

2

Global warming and discourses of uncertainty: buying time, buying business and engendering risk

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Abstract

The focus of public discourse on global warming has shifted immeasurably in the last twelve months. With business endorsing this sentiment, the Australian government's longstanding reluctance to accept the science of global warming and the need to implement policies designed to abate greenhouse gas emissions has apparently evaporated. The hitherto economic justifications of uncertainty for not formulating a climate change management framework have given way to the concern to promote a greater degree of investment certainty.

The appointment of the Emissions Trading Task Group in December 2006 appears as a watershed in the government's approach to the challenge of global warming. Yet the group's recommendations, which formed the basis of the recently released government *Climate Change Policy*, remain framed by uncertainty, and this justifies an 'aspirational' approach to policy with the promise of little more than indicative emission targets. While the emissions trading scheme proposal is represented as an additional pillar designed to complement other government initiatives, the Policy seems to be more or less 'business-as-usual'.

The current study questions the logic of the government's reference to uncertainty as a justification for inaction. It argues that resistance to

engaging more constructively with global warming is reflective of the commitment to an economic model that is predicated on fossil-fuel based, energy-intensive growth. However, the appeal to uncertainty to justify inaction engenders other uncertainties and risks. Business is responding to these policy failings, but there are other risks that require more robust responses, and these point to the government being caught in a policy cul de sac.

Introduction

The focus of public discourse on global warming has shifted immeasurably in the last twelve months. There is now widespread support for the understanding that unless action is taken soon to mitigate the emission of greenhouse gases, climate change will have adverse consequences for humanity and that these will become magnified with time. With major peak business organisations falling behind this shift in sentiment, the Australian government's longstanding reluctance to accept the science of global warming, or to acknowledge that there is any pressing need to implement policies designed to abate greenhouse gas emissions or ameliorate the potential impacts of climate change, has apparently evaporated. The hitherto economic justifications for not formulating a climate change management framework – based on arguments about the plethora of uncertainties and the potential risks and costs that would arise in adopting what could be considered precipitous initiatives to regulate emissions – have given way to an acceptance of the merits in taking steps to reduce emissions. This sentiment is being echoed by business leaders who are also arguing that in the interests of investment certainty, the details of any emissions regulatory framework should be unveiled sooner rather than later.

The Liberal-National Party coalition, in the ten years that it has held government, has been extremely resistant to adopting any measures to mitigate greenhouse gas emissions, and while it argues, incorrectly, that Australia is on track to meet its Kyoto Protocol emissions target, the government remains resolute in its opposition to ratifying the protocol. However, there seems to have been a sudden change of heart within the coalition government, especially in response to the shifting business sentiment. In late 2006, in a presentation before a Business Council of

24

23

Australia, the Prime Minister announced the establishment of an Emissions Trading Task Group to chart a framework to guide policy formulation to meet the challenge of climate change.¹ The task group tabled its report in May 2007, and recommended that Australia introduce an emissions trading system. The recommendations advocated a staggered timetable, proposing an ‘aspirational’ long-term emissions reduction target be set in 2008, a more modest medium-term target in 2010 to guide investment decisions over 2011 to 2020, and the adoption of a relatively flexible ‘cap-and-trade’ system that would put a price on carbon emissions from 2011.

Given the government’s longstanding opposition to any suggestion for mandating emission reductions or placing a price on carbon, the Prime Minister’s endorsement of the task group’s key recommendations appears to mark a significant shift in policy focus. This would appear to have been consolidated with the Prime Minister’s release of *Australia’s Climate Change Policy* in July. The Policy elaborates the shape of a proposed broadly-framed climate change regulatory regime, including a broadly-based system covering most emission sources, a mixture of grandfathering coupled with the auctioning of some emission permits, a penalty system and recognition of early action by business to reduce emissions (Australia, Department of the Prime Minister and Cabinet 2007b; *The Australian Financial Review* 18 July 2007).

However, beyond a broad-brush outline of the direction in which policy appears to be developing, the details of the regulatory framework are suggestive and vague. Most importantly with respect to the key shift in policy direction, *ETS*, an emissions trading system, there is no intention to introduce anything concrete in the immediate future. Clearly-designated emission targets will not be set, and the government has announced that it would propose to set some indicative targets, but that this will not occur until at least 2011. It is proposed to formulate some ‘aspirational’ goals for the longer term.

¹ The Business Council of Australia, which had hitherto been divided on the question of advocating government policy to regulate greenhouse gas emissions, had in 2006 acceded to the merits of an emissions trading system and in November identified what it advocated should be the guiding principles for the trading system.

The qualified nature of the Policy suggests that the measure of the shift in the government’s climate change policy could well be overstated. Indeed, recent Prime Ministerial pronouncements, such as the description of the most recent set of climate change management policy initiatives as reflecting a “blend of prudent conservatism and economic liberalism”, point to this (*The Sydney Morning Herald* 18 July 2007). There is more reluctance to move forward with policy developments than government pronouncements would indicate.

The present chapter explores the different ways in which ‘prudent conservatism and economic liberalism’ have been expressed by reflecting on the nature of the arguments proffered in opposition to the formulation of comprehensive strategies to mitigate greenhouse gas emissions, including the refusal to ratify the Kyoto Protocol. The principal focus of attention is on the way in which the government’s position has been persistently justified in terms of a conceptual economic rationale framed in terms of risk and uncertainty, on the one hand, and, more concretely on the other, the potentially deleterious effects that emissions mitigation policies would have on the continued growth of energy-intensive and resource sectors and export-revenue earning industries.

