

## **ARTICLES**

# The Australian Parliament and Climate Change: Are the Institutions Inadequate?

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Professor Ross Garnaut, engaged by the Australian state and territory governments to report on the issue, once described climate change as a ‘diabolical problem.’<sup>1</sup> So it has proved to be, with the issue contributing to the demise of the Howard Coalition Government, the Prime Ministership of Kevin Rudd, the ALP Government of Julia Gillard after Rudd, and the Leadership of the Opposition of both Brendan Nelson and Malcolm Turnbull – although Gillard continued to govern with the support of independents and the Greens.

While climate change is indeed a problem, during 2009 there was bipartisan support for an emissions trading scheme, and it is difficult at first blush to understand why the Parliamentary arena is so liberally littered with political corpses. The inevitable question arises as to whether the recent history of policy on this issue calls the adequacy of Parliamentary institutions into question. This paper critically examines the recent trajectory of the issues at the Commonwealth level. It suggests that the explanation is to be found in the nature of the issue itself, including the policy response that has dominated the debate in Australia, and in the exploitation of the issue for political advantage.

## *Climate Change Legislation*

The *Carbon Pollution Reduction Scheme Bill 2009* (CPRS Bill), one of six related Bills, was introduced to the House of Representatives on 14 May 2009, was passed on 4 June and was introduced into the Senate on 15 June. The Bill included an initial target to reduce Australia’s annual GHG emissions by five per cent of 2000 levels by 2020, if there was no overall global agreement to reduce emissions. If a global agreement that included all major economies was reached, then Australia

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would aim to reduce its annual GHG emissions by up to fifteen per cent of 2000 emissions levels by 2020.

The Bill proposed establishing an emissions trading scheme (ETS) for domestic emissions of the four gases (carbon dioxide, methane, nitrous oxide, sulphur hexafluoride) and two groups of gases (hydrofluorocarbons and perfluorocarbons) covered by the Kyoto Protocol. It also provided for the acceptance of several international emissions credits allowed under the Protocol: Certified Emission Reduction Units (CER) generated under the Clean Development Mechanism (but not temporary or long term CERs); Emission Removal Units generated under the Joint Implementation Mechanism; and Removal Units (RMU). The sale and transfer of Australian permits to international markets was not to be permitted initially, and the proposed scheme would not be linked with any other ETS, even that of New Zealand with which Australia enjoys closer economic relations.

Climate change is, indeed, a 'diabolical problem' especially for Australia, which (in addition to the global commons characteristic of the problem) had to contend with the extent to which climate change policy compromised central national interests. Put simply, coal is the most carbon-intensive energy source, upon which Australia relies for about 80 percent of its electricity generation, much of which is embodied in exports such as aluminium. Coal is also Australia's largest export item, and it is the world's largest coal exporting nation. Its coal is also cheap – about a quarter the price for streaming coal compared with that in Europe – and generally low in sulphur. Australia also has much less need than Europe for high energy taxes for energy security reasons, and sits in a region where most countries are exempt from emission reduction targets, including Singapore, which is its peer in both affluence and emissions per capita, and some have potential to exploit any 'carbon leakage', including Indonesia, another low-cost coal producer.

For these reasons, and in the face of strong lobbying from affected interests, Australia negotiated strongly at Kyoto, signed, but held off on ratification, not wishing, in particular, to enter into legally-binding commitments until the United States committed, and while its regional neighbours were exempt from any effective restrictions. Nevertheless, on 4 June 2007, then Prime Minister John Howard, after a review chaired by the Secretary of his Department, Peter Shergold, announced that a Carbon Trading Scheme would be introduced by 2012. Howard, however, refused to ratify Kyoto, while accepting the need for Australia to meet its Kyoto commitments.

The Kevin Rudd-led Australian Labor Party defeated the Coalition at the election held on 24 November 2007, with Rudd effectively trumping Howard on the issue, promising both an ETS by 2010 and ratification of Kyoto. Rudd's first act as incoming Prime Minister was to ratify Kyoto, enabling him to attend personally the 13<sup>th</sup> Conference of the Parties to the Framework Convention on Climate Change, and present the instrument of ratification, securing an important symbolic moment. This was, perhaps, the high point for Rudd on the issue, though- he did play an

important, (largely unacknowledged) role two years later in securing what became known as the Copenhagen Declaration. Rudd sought to exploit the Coalition discomfort over the issue, putting them in a position where he obtained a potential double dissolution trigger, which he chose not to pull.

