level)***	-	251	284	284
EITE emissions (share)	-	42%	54%	61%
EITE emissions 2010-20 increase (- = abatement)	-	-	13%	13%
Covered non-EITE emissions	-	287	189	140
Non-EITE emissions 2010-20 increase (- = abatement)	-	-	-34%	-51%
* To enable comparisons with 2020, numbers for 2010 are as if agriculture was included in the CPRS. This is because the White Paper suggested agricultural emissions should be included from 2015 (p.xxix); so its 2020 calculations include agriculture, and coverage is 75% + 15.6%, the latter being agriculture's emission share in 2006. However, the November 2009 changes excluded agriculture indefinitely from the CPRS.				
**35% for 2010 and 45% for 2020 from White Paper p.xxxvi				
***This row and all rows below it assume an average EITE assistance rate of 75%.				

Table 2 shows that because total assistance is both uncapped and probably unresponsive to any change in target, then by the White Paper's own calculation (which makes assumptions about growth in EITE industries and future global developments) about 45% of permits go as EITE assistance in 2020. The emissions entitlements of the *non*-EITE economy must then be cut by 34% and 51% respectively over 2010-2020 to meet the overall targets of 5% or 15%, while EITE activities increase their emissions by 13%. This imbalance of relative abatement is manifestly unfair. It will also be very inefficient, even though the non-EITE entitlement cuts would be met by extra permit imports rather than extra abatement. Such deferring until after 2020 of most of Australia's necessary transition to a lower-carbon economy would, as argued earlier, still raise long-term overall costs; hence again the case for some permit import restrictions.

Lastly, as already noted in Section 4.1(b), the harm caused by excessive EITE assistance goes wider still, for giving away 45% of permits would also leave the Government far too little revenue for needed expenditures on low-emission technologies, energy efficiency and household compensation (Garnaut 2008b).

4.5 The role of collective action in changing the EITE assistance

The Government's defence of the striking increase in EITE assistance from Green to White Paper was disingenuous:

"The Government has balanced the concern of the emissions-intensive trade-exposed sector with the fact that more assistance for these sectors reduces the Government's capacity to assist households and other businesses. Accordingly the rate of assistance per unit of output will be gradually reduced over time." (White Paper p.xxxvi)

Moreover, support for the continued *growth* of EITEs was expressed prominently in the Government's White Paper foreword. So one naturally suspects the influence of the carbon lobby at work, but as noted at the outset, this is hard to prove. Nevertheless, the lobbying by potential EITE firms was highly visible and relentless once the Green Paper was published, as described by a leading economic journalist:

"Last week's disillusioning plea for special treatment by the Business Council was just the latest in a long line of business lobby group responses to the Green Paper on a carbon pollution reduction scheme, all of them predicting death and destruction unless they were let off the hook." (Gittins 2008, August)

Later, an analysis of government lobbyist registers showed that about 120 companies potentially affected by climate change laws employ firms using more than 300 lobbyists (Wilkinson et al. 2009).

The general starting point of lobbying arguments was neatly summarised by Garnaut (2008a, p.344) as a set of false but often-implied Australian beliefs that no climate policy progress is happening or will happen abroad, and that nothing done by Australia makes any difference to what happens abroad. Garnaut's view of the White Paper was that the force of collective action applied to the CPRS debate had been

"...the most pervasive vested-interest pressure on the policy process since the [1929-32] Scullin Government and the most expensive, elaborate and sophisticated lobbying pressure on the policy process ever." (Garnaut 2008b)

The changes between the Green and White Papers were clearly of great benefit to such firms, so it is hard to avoid the conclusion that one led to the other. Lobbying by the LNG industry to lower the threshold in Box 1 to 1000 tCO₂-e/\$m so it would qualify for 60% free permits was a particularly notable example (Woodside Energy 2008). So was the position of many commentators in early 2009 that *any* job losses in emissions-intensive industries (even if not trade-exposed ones) would be considered a failure of the ETS (Pearse 2009). This amounted to a basic refusal to accept that most of the lowest-cost abatement opportunities lie in such industries, and a complete failure to keep any focus on the cost of climate policy to the whole economy.

5. The need for neutral assessment institutions and more government publicity

We have now seen the amount of EITE assistance at stake in Australia and its potential to significantly raise the cost of achieving any given target, as well as the lack of supporting evidence for carbon leakage. In any country these are likely to be common

features, so limiting the scope for distortionary lobbying arguably requires a neutral body, with enough economic expertise, to assess industry claims and the subtle, intertwined effects of EITE assistance features. This applies to both the overall design of assistance and the data needed to make it operational. Such assessments will unavoidably be contestable, as they rely on counterfactual analyses. The soundest possible institutional base for assessment is thus crucial, to minimise the scope for undue influence by special interests,.

Given its successful history in tariff reform in Australia, the obvious body there would be the Productivity Commission. It could review the whole EITE assistance scheme and report within 1-2 years, so a revised assistance scheme could be implemented around 2016, assuming the 5-year notice period for policy change remains part of the CPRS. An alternative may be to give the task to an international body (perhaps the International Energy Agency given its expertise, though there is some evidence it would first need to become more impartial between fossil fuels and their alternatives), as a single global assessment would help coordinate EITE assistance across countries. This in turn could reduce pressures in many countries to use EITE assistance as disguised protectionism.

We also contend that more government publicity is needed to make efficient climate policy possible. Public opinion needs to understand that letting carbon pricing cut actual emissions where it is cheapest means most carbon-intensive sectors making bigger cuts than the economy-wide average. To make this acceptable, the public also needs to understand better the economy's structure of output and jobs. In particular, the small proportion of carbon-intensive jobs shown in Table 1 needs to be well-known, so that exaggerated claims about extensive job losses can be better appraised. Finally, to improve public scrutiny, governments should resist special interest pressures, so as to make their proposals much simpler and shorter.

6. Conclusions

The evolution of Australian climate policy during 2008-2009 provides a classic example of the power of collective action to distort national policy to serve sectoral self-interests. We have given strong circumstantial evidence that the Australian carbon lobby managed to emasculate the sound economic principles, for cutting national carbon emissions at something approaching least overall cost, that originally underlay the policy design proposals behind the 2008 Green and White papers. The resulting Carbon Pollution Reduction Scheme (CPRS) had targets too low, and assistance to emission-intensive trade-exposed (EITE) sectors so excessive as to greatly increase total costs. Even a 5% cut of total Australian emissions during 2000-2020 would require non-EITE sectors to cut emissions by 34% (or import permits instead) in the decade to 2020 while EITE emissions rise by 13%, a patently inefficient and unjust imbalance. The 2009 changes to EITE assistance rates would only worsen this problem, and strengthen the case for permit import restrictions, to ensure the necessary long-term restructuring of the Australian economy begins before 2020.

Whether the CPRS gets passed or another scheme emerges, the issue of carbon leakage and EITE assistance is likely to remain. To reduce the power of special-interest lobbying, we suggest using national and/or international institutions to apply neutral economic expertise to the overall design of, and data collection, for EITE assistance schemes. We also suggest that good public debate requires governments to publicise more the sectoral structure of their economies, and to make much simpler proposals.

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