This commitment to a fossil-fuel, energy-intensive economic future lies at the heart of the government’s opposition to the Kyoto Protocol and the current study reflects on this opposition in examining the strategies the Howard government has sought to progress as an alternative to the emissions-reduction target framework embodied in the Kyoto Protocol. In particular, we consider the establishment of the Asia-Pacific Partnership on Clean Development and Climate as an institutional vehicle for underwriting the continued expansion of the energy-intensive and resource sectors and export-revenue earning industries and the endeavours to progress this through hosting the Asia-Pacific Economic Cooperation forum in September 2007.

This will also necessitate reflecting back on the import of risk and uncertainty in this policy trajectory. The study will conclude by considering the purchase of government policy in the context of a global polity that is demonstrating renewed commitment to the United Nations

climate change framework, and pose the question as to whether the government is now caught in a policy cul-de-sac that itself engenders uncertainty and risk.

The challenge of global warming – changes in the wind

There is now overwhelming scientific evidence that human activities are producing greenhouse gas emissions that are resulting in the concentration of gases in the Earth's atmosphere to cause climate change. The most obvious manifestations of this are global warming and extreme weather patterns. It is generally agreed that in all likelihood, unless action is taken, the accelerating pace of industrial development across the globe will result in an exponential growth in concentrations of greenhouse gases (GHG) emissions and the capacity of the global ecology to assimilate emissions will be further compromised. Feedback mechanisms within terrestrial and marine eco-systems responding to climbing temperatures by releasing greenhouse gases will likely exacerbate the severity of climate change.

The release of Al Gore's film *An Undeniable Truth*, the publication of the Stern Review, and the release of the InterGovernmental Panel on Climate Change's most recent reports providing a more definitive scientific defence of the evidence of global warming, followed soon after by the report on the potential impacts of global warming on national weather patterns, have engendered considerable rethinking on the import of global warming. This is evident within the business community. The executives of major corporations acknowledge that global warming will likely impact on their fortunes and are now pressing for some government action to ensure greater certainty for the business environment.² Several major corporations have recently joined forces to publicly commit to reducing their emissions and, for some, to become carbon neutral.³ A number of prominent corporations have signed up to

² The most recent survey of corporate executives documents a significant shift in corporate thinking on global warming. See: PricewaterhouseCoopers, *Carbon conscious: survey of executive opinion on climate change in Australia*, Sydney, December 2006.

³ The Australian Business Roundtable on Climate Change was formed by Westpac, Insurance Australia Group, BP Australasia and Origin Energy with the Australian

the Global Disclosure Project, which aims to monitor the efforts of some of the world's largest companies to reduce CO₂ emissions.⁴ Companies registered on the Australian Stock Exchange are also coming under pressure from investor groups and fund managers to report on how they are preparing to meet the challenge of climate change (*The Australian Financial Review* 2 June 2006). For some considerable time the Business Council of Australia has been reluctant to declare a policy position on greenhouse gas emissions and climate change because of intense differences among its corporate membership, but has now joined the call for some government action (Business Council of Australia 2006; *The Australian Financial Review* 14 November 2006). The Australian Industry Group has likewise managed to turn its membership around on the need to act (although the Australian Chamber of Commerce and Industry continues its opposition to any interference in the market).⁵ The National Farmers Federation now supports a tradeable emissions system because of the potential revenue that would be generated for farming communities through the issue of carbon credits for reducing land clearing and for carbon sequestration in plantations (*The Sydney Morning Herald* 26 October 2006).

Added to this change of temperament in the political climate have been the moves by state Labor governments to establish a national trading emissions scheme (National Emissions Trading Taskforce 2006). In part, responding to public sentiment, state governments have also responded to some sectors of business, and most particularly the finance and

Conservation of Australia, in April 2006. IAG had previously joined the WWF, the World Wide Fund for Nature, to establish the Australian Climate Group in 2003, and their reports on the threat of climate change was endorsed by the New South Wales, South Australian and Victorian governments. The Climate Institute, associated with the Australia Institute, launched in October 2005 a \$10 million campaign with the support of business to pressure the government to ratify the Kyoto Protocol. There are a growing number of Australian corporations that have signed on to the Global Disclosure Project which aims to monitor the efforts of some of the world's largest companies to reduce CO₂ emissions.

⁴ The details and company assessments are available at: <http://www.cdproject.net>.

⁵ PricewaterhouseCooper's survey of business leaders released in December reported that a markedly increasing proportion believed that climate change was strategically significant to their business, and that they would be developing a more proactive stance rather than continue with a compliance-approach.

insurance industries, that have lobbied for greater certainty in governance frameworks as the Kyoto Protocol came into force, as well as for a price on carbon. Their calls for greater policy uniformity no doubt intensified the political pressure upon the Howard government to embrace the need for a more proactive policy framework to meet the challenge of climate change.

The decision to establish the Emissions Trading Task Group, the swift endorsement of the Task Group's recommendations and the issue in July of the government's policy paper *Australia's Climate Change Policy* (2007b) point to a rapid and significant change in the government's position with respect to adopting a comprehensive regulatory framework. It is a change that seems to signal a determination to implement a broadly-based climate change management program. Moreover, when set alongside other key initiatives – most particularly the government's leading role in bringing the United States, Japan and South Korea with China and India to form the Asia-Pacific Partnership on Clean Development and Climate (A-P6),⁶ the government's role in the multi-lateral global initiative on forests and climate,⁷ and the Howard government ambition to make climate change the principal agenda focus at the Asia-Pacific Economic Co-operation forum that Australia is hosting in September 2007 – it is clear that the government has assumed a quite proactive and dynamic engagement with the climate change challenge in both domestic and international political arenas. The momentum of this engagement has seen the energy and resources

⁶ In July 2005 the United States, China, India, Japan and Australia announced the establishment of the Asia-Pacific Partnership on Clean Development and Climate partnership (A-P6). This union of developed and developing countries was promoted as a partnership that complemented the ambitions of the Kyoto Protocol by establishing collaborative endeavours to build the institutional capacity and facilitate the development, deployment and transfer of clean technology, as well as more fully involve the private sector. While largely deliberative, the partnership is being developed as an institutional vehicle for engaging the governments of China and India in strategies to meet the challenge of climate change and simultaneously meet increased energy needs. The A-P6 will be discussed in more detail below.