Rudd's ratification of Kyoto, though constitutional (since the Executive has the authority to ratify treaties) broke with the Parliamentary role that had been established for more than a decade to have such instruments considered by the Joint Standing Committee on Treaties (JSCOT) prior to decision.<sup>2</sup> In his rush to secure the symbolism of a personal appearance in Bali, Rudd diminished the role of the Parliament that had grown up around JSCOT. In the past the Government would have prepared a National Impact Analysis evaluating the pros and cons of the treaty, then a Parliamentary inquiry by JSCOT, enactment of new law giving effect to the treaty, and finally a recommendation by the Executive Council that ratification take place. This somewhat lengthy process would not have permitted Rudd his exercise in personal diplomacy in Bali. While JSCOT completed a Kyoto Discussion Paper in 2001, no recommendations on ratification had been made and no National Impact Analysis was ever undertaken on Kyoto.

Rudd's haste meant more than just by-passing JSCOT; it risked the disjuncture between international commitments and domestic policy settings that has now come to pass. It is something of a catechism of Australian foreign policy that, as a middle power, its interests lie in a rules-based system, so it takes its international obligations seriously; this makes it a hard-nosed negotiator that only signs up to those obligations it can honour, hoping to set an example to hegemonies it hopes will be similarly bound. As Don Rothwell pointed out, from the 1990s it had been the practice of successive governments that Australia would never ratify a treaty without domestic law in place to give effect to that treaty. Rudd's rush to ratification means that Australia joined the ranks of those who fail to live up to their international commitments, when a 'vertical disintegration of policy' is all too common with multilateral environmental agreements.<sup>3</sup>

Rudd rode to office at least partly on the climate change issue. He frequently argued that Australia had to ratify Kyoto in order to have a 'seat at the table.' This line was popular, but it was wrong; Australia was not only 'at the table', but at its head: it was co-chair of the group in the FCCC considering the architecture to follow Kyoto (which runs only until 2012). As it happened, he was unable to deliver on the commitments he made at Bali, a result that is difficult to fathom, given the apparent bipartisan support for an ETS.

### *Building an Economic Case*

Rudd was faced with a potentially hostile Senate until mid-2008, but the failure of the CPRS probably lies in a combination of poor policy and an over-egging of the political pudding. The two are related.

To take the last point first, Rudd set out to distinguish his response from that of Howard, and (somewhat brashly) produced his own report on the issue even prior to taking office, by commissioning Professor Ross Garnaut to conduct a review of climate change that – unsurprisingly – would recommend an ETS and provide economic reasons and evidence as to why it should be adopted. Technically speaking, the Garnaut Review was commissioned by the state and territory (ALP) governments during 2007 and was required to report to them and, if requested, to the Commonwealth government. While Garnaut was a well respected and important resource economist, his expertise was not in climate change; however he had been Ambassador in Beijing while Rudd was Third Secretary and was undoubtedly trusted by him.

Garnaut was to Rudd as Nicholas Stern had been to Gordon Brown in the United Kingdom in 2006, except Brown also needed political support for unpopular taxes underpinning energy security. Stern, like Garnaut, was not an expert in the economics of climate change.<sup>4</sup> Stern's review was a masterpiece of political spin. Released on a Monday at a press conference with no questions permitted and no prior circulation of the report, it was some time before sceptical analysts pointed out that Stern's case for costly action *now* depended essentially on his selection of an extremely low discount rate coupled with an extreme escalation in the real rate of increase of damage from extreme weather events unsupported by the relevant peer-reviewed literature.