⁷ In early 2007, the government announced that Australia had committed \$200 million to assist Indonesia and Papua New Guinea to stop illegal logging of forests. In July, the government hosted 70 countries under the umbrella of the global initiative on forests and climate in talks on tackling climate change.

sector, resolute in their opposition to any policies that would impose a charge on carbon emissions, become resigned to the likelihood of their being some form of carbon impost either through a cap-and-trade emissions trading system or a carbon tax adopted in Australia.⁸

The challenge of global warming – the appeal of uncertainty

The time frames proposed for introducing an emissions trading system and setting emission reduction targets outlined in *Australia's Climate Change Policy* and the continuing opposition to ratify the Kyoto Protocol suggest that the government's engagement with a comprehensive climate change policy is a much qualified one. The rationale for this hesitancy has been well articulated. The defining feature of the government's approach to the challenge of climate change has been to resist approaching any initiative that might compromise the economic viability of energy-intensive industries and the fossil-fuel export sector. This preoccupation framed the earlier engagement in the United Nations Framework Convention on Climate Change and the deliberations that led to the Kyoto Protocol. In negotiating emission targets, Australian negotiators won support for special consideration for the unique character of the Australian economy. It was conceded that the fossil-fuel rich country, with its energy-intensive industries and reliance on fossil-fuel exports, would be disproportionately disadvantaged if Australia was set the same greenhouse gas emissions reduction targets as other advanced industrial (or Annex 1) countries. Australia was granted the concession of being permitted to increase the mass of emissions over 1990 levels.

The defence of this commitment to not pursue any policy agenda that would compromise the viability of energy-intensive industries and the fossil-fuel export sector was justified in terms of the conventional economic theory of comparative advantage. Australia's abundant resource endowments defined the character of Australia's incorporation

⁸ The Australian Coal Association, for instance, predicted that a climate change strategy could see the introduction of an emissions trading scheme as early as 2012 (*The Australian Financial Review* 18 August 2006).

into the global political economy. The robustness of the economy was predicated on these resource endowments and the efficiency with which minerals, through energy-intensive means, could be partially transformed to meet an ever-increasing global demand for iron and steel, aluminium and other metals. The momentum of the economy was also being underpinned by the marked growth in exports of fossil fuels, especially coal and more recently natural gas.

The government's opposition to ratifying the Kyoto Protocol rested on its fear that emission targets would, in the first instance, compromise the future of the resource industry whose success was reliant on the production of high-energy embodied products. A secondary consideration has been that any comprehensive international restriction on carbon emissions could imperil the fossil-fuel, and particularly coal, export industry. The government contended that, given there would be definite economic risks associated with a global regulatory framework that sought to restrict greenhouse gas emissions, more careful consideration had to be focused on arguments about the gravity of global warming predictions, the potential impact of global warming on economic activity and the effectiveness of prospective regulatory frameworks designed to meet the challenge of climate change. Appeal to the economic concept of uncertainty, and the associated economic risks of taking action in the face of uncertainty, became the principal justification for the government's intransigence. This appeal to uncertainty was premised on the unpredictability of, or on the limits to being able to establish with any degree of certainty or probability, several different dimensions of global warming.

A starting point in the preoccupation with uncertainty arose with respect to the science of global warming, which posits an association between the increasing concentrations of carbon dioxide in the atmosphere and global warming. Senior figures within the government referred to the lack of conclusiveness of the science of global warming as providing good reason for exercising caution and holding off imposing restrictions on industry to mitigate emissions. Climatology science was held to be provisional, or worse speculative, and this was reckoned to make for considerable uncertainty in predicting with any accuracy the shape of

future climate patterns. There have been several different slants to this scepticism in the science of global warming.

An early argument was founded on the notion that evidence of global warming was in fact inconclusive and the very idea of climate change contestable.⁹ There is less and less support for this opinion. A second order argument acknowledged that there is evidence of global warming, but the science sceptics have taken issue with the contention that global warming is the result of anthropogenic emissions, that is, that it is human activity that is the principal source of the greenhouse gas emissions. This contention that there is not a demonstrable association between human activity, emissions and global warming has informed the argument that calls for the urgency to control emissions be treated with extreme caution. The latest assessment by climatologists working under the auspices of the Intergovernmental Panel on Climate Change, which provides overwhelming evidence in support of the anthropogenic origin of global warming, has diminished the appeal of this argument (IPCC 2007a).

Another tack taken by the science sceptics has been to question the predictive capabilities of the science of global warming, notwithstanding the overwhelming thrust of scientific opinion identifying increased concentrations of CO₂ as the principal cause of global warming. Sceptics take issue with the reliability of climate sensitivity assessments which predict the likely temperature changes that will be caused by prospective increases in CO₂ concentrations. While it is conceded that measurements of prospective increases in CO₂ concentrations of climate sensitivity assessments could provide some pointers as to potential impacts, it is argued by the science sceptics that the predictions are at best indicative.¹⁰ A related argument questions the veracity of the IPCC projections of the consequences of global economic growth and the

⁹ Bjørn Lomborg is among the more celebrated of the sceptics (2001). The Prime Minister has, until recently, displayed a deep-seated scepticism towards the science of climatology and his political opponents continue to deride the Prime Minister as a climate change sceptic.

¹⁰ A. Barrie Pitroek's *Climate change: yarning up the heat* (CSIRO, Collingwood and Earthscan) provides a constructive introduction and appraisal of the science of climate change.

likely impact on concentrations of CO₂ (Castles 2006). The projections are held to be exaggerated because they are based on inflated predictions of the pace of economic growth of developing countries with the consequence that the likely growth in greenhouse gas emissions is overstated.

Many of these doubts about the science of global warming have now been cast aside. It is, for example, now widely accepted that global warming is anthropogenic in origin, and the government has publicly jettisoned its long-held scepticism with respect to climate change. The government also acknowledges that China and India, especially as major importers of Australian coal, have become major emitters and this gives cause for concern. In the place of the longstanding scepticism, a new 'realism' defines the government agenda. As the Prime Minister has stated repeatedly since announcing the establishment of the Emissions Trading Task Group, he is a 'climate realist' – the corollary being that he is no longer the climate change sceptic. Nevertheless, the appeal to uncertainty continues to colour the measure of the government's preparedness to legislate to mandate emission reductions. There are several dimensions to this modified take on uncertainty.

It is firmly believed by the government that the pessimism of global warming scientists is unwarranted because it is based on modelling that overstates the likely increase in greenhouse gas emissions that will be generated as the world economy continues to grow. It has been argued that the modelling understates the capacity to enhance efficiency in burning of fossil fuels, the extent to which CO₂ emissions can be sequestered, such as through better foresting and agricultural practices, and the benefits that will be derived from technological advances. Uncertainty about the character and emissions intensity of production systems in the future, and indeed the positive possibilities of human ingenuity to innovate, is held to justify some caution in the veracity of the modelling of future climate scenarios.

These arguments feed into a related uncertainty associated with the ostensible lack of precision in the global warming models in predicting the pace and magnitude at which greenhouse gas emissions will effect climate change. The debate that followed the release of the most recent

Intergovernmental Panel on Climate Change's assessment of the physical scientific basis of climate change, focused in on climatologists' long-range forecasts which, while estimating increases in global temperatures by the end of this century, ascribed anticipated increases that varied by some four degrees Centigrade (IPCC 2007a). Probability assessments have become more precise, but such assessments must necessarily remain qualified in considering likely climatic impacts through time.

Uncertainty is also held to be manifest with the complexity in modelling the possible impacts across space. The modelling of climate change induced impacts across different locations is not an exact science. Predictions are necessarily subject to a degree of uncertainty given that change is subject to other changes in ecological systems, as well as in human systems. This complicates the efforts to anticipate the impact of climate change on a region or on different economic activities. This has not prevented some very innovative and sophisticated modelling of possible impacts in particular regions, and the IPCC's Group II report on climate change outlines some likely climate impacts across Australia (IPCC 2007b).¹¹ But the inexactness of climatology science in being able to predict likely impacts and the associated damage costs with much precision has been referenced by government to justify holding off taking any immediate pre-emptive steps to regulate emissions. This has justified the 'let's wait and see' approach. Uncertainty in this instance justifies a preoccupation with adaptation as the need arises.

Another order of uncertainty arises with respect to assessing the costs and benefits of taking action to mitigate greenhouse gas emissions. The costs of taking early action, such as by requiring production systems to adapt, or installing mitigation technologies, appear on the accounting ledger immediately. In contrast, the benefits are generally not immediate;

¹¹ This uncertainty has not, however, prevented some quite critical research that has modelled the potential impacts of climate change in particular regions, including some probable 'hot spots' which would have deleterious consequences for some industries. See, for instance IPCC (2007b). The CSIRO is dedicating considerable resources to impact assessments across different regions and thus industries (Preston and Jones 2006).

they are likely to be more amorphous, and not so readily measurable in accounting, or money, terms.

There is an asymmetry in the timing of the costs and benefits, and this also presents at another level. A government-initiated dedication of capital to a mitigation strategy would have an opportunity cost. The redirection of finite resources entails the diversion of capital from another possible investment program that could have relatively clear and positive and measurable economic outcomes. The incentive to meet immediate calls on public monies, to fund site-specific projects or projects that will meet a set of needs or generate a return within a specific timeframe, are obviously more attractive to governments faced with the choice of dedicating public funds to a climate change mitigation venture whose outcome is uncertain and where the benefit will not be site-specific.

This asymmetry in the costs and benefits of an interventionist program provides a more classic rendition of the concept of economic uncertainty. The uncertainty with respect to the benefits of implementing what can sometimes be very costly initiatives has given government cause for not acting. The appeal in postponing any action to mitigate emissions has been reinforced by the conviction that future technological advances will both make cheaper any required mitigation policies and likely reduce the costs associated with damage rectification.

Underlying this approach to risk is a conviction that the costs of adopting immediate actions to mitigate emissions will not necessarily be offset by prospective future benefits. This conviction is premised on an assessment that discounts the value of costs and benefits into the future *vis-à-vis* the present. Within the conventional economic reckoning the present is valued over the future, and the calculation of the value of benefits and costs through time gives greater weight to the immediate over the future. This logic informs the case for discounting future benefit flows relative to the up-front costs that would occur with the adoption of a mitigation policy. Indeed, the preoccupation with the myriad of uncertainties as giving reason for holding off taking any action tends to feed into an argument that justifies a high rate of discounting

future benefits.¹² This has become evident in recent mainstream economists' reflections on the most appropriate rate at which future values should be discounted to ensure the commensurability of future benefits (and any costs) with up-front, present costs.