The actual time discount rate used by Stern, according to William Nordhaus,<sup>5</sup> Sir Partha Dasgupta<sup>6</sup> and others,<sup>7</sup> was an extremely low 0.1 percent per year. When combined with a rate of unity for the value given to the elasticity of the marginal value of the social weight that ought to be placed on individual well-beings of people in the future, the future was discounted almost not at all. As a result, Nordhaus pointed out that more than half of the costs 'now and forever' that justify huge present costs occur after the year 2800. Dasgupta put the effect of this another way: if we were to apply this rate of time preference generally, the present generation should be saving a full 97.5 percent of its GDP for the future. (In contrast, the aggregate savings ratio in the UK is currently about 15 percent). This was, as Jeremy Bentham would have put it, nonsense upon stilts.

On the question of damage costs, one of the leading authorities on hurricane damage, Roger Pielke Jr has described the error of Stern thus:

To justify its conclusion of large increases in future economic losses of extreme events due to climate change, the Stern Review misrepresents a single non-peer-reviewed, heavily caveated background paper to a workshop which itself resulted in conclusions counter to those presented by Stern.<sup>8</sup>

Garnaut did not receive similar scrutiny in Australia, yet his report was just as problematic, and both reports succeeded in gaining wide legitimacy in the policy discourse in Australia, even if they supported a policy response that is, at best, second best. Both Stern and Garnaut produced estimates of the costs of climate

change that stretched credibility. Economist Richard Tol<sup>9</sup> has pointed out that there were only fourteen peer-reviewed studies of the costs of climate change, ten of which were based of the IPCC mid-point projection for future warming (3°C warming by 2100). They all attempted to cover non-financial costs such as deaths and environmental changes. The average conclusion of these studies was a cost of 0.9 percent of GDP, with a range of 0 to 2.5 percent of GDP (with some suggesting even slight net benefits). One estimate using much greater warming by 2100 suggests that the costs might be as high as 5 percent of GDP.

The (non-peer reviewed) Stern review, using pessimistic assumptions such as those identified above, estimated the costs of anthropogenic global warming (AGW) beyond this range, at 2.9 percent of GDP by 2100. (As noted above, the longer-term costs in his analysis were also extremely high). Garnaut managed to out-do even Stern, with costs estimated at 10 percent of GNP (or 8 percent of GDP). Garnaut eschewed the mid-point IPCC projection of 3°C of warming, and factored in an expected warming of 5.1°C by 2100, employed some debatable assumptions and employed a low discount rate in recommending an ETS as a policy response.

The Rudd government then produced a Green Paper for consultation in July 2008, followed by a White Paper, *Carbon Pollution Reduction Scheme – Australia’s Low Pollution Future*, in December. One problem for the prospects of legislation to honour Australia’s Kyoto obligations was that the bipartisan political support for an ETS began to erode. While there were many in the Coalition ranks who remained sceptical over the dimensions of the problem, and this camp received encouragement later in 2009 as questions emerged over the quality of both the IPCC’s assessment report process and some on the science on which it was based, but the initial softening in the Coalition support for an ETS came over the solution, not the problem. In order to understand this point, some discussion of the problems and possible policy solutions is necessary.

### *Understanding the Climate Change Problem*

A problem for policymakers is that climate change is fundamentally about uncertainty.<sup>10</sup> In many ways, climate scientists have oversold their wares, because the global climate system is a complex, non-linear, coupled ocean-atmosphere system. While the basis physics is clear that a doubling of atmospheric carbon dioxide will cause a modest rise in temperature, more serious projected warming depends upon positive feedback mechanisms, about which less is known.

Many of what have come to be regarded as key parameters of the climate change problem are set in fact quite arbitrary, and the result of politics, not science. To give one example, a great difficulty lies in where to set the cap in a cap-and-trade scheme such as the CPRS. Too small a cap, and the costs from abatement will be unnecessarily high; too large, and it will not prevent ‘dangerous anthropogenic climate change’, assuming other nations do the same, of course. Either way, unpredictable *natural* climate change might make a mockery of human efforts, and

it is worth bearing in mind that the IPCC and FCCC have different definitions of 'climate change,' with the former referring to all climate change and the latter to only anthropogenic climate change.