The release of *The Stern Review* sharpened this debate because *The Review* makes the economic case for implementing policies to stabilise the magnitude of future emissions levels based on a different reflection on future scenarios (Stern 2007). *The Review* argues that early action to address global warming will yield positive benefits at comparatively little long-term cost, whereas postponing any substantial action will fuel the pace and intensity of global warming, exacerbate the damage that climate change will likely cause to future economic activity and thus exaggerate adaptation and rectification costs. The assessment of the economic merits in implementing early action is predicated on the case for setting a low rate of discount because the reference point for the valuing is the state of the global environment and the wellbeing of the global community, and not discrete economic processes for which individual decision makers would likely be able to find a ready substitute. *The Stern Review* locates the logic for both a low rate of discount in terms of the pervasive effect climate change will have on the capacity of the natural environment to sustain humanity, and in terms of the realisation that any meaningful reductions in the level of CO₂ concentrations causing global warming are irreversible in the short- to medium-term and on the pace of global warming into the future. According to this logic, there is a systemically high level of risk associated with global warming; that justifies early action. This reasoning informs the argument for paying greater heed to the real costs that would likely be incurred in redressing the negative consequences of climate change and especially if the wellbeing of future generations is to be secured on terms comparable to those of present-day communities. By contrast, the conventional wisdom within economic discourse holds that a low rate of discount cannot be justified given the level of uncertainty, and that a high rate of discount, or at least a discount rate set by the market, should inform

¹² The argument in support of a high rate of discount is bolstered by a confidence in technological development which, it is contended, will enhance the capacity of communities to adapt to and rectify the damage that will be caused by climate change, reducing likely future costs in the process.

decisions regarding allocations of discrete economic resources through time (Productivity Commission 2007).

Finally, the other element in this basket of uncertainty that has occupied the government relates to the global purchase of governance or regulatory frameworks. The government has been forthright in arguing that without a comprehensive international commitment that engages all countries in emission targeting, there is no certainty that any Australian action to mandate greenhouse gas emissions reductions would result in any absolute net reduction in global emissions. The regulatory framework engineered under the Protocol umbrella is held to be of doubtful benefit when it requires only the industrialised Annex I countries to meet emission reduction targets. The potential for free-riding underscores the uncertain benefits of unilateral initiatives.¹³

This notion that Australia would be encumbered by the emission targets set under the Kyoto Protocol, while the developing economies would be free to invite energy-intensive industries to set up without restriction, is held to pose a severe economic risk for Australia should the government ratify the Protocol. The lack of universality of country obligations has instilled this lack of confidence in the capacity of the Kyoto framework to prevent developing countries from inviting energy-intensive enterprises to transfer their operations out of Australia. The belief that this is a real possibility is held to strike at the heart of Australia's international comparative and competitive advantage.¹⁴

¹³ The free-rider argument is somewhat specious because the rationale for the differential treatment of Annex I and non-Annex I countries is based on equity grounds and, most importantly, in recognition of the fact that the concentrations of greenhouse gas emissions in the atmosphere, that is, the stock of emissions, reflect the disproportionately large level of greenhouse gases emitted historically by the industrialised economies. The setting of emission targets for Annex I countries also reflects their stronger resource base and capacity to draw on technology to mitigate emissions, as well as adapt to climate change.

¹⁴ The argument has been most forcefully articulated by the Australian Bureau of Agriculture and Resource Economics, but surprisingly there has been next to no empirical research to support the contention. In fact, within environmental economic discourse there is little evidence to support the more general proposition that the weaker environmental regulatory frameworks that tend to exist in developing countries result in polluting industries relocating from

The uncertainty that this perceived deficit in global architecture engenders is held to generate further uncertainty with respect to the status of the infrastructure investment that is so critical to the energy-intensive sectors and fossil-fuel export industries. In most instances the existence of these industries has been contingent on governments giving priority to large-scale investment in public infrastructure which represents significant sunk costs, and generally funding arrangements, as well as borrowing assumptions, are based on the capacity of these investments to be amortised over the life of the venture. Should a change in regulatory arrangements occur, as critics of the Kyoto Protocol contend is the case, this could jeopardise the competitive position of an industry subject to more stringent controls, and this in turn would undermine the fiduciary position of the public agency or government responsible for the infrastructure investment. The uncertainty relating to governance thus has broader reach than the industry or sector directly effected.

Policy making in the age of uncertainty: “a blend of prudent conservatism and economic liberalism”

Uncertainty, it is contended within much conventional economic discourse, should dictate caution in responding to the climate change challenge. Precipitous action to restrict energy use to cut emissions could result in considerable economic costs. The potential economic damage would likely fall first on those industries that are held to be the drivers of the Australian economy, the energy-intensive sector in particular. In the longer term, the more extensive adoption of restrictions on CO₂ emissions would also impact on the coal export industry. It is the embrace of caution that is integral to, and has been held to justify, the orientation of the government's risk-averse strategy with respect to the adoption of policies to meet the challenge of climate change.

A corollary of this line of reasoning contends that the uncertainty with respect to the pace and impact of climate change suggests that priority should be to first focus on dedicating resources to adapting to the changed circumstances. It is argued that, rather than mandating pre-

the developed economies where more stringent environmental regulations are in force.

emptive action, adaptation is more economically sensible, and that those feeling the effects of climate change, and not government, are best placed to respond as appropriate. The priority should not be concentrated on placing onerous requirements on business, or on restricting economic growth to contain emissions, but on the formulation of policies that remove impediments to businesses and communities adapting as they deem appropriate to the challenges as these become manifest (McKibbin 2005; *The Australian Financial Review* 20 October 2006; *The Australian* 5 September 2006).¹⁵ The argument that we should be learning to live with climate change has been presented by the Australian Industry Greenhouse Network, a lobby group representing the interests of energy-intensive and resource industries, as the more strategically and economically sensible approach to policy (*The Australian Financial Review* 4 September 2006).