The commonly accepted level of change to which global warming should be limited to avoid 'dangerous anthropogenic climate change' is 2°C, estimated (from climate models) to require stabilisation of atmospheric carbon dioxide at 450ppm. This is the assumption of the Garnaut Review. Yet the 2°C figure is merely a political judgment, adopted by the European Union in 1996, and then by a conference organized by the UK government in Exeter in February 2005.<sup>11</sup> There is far from certainty surrounding the appropriateness of the target and whether 450ppm will yield such a result, assuming global cooperation could produce this result.

This is a compelling reason why a cap-and-trade policy is not well suited to climate change, because it is not clear what size the cap should be. The global climate system simply does not have a thermostat whereby a desired outcome can be dialled in, and what that outcome might be is itself problematic. This makes a carbon tax the preferred policy instrument for dealing with climate change, with Tol, for example, noting that a uniform carbon tax is also considered to be the cheapest way to abate emissions,<sup>12</sup> despite the natural inclination of economists to favour tradable permits. Even the economists who first developed tradable permits as a solution of sulphur dioxide pollution, Thomas Crocker and John Dales, did not think the approach was appropriate for climate change.<sup>13</sup> Their reasons for this are two-fold: the uncertainty issue, plus the difficulty in providing verification to underpin the value of permits traded internationally.<sup>14</sup>

A single example demonstrates only too well the pitfalls of international emissions trading under the Clean Development Mechanism under Kyoto. This includes CFCs and HFCs, which has resulted in credits being granted for the destruction of HFC-23, a by-product of the manufacture of HCFC-22, being phased out under the Montreal Protocol and readily destroyed by combustion of flue gases. Almost two-thirds of all CDM payments in the period to 2012 will go to HFC capture and benefit Brazil, China, India, and South Korea, with China alone receiving half the total, and manufacturers reportedly earning twice as much scrubbing HFCs as they can by selling the refrigerants produced. The Chinese government stands to collect \$US1.5 billion pa in taxation revenue. So attractive is HFC scrubbing that it has helped *expand* HCFC production in DCs, undermining the Montreal phase-out by creating a perverse incentive. Most of the CDM is therefore going to more affluent DCs for questionable mitigation activities, rather than the least developed countries for sink creation (via forest conservation, for example).<sup>15</sup>

### *Politics Meets Policy*

Recognising the inherent uncertainties in climate science and the pitfalls inherent in international trading in the absence of a sufficient international governance regime, the McKibbin-Wilcoxon proposal<sup>16</sup> involves a hybrid instrument, essentially a

short-term tax and a longer term ETS. There is much to recommend in the hybrid proposal, and in mid-2008 the Leader of the Opposition, Brendan Nelson, met with Professor Warwick McKibbin and discussed the hybrid scheme. Nelson considered a shift in the Coalition policy position to a harder line after his meeting with McKibbin, pondering whether a hybrid scheme might not be better than an ETS and signaling that perhaps Australia should defer any serious action until leading global emitters also committed after 2012. Nelson published an opinion piece in the *Australian* on 11 July (actually written by one of his staff, Tom Switzer) raising these points, but the result was a confusion, exploited by shadow treasurer and leadership aspirant Malcolm Turnbull, whose background in Goldman Sachs made him a natural supporter of an ETS. Nelson was rolled in his shadow cabinet on the issue, in what marked the beginning of the end of his leadership,<sup>17</sup> with Turnbull taking over in September, only to be defeated himself on 1 December 2009 over his inability to carry his party with him in support of the Government's CPRS. Climate change can therefore be seen to have been central to the defeat of three Liberal Party leaders – Howard as Prime Minister and Nelson and Turnbull as Leaders of the Opposition. Sow the wind, reap the extreme weather event.

Ultimately, the CPRS issue contributed to the demise of Prime Minister Kevin Rudd, who famously referred to climate change as the great moral question of our time. The CPRS Bill was introduced in the House of Representatives on 14 May 2009; 144 Government amendments were made and the Bill passed the House on 4 June. It was then introduced to the Senate on 15 June, accompanied by a report by the Senate Economics Legislation Committee, which had conducted an inquiry at the instigation of the Coalition and the Greens, and defeated at the Second Reading on 13 August. Opposition leader Malcolm Turnbull, who was supportive of an ETS, negotiated a number of changes with Prime Minister Rudd in an effort to have the Bill passed by the Senate. These included an increase in compensation for emitting industries, including the coal and aluminium sectors, but Turnbull suffered the same humiliation as he had inflicted on his predecessor when he could not carry his coalition colleagues with him and therefore could not deliver on the deal. He was replaced as leader by Tony Abbott on 1 December 2009. On 2 December, the Senate again refused to pass the Bill, providing the Government with a trigger for a double dissolution.