This approach is an essentially conservative one, and in an important respect this resonates with the first component of the Prime Minister's representation of the government's policy approach as a "blend of prudent conservatism and economic liberalism". Even though 'prudent conservatism' has been pivotal in the government's decision not to embrace the emissions trading and target system that lies at the core of the Kyoto Protocol, and which incidentally are formed within an economic liberalist frame, it is important to recognise that there have been other emphases in the government's 'economic liberalism' basket that have been represented as strategic responses to the challenge of climate change. Three particular policy elements formed under the banner of 'economic liberalism' warrant mention. These have emphasised voluntarism, enhancing market efficiency, especially in energy markets, and providing financial incentives to support business initiatives to innovate low-emissions technologies.

A key feature of the government's approach to the challenge of global warming has been its opposition to mandating compliance with emissions

¹⁵ A variant of this argument is that a comprehensive cap-and-trade emissions system would prove extremely costly and impractical, and force major structural economic transformations. See, for instance, the criticisms of the Stern Review by Brian Fisher, formerly ABARE director, and Henry Ergas (*The Australian Financial Review* 2 November 2006).

reduction objectives. An early initiative, the mandatory renewable energy target, was allowed to lapse. The government has sought to engage business to become more greenhouse savvy, but it has emphasised the merits in voluntarist engagement, rather than mandating this approach. This is consistent with the philosophy that business, rather than government, is best placed to evaluate the risks and responses to uncertainty with respect to climate change. One of the key planks in this policy approach has been the 'Greenhouse Challenge Plus' Program. The program invited companies to voluntarily commit to an emissions reduction plan, in return for which they would be rewarded with a government green seal of approval. The voluntary nature of the scheme was represented as more likely to win the support of business than would be the case with an emissions trading system in which businesses were compelled to participate.¹⁶ The government has been encouraged by corporate involvement in the program, in spite of the government's failure to conduct more than a small number of audits of the companies participating in the 'Greenhouse Challenge Plus' program.¹⁷

Energy market reform has been another key element in the government's economic liberalism program. The commitment to energy market reform as a vehicle to enhance the efficient utilisation of energy was outlined as a key objective of the 2004 Energy White Paper, *Securing Australia's Energy Future*. An energy reform implementation group was established under the auspices of the Commonwealth and State governments to give effect to National Competition Policy and to generate market conditions that would enhance the efficient production, delivery and utilisation of energy and, in the process, reduce emissions of greenhouse gases. State government control of energy production and distribution has been regarded as the major structural and institutional

¹⁶ The Secretary to the Department of Prime Minister and Cabinet, Peter Shergold, who also chaired the Emissions Trading Task Group, maintained that the ambitious reach of the scheme justified the decision to postpone the start of an emissions trading system (*The Australian Financial Review* 15 June 2007).

¹⁷ The government has, however, sought to secure a greater level of commitment to the scheme by passing legislation in 2006, the *Energy Opportunities Act*, to mandate assessment and reporting of energy use by big energy users. The government is proposing to extend this to require more businesses to report on energy and emissions reduction plans.

obstacle to competition and thus energy efficiency. Reform has thus been almost wholly concentrated on effecting the corporatisation and/or privatisation of state-owned generation and retail instrumentalities.

This focus on energy market reforms highlights how pivotal the 'economic liberalism' program has been and continues to be in defining the government's approach to the challenge of climate change. This is evident in domestic policy initiatives. It is also manifest in the government's international diplomatic endeavours, and most obviously through Australia's leadership role in the establishment and focus of the Asia-Pacific Partnership on Clean Development Climate. It was also apparent at the G-20 forum, chaired by the Treasurer and held in Melbourne in November 2006, which resolved to prioritise the objective of 'energy reform', or more particularly energy market liberalisation, in its manifesto (*The Sydney Morning Herald* 13 November 2006).

A third crucial policy component in this 'economic liberalism' program has been based on the principle that, providing the appropriate incentives are in place and there are no institutional obstacles, the free market can be a critically significant catalyst in inducing technological innovation. The initial interest in the possibilities of technological solutions concentrated on the provision of incentives to promote research and development of low-emission and renewable energy technologies, including solar and wind-sourced energy technologies. This was coupled with federal and state governments setting mandatory renewal energy targets with the object of providing clear signals about the future shape of energy markets.

However, the federal government has since abandoned mandatory renewable energy targets. The overwhelming share of government-sourced 'market incentives' are now directed towards underwriting the research and development of technologies that could provide solutions to the major source of greenhouse gas emissions, coal-fired electricity generation and coal-based energy-intensive minerals processing industries. This shift in policy was in large measure a response to the initiatives adopted by energy producers and the resource industry themselves. It followed agreement among companies whose future was tied to coal that they should concentrate resources and coordinate

endeavours to research and develop technologies to mitigate CO₂ emissions. With the first of the COAL21 conferences held in 2003, representatives from the electricity generating sector, coal mining companies and aluminium companies, with government support, proposed to commit up to one billion dollars to support research into and development of 'clean coal' technologies and the sequestration of emissions.¹⁸ The government subsequently dedicated up to \$500 million, and joined state governments to establish the Low Emissions Technology Fund to underwrite the commitment to the development of 'clean coal' technologies and the continued development of energy-intensive industries and the coal export industry. Through other support schemes, such as establishing cooperative research centres and the provision of tax concessions, the government has sought to accelerate the innovation of 'clean coal' technologies, including more efficient, less polluting methods of burning coal, carbon capture and storage techniques, and most notably geo-sequestration.

The Bush administration's Clean Energy Bill proved an added impetus to this focus. There was some effort directed to tie the COAL21 program into initiatives spawned by the Clean Energy Bill, and this in turn formed a key plank in the Asia-Pacific Partnership on Clean Development and Climate project. 'Low-emission' and 'clean-coal' technologies are held out as affording the means to mitigate CO₂ emissions whilst permitting the continued reliance on coal.