Abbott's ascension reflected the growing numbers of those in the Coalition who were either sceptical of the seriousness of anthropogenic climate change or of the nature of an ETS as the appropriate policy instrument to respond to it, or considered that Australia should await a commitment to serious action from the large emitters such as the US and China. Also in November, a series of events brought the integrity of the scientific consensus on anthropogenic climate change into question. The first of these was the leaking of a number of embarrassing e-mails among climate scientists suggesting a breakdown of core scientific principles such as disclosure of data and open, fair and anonymous peer review, and a subversion of the IPCC process to ensure some research did not find its way into IPCC assessment reports. Perhaps even worse, further disclosures undermined the quality



of the IPCC reports themselves, most notably the inclusion of a claim that all the glaciers in the Himalayas would vanish by 2035, whereas the underlying paper (itself of questionable quality) had put the date at 2350.

It then became quite clear, even before the 15<sup>th</sup> Conference of the Parties in Copenhagen commenced in 7 December that there would be no successful outcome that might see other nations take on meaningful commitments post-2012. Much of the growing dissent in the Coalition ranks reflected a growing unease with supporting the Government's scheme, rather than differentiating itself, and events seemed to be running strongly in favour of proceeding more cautiously. Abbott's new position was to keep a similar target for mitigation by 2020, but use less intrusive measures to achieve it, such as the government buying reductions by paying industry not to emit.

### *A Thinning Wedge*

Rudd played a key (but largely unacknowledged) role in negotiating the non-binding declaration that emerged from Copenhagen, but he held off on calling an election to resolve the impasse and ultimately, on 27 April 2010, having already delayed the commencement of the scheme from 2010 to 2011, announced that it would be deferred until 2013. Rudd announced that the CPRS would be introduced only when there was greater clarity on the actions of other major economies including the US, China and India. What had been the 'great moral issue' was now an inconvenience, and this was the beginning of the end for Rudd's tenure as Prime Minister. He had used the issue to try to wedge the Opposition, with Rudd and his Minister Penny Wong constantly attempting to depict Abbot as a climate change 'denier', but it appears plausible to suggest that the issue had more to do with the apparent electoral advantage it was thought the wedge would provide than addressing the problem. This interpretation is supported by two factors: the lack of any genuine attempt to gain the support of the Greens in the Senate; and the fragile nature of public support for an ETS. The latter made calling an election a risky proposition, while the former suggests that Rudd and Wong used the somewhat predictable intransigence of the Greens to pursue a confrontation. That strategy was helped by the nature of the measure – an ETS rather than a tax. I shall return to this point later.

It was apparent, viewed from the outside, that when the Bill was introduced that little effort was made to find a compromise with the Greens as an important step towards building a majority in the Senate. The Greens wanted tighter regulation, but it appeared the Senator Wong was more intent on scoring points in public than negotiating a compromise, using the relative purity of the Greens, who probably benefit politically from taking principled stands on such issues rather than compromising.<sup>18</sup> To support this view, the Greens have recently confirmed that they did not find Wong helpful in negotiations over the Bill.<sup>19</sup>

The risks posed by a double dissolution election on the ETS issue are not self-evident, because successive opinion polls have recorded strong support for action on climate change. That support, however, softened considerably between the 2007 election and the abandonment of the legislation in 2010, and it was not strong for action that might require voters to pay – as an ATS or a tax would do.