More recently, the government has turned its attention to another technological solution in the form of nuclear power. Nuclear power, the government contends, holds out the promise of delivering 'emissions-free' green power. In the first instance, however, it is evident that the government is primarily interested in facilitating the further expansion of uranium mining to satisfy growing world demand. The establishment of the Switkowski review into 'Uranium Mining, Processing and Nuclear

¹⁸ The policy to provide government funding support and taxation incentives for research and development of geo-sequestration was adopted in March 2004. The commitments made by resource and energy companies, with funds to be raised through a voluntary industry-organised levy, were honoured only after the Queensland state government threatened to increase the royalty (*The Australian Financial Review* 18 May 2007).

Energy' in 2006 was a thinly disguised manoeuvre to draw attention to the potential of the growing export market. The inquiry also flagged the potential of nuclear power as providing a source of energy in Australia that is 'green' and which could be added to the suite of technologies adopted to combat global warming.¹⁹ In the immediate future, however, the government is concentrating its resources on removing obstacles to providing infrastructural support for and diplomatic backing for the export of uranium.²⁰ A commitment has also been made to join with the United States in commissioning further research on the Generation IV nuclear reactor technology.²¹

Energy market reform and the dedication of funds to supporting research and development of 'low emission' and 'clean coal' technology are regarded as the most sensible low-risk responses to meeting the challenge of global warming. When considered alongside the appeal to the myriad of uncertainties that the government has reflected on in considering how to respond to the challenge, and the timidity with which the government has approached the establishment of a planned emissions trading scheme, the actual policy initiatives that have

¹⁹ The nomination of Warwick McKibbin to the review would also suggest that the inquiry was repositioning the government on carbon pricing since the recommendation to support the case for nuclear power generation being an economically viable option in Australia is contingent upon an impost on carbon emissions (Switkowski Report, Australia 2006). McKibbin has been a strong advocate for a nationally-determined carbon impost (McKibbin 2005; McKibbin & Wilcoxon 2006).

²⁰ The Howard government has overridden objections voiced by the Northern Territory administration to the expansion of uranium mining in the Territory, as well as to establishing nuclear waste storage facilities in the Territory. The government has also indicated it will move to draw on its constitutional powers to override state government opposition to uranium mining, which is a source of uncertainty. The government has been quite active in facilitating the negotiation of contracts to enable the export of uranium to Taiwan, China and most recently India, and there are risk management issues associated with these arrangements that the current study will address below.

²¹ Paradoxically, given that the Generation IV technology is unproven, as well as the risks associated with nuclear technology and issues relating to the storage of nuclear waste more generally, the Minister for Industry and Resources, Mr Iain McFarlane, has expressed his lack of confidence in future of geo-thermal sources power (*The Australian* 2 August 2007).

been adopted to date are clearly consistent with the "blend of prudent conservatism and economic liberalism" that the Prime Minister has argued is the basis of the government's climate change policy. But it is the conservatism that stands out, and this is reflective of a 'business-as-usual' approach to the challenge of global warming. This conservatism helps explain the government's opposition to ratifying the Kyoto Protocol.

The substance of climate change policy: towards energy security

The one consistent theme in the Howard government's approach to the challenge of climate change has been to avoid committing to any action that would compromise the internationally-competitive position of energy-intensive industries or impede the future of coal exports. The justification for not ratifying the Kyoto Protocol has been made primarily in terms of Australian industry being subject to emissions targets that Australia's main (non-Annex 1) trading partners would not be. The government's plan to establish an emissions trading system proposes a means of addressing this anomaly. The plan is predicated on two principles. The initial steps would be tentative ones, to what has been referred to as a 'soft start' for the business sector as a whole. The government has announced that the start-up date for an emissions trading system would not occur before 2011. Emission reduction targets would be set. Targets would in all likelihood be indicative. The Prime Minister has argued that the primary objective would be to ensure that when the trading system is established it should not impose too great a burden on business. It has been envisaged that the price should not exceed \$10 per tonne, and this in effect will determine the setting of the short-term emissions target.²² A 'safety valve' would provide scope for a 'soft penalty' to cushion possible emission overruns.

The second principle is based on securing the internationally competitive position of energy-intensive industries and energy-intensive exports. The

²² The price at which carbon is currently being traded in voluntary emissions trading markets would suggest that this ceiling will provide little (market-based) incentive for business to pursue emission reduction strategies.

July 2007 *Climate Change Policy* details those sectors of the economy – energy-intensive industries and industries whose operations are reliant upon substantial infrastructure investments – that would be given special treatment when carbon permits are issued. The intention is to ‘grandfather’ emission entitlements, that is, to issue a quota of carbon permits to businesses which would be comparable to their present emission levels, and to impose a ‘soft penalty’ on those companies that exceed their allotted emissions quota. In addition, businesses that have recently invested in technologies or adopted strategies to reduce emissions would be rewarded for these initiatives by being issued with an emission quota in excess of the reduced level of emissions, and the quota in excess of the business’s needs could be traded in the market.

The *Climate Change Policy* has been well received by companies engaged in energy-intensive activities and the resources sector, and the *Policy* mirrors proposals advocated by the Business Council of Australia in its submission to the Prime Minister’s Emissions Trading Task Group. By contrast, there have been some quite formidable criticisms of the failure of the government to pursue more proactive policy initiatives, and in particular steps that would mandate reductions in Australia’s carbon footprint, consistent with the Kyoto Protocol. The more strident of the criticisms have argued that the Howard government’s climate change policy position has been captive of the international corporations that dominate energy-intensive activities (Hamilton 2007; Pearse 2007).²³

Considerable evidence has been marshalled in support of this contention that government policy has been largely framed by the dictates of international energy and resource corporations. The evidence seems indisputable. Similar criticisms have been advanced to explain the continuing opposition of the Bush administration to the ratification of the Kyoto Protocol. However, it is important to look beyond this criticism that the definition of government policy has been largely instrumentally determined by particular sections of the business community. The contention fails to explain the apparent lack of influence exercised by other sections of business. It does not explain

²³ It is generally acknowledged that American energy corporations have funded much of the research that has questioned the science of global warming (Monbiot 2006).

why the government has proposed introducing an emissions trading system, unless of course this shift in policy can be attributed to a change of heart among the influential captains of industry (and there may be some substance in this). More concretely, it fails to explain the different initiatives implemented and/or proposed by state governments in their endeavours to confront the challenge of climate change, and these have been so significantly different.