In 2007, climate change ranked as the equal-highest foreign policy goal with 75 percent of Australians saying it was a very important goal, according to the annual Lowy Institute poll, but by 2010, the priority given to tackling climate change was at its lowest level since the question was first posed in 2007.<sup>20</sup> A bare majority (53 percent) said it was very important (down from 56 percent the previous year), and it ranked behind goals such as improving Australia's relationships with its Pacific neighbours (61 percent) and controlling illegal immigration (62 percent). A large majority of Australians (72 percent) agreed that Australia should take action to reduce its carbon emissions before a global agreement was reached, but they were not prepared to pay much for it. A majority of people was either only prepared to pay \$10 or less extra per month on their electricity bill to help solve climate change (25 percent) or were not prepared to pay anything at all (33 percent, up from 21 percent in 2008). In other words, a majority supported action on climate change – just as long as they did not have to pay for it, which they would with an ETS. The alternative developed by the Coalition – to buy mitigation with revenue, not by consumer prices – appears to reflect these concerns. It should be noted that a Gallup poll published in the US found a similar softening of acceptance of a human role in driving climate change.<sup>21</sup> Those saying climate change resulted from human activities fell from 52 percent in June 2008 to just 44 percent in March 2010, and those attributing it to natural causes increased by 10 percent.

### *Conclusion: Actors, Not Institutions*

It is perhaps unfortunate that the trajectory of climate change politics described thus far has led Australia to the point where there is bipartisan rejection of perhaps the best policy instrument: a tax on greenhouse gas emissions. There are several problems with the way in which the climate change problem and policy responses have been defined, not least an excessive emphasis on carbon dioxide rather than other climate forcing agents that might be mitigated more easily (technically), more cost-effectively, or with substantial co-benefits.<sup>22</sup> Many of these alternative measures also offer greater hope of coordinated international action on the problem. But even confining consideration to carbon dioxide, a tax (or the McKibbin-Wilcoxon hybrid) would not only represent a better instrument, but be more conducive to the chances of being adopted through the parliamentary institutions of the Australian Commonwealth.

An ETS involves the creation of property rights. Once created, they are extremely difficult to adjust. If the cap is too tight, issuing more permits destroys the value of those issued; if the cap is too loose and has to be tightened, those holding them have

to be relieved of their property, which, constitutionally, can only be done on 'just terms.' Any adjustment is likely to be highly contentious politically. A successful ETS would, in short, require a greater degree of certainty in the state of our knowledge of climate change than exists, or indeed might ever be possible. Recent research suggests that the ETS proposed in the CPRS Bill could not have delivered the decarbonisation inherent in the stated target.<sup>23</sup>

A tax, on the other hand, is readily fungible. It can be introduced at a very low level and raised as the need arises and the consensus varies. It can be set by compromise at a level that is accepted at any point in time and investors can additionally make investment decisions influenced not only by the existing level of the tax, but by their best assessment of what the tax might be at some time in the future. It spreads the risk assessment widely, relying on the wisdom of crowds, and does involve the problems inherent in international emissions trading, and nor does it preclude other kinds of international cooperation.

Unfortunately, Australia has reached a position where such a policy seems unlikely. An ETS, a less adequate policy response might still be adopted, though that continues to seem unlikely, but the preferable instrument of a tax has been rejected by both major parties and supported only by the Greens. The Coalition's policy appears more politically feasible, but it essentially involves all taxpayers meeting the costs.

Climate change policy in Australia is in a mess. The problem, however, lies not with the institutions of Parliament, but the choices made by those occupying them. ▲

## End Notes

<sup>1</sup> Climate crisis 'diabolical' *Sydney Morning Herald* 4 July 2008.

<sup>2</sup> Donald R. Rothwell, 'Kyoto ratification not without its headaches for Rudd.' *Crikey* 27 November 2007.

<sup>3</sup> Hanf, Kenneth and Arild Underdal (1998), 'Domesticating International Commitments: Linking National and International Decision-Making' in Arild Underdal (ed.) *The Politics of International Environmental Management*, Dordrecht: Kluwer.

<sup>4</sup> Aynsley Kellow (2007), 'Stern Warnings and Convenient Truths: How Can Economics Better Inform Climate Policy?' Lecture Delivered to The Royal Society of Tasmania, 16 October.

<sup>5</sup> William Nordhaus (2007), 'Critical Assumptions in the Stern Review on Climate Change.' *Science*. 317: 201–202.

<sup>6</sup> Partha Dasgupta (2007), 'Commentary: The Stern Review's Economics of Climate Change.' *National Institute Economic Review*, 199: 4–7.

<sup>7</sup> Richard S.J. Tol and Gary Yohe (2006) 'A Review of the Stern Review.' *World Economics*. 7(4): 233–50. Ian Byatt, Ian Castles, Indur M. Goklany, David Henderson, Nigel Lawson, Ross McKittrick, Julian Morris, Alan Peacock, Colin Robinson and Robert Skidelsky (2006) 'The Stern Review: A Dual Critique; Part II: Economic Aspects.' *World Economics*, 7(4): 199–229.

- <sup>8</sup> R. Pielke Jr. (2007), 'Mistreatment of the economic impacts of extreme events in the Stern Review Report on the Economics of Climate Change.' *Global Environmental Change*. Doi:10.1016/j.gloenvcha.2007.05.004; p4.
- <sup>9</sup> Richard S. J. Tol n.d. (2009), *An Analysis of Mitigation as a Response to Climate Change* Copenhagen, Copenhagen Consensus Centre.
- <sup>10</sup> See: John W. Zillman, Warwick J McKibbin and Aynsley Kellow (2005), *Uncertainty and climate change: the challenge for policy*. Canberra, Academy of Social Sciences in Australia (*Occasional Paper 2005 Number 2*).
- <sup>11</sup> Marco Evers, Olaf Stampf and Gerald Traufetter, 'A Superstorm for Global Warming Research: The Invention of the Two-Degree Target' *Spiegel Online* 4 January 2010. <http://www.spiegel.de/international/world/0,1518,686697-8,00.html> (Accessed 23 August 2010).
- <sup>12</sup> Tol, p5.
- <sup>13</sup> Jon Hilsenrath (2009), 'Cap-and-Trade's Unlikely Critics: Its Creators; Economists Behind Original Concept Question the System's Large-Scale Usefulness, and Recommend Emissions Taxes Instead.' *Wall Street Journal*. 13 August. [http://online.wsj.com/article/NA\\_WSJ\\_PUB:SB125011380094927137.html](http://online.wsj.com/article/NA_WSJ_PUB:SB125011380094927137.html)
- <sup>14</sup> For a critique of emissions trading, see Clive L. Spash (2010), 'The Brave New World of Carbon Trading.' *New Political Economy* 15(2), 169–95. Spash's paper was the centre of controversy in 2009 when his then employer, CSIRO, refused him permission to publish it as it conflicted with government policy.
- <sup>15</sup> Wara M. (2007), 'Is the global carbon market working?' *Nature* 445, 595; Prins G, Rayner S. 2007. *The Wrong Trousers: Radically Rethinking Climate Policy*. Oxford, James Martin Institute for Science and Civilization; p30.
- <sup>16</sup> Peter J. Wilcoxon and Warwick J. McKibbin (2002), *Climate Change Policy after Kyoto: Blueprint for a Realistic Approach*. Washington, Brookings Institution Press.
- <sup>17</sup> Dennis Shanahan, 'Brendan Nelson's vision lost in carbon fog' *Australian*, 30 July 2008.
- <sup>18</sup> Lenore Taylor, 'Penny Wong pleads for ETS deal.' *Australian*, 11 March 2009.
- <sup>19</sup> Michael Owen, 'Greens at odds with Wong on climate change action' *Australian* 7 September 2010.
- <sup>20</sup> Fergus Hanson (2010), *Australia and the World: Public Opinion and Foreign Policy. The Lowy Institute Poll 2010*. Sydney, Lowy Institute; pp14–15.
- <sup>21</sup> <http://www.gallup.com/poll/141782/australians-views-shift-climate-change.aspx>
- <sup>22</sup> Hansen J, Sato M, Ruedy R, Lacis A, Oinas V. (2000), 'Global warming in the twenty-first century: an alternative scenario' *Proc Natl Acad Sci* 97, c 9875–9880.
- <sup>23</sup> Roger A. Pielke, Jr. (2010), 'An Evaluation of the Targets and Timetables of the Proposed Australian Emissions Trading Scheme.' Paper submitted to *Environmental Science and Policy*, 30 July 2010.