In 2005 the state and territory governments in Australia entered into discussions to begin exploring a national emissions trading scheme in recognition that Australia should be more proactive in formulating policies to deal with the challenge of a ‘carbon constrained’ future. In 2006, the governments established a task force to begin mapping the framework of an emissions trading scheme which they then resolved to establish by 2010 irrespective of whether this had the support of the federal government. The initiative was in part politically motivated, as state Labor governments sought to capture political advantage in the face of the federal Liberal-National Party government’s opposition to an emissions trading system. It was also consistent with the interests of some sections of the business community, most notably insurance companies, investment and superannuation funds and financial advisors and traders in the share market, moved by risk management concerns or the opportunity to trade in a new financial instrument.

Yet, notwithstanding this ostensible commitment to the objectives of the Kyoto Protocol, it has to be acknowledged that state governments have done very little to block the continued development of energy-intensive industries and related coal-fired and gas-fired power generation capacity, as well as the further expansion of mining to bolster coal exports.²⁴ There is an apparent contradiction between the declared policy commitments and actual practices in their support for industrial

²⁴ Reflective of this contradiction, despite continuing to advocate the establishment of the emissions trading scheme, in 2007 the New South Wales government overrode a decision by the NSW Land and Environment Court to block an application to develop a coal mine in the Hunter Valley on a number of grounds that the coal mined would contribute to global warming. The Land and Environment Court decision followed a campaign by local environmentalists against the development proposal.

development. It might also be observed that for all federal Labor's declared commitments to address the challenge of global warming, including immediately ratifying the Kyoto Protocol should it be elected to government, Labor's greenhouse management policies fall short of pursuing any immediate initiatives.

This suggests another explanation for understanding the role of the different levels of government in responding to the climate change challenge that does not reduce policy positions to an instrumentally determined reflection of business demands. It prompts consideration of the structural nature of government policy decisions. Indeed, Australian negotiations within the UN Framework Convention made this structural imperative clear from the outset. The unique character of the Australian economy, the significance of energy-intensive industries, but also the resource, including fossil-fuel based, export industries, justified special treatment in the eyes of Australian diplomatic representatives. It was argued that there were structural reasons why Australia should be granted concessional treatment within the Kyoto framework.

This case for 'special treatment' has been reiterated repeatedly. Australia's Ambassador to the United Nations has made the point most recently as August 2007, in the General Assembly debate on climate change. Mr Hill signalled Australian government endorsement of the need for an effective international framework, then qualified this commitment by advocating a framework "that includes all major emitters, takes account of differing national circumstances and goals for sustainable development and allows countries to adopt a range of policies to reduce their emissions" (Hill 2007). Hill then proceeded to detail the raft of initiatives that the government has pursued in the quest to meet the challenge of climate change. These include setting the agenda at the Asia-Pacific Economic Co-operation forum to be hosted by Australia in September to enable debate on the economic effects of climate change, assuming a lead role in establishing the Asia-Pacific Partnership on Climate Change and Development group, which has brought the US, Japan, South Korea and Australia together with China and India, and supporting the Global Initiative on Forests and Climate Change.

The distinctive feature of each of these initiatives, and more especially so when considered in relation to one another, is that they chart an alternative framework to that constructed under the umbrella of the Kyoto Protocol. Perhaps the most significant in terms of the institutional architecture that has been put in place has been the Asia-Pacific Partnership on Climate Change and Development, or A-P6. Formed in mid-2005, A-P6 was established with the express objective of bringing China and India, as non-Annex I countries and thus not subject to emission target reductions, into dialogue with the US, Australia, Japan and South Korea as signatories to the Kyoto Protocol and, in the case of Japan and South Korea countries that had ratified the Protocol. The ostensible rationale was a more active engagement among the partner countries than was reckoned could occur under the mantle of the Protocol. This would facilitate the diffusion of technology that could facilitate further economic development while simultaneously addressing climate change.

Taking the lead from the Prime Minister's characterisation of Australia's policy approach being a blend of "prudent conservatism and economic liberalism", the interest in establishing the A-P6 can be linked back to the endeavours to construct an institutional framework that secured the structural orientation of the Australian economy. The immediate ambition of the six-country deliberations, the one proffered at the January 2006 meeting of the Asia-Pacific Partnership countries, turned the emphasis of emissions management away from setting emission targets to the development of more efficient ways of producing and utilising fossil-fuel based sources of energy to reduce carbon emissions. The A-P6 forum resolved to garner support for investing in technological solutions to the problem of greenhouse gas emissions, to cooperate in the research and development of low emissions technologies, and to facilitate the diffusion of this technology.²⁵

A second platform in the A-P6 program has moved still further away from the Kyoto Protocol's primary ambition to target greenhouse gas emissions to emphasise the importance of energy security. Energy security has emerged as a paramount concern of the United States. The

²⁵ The government's commitment of funds to research and development of 'clean coal technology' has been positioned as an A-P6 initiative.

preoccupation with securing future energy supplies prompted the Bush administration to commission a major study by the National Petroleum Council, an organisation representing American oil and energy corporations (NPC 2007). Indeed, the concern with 'energy security' extends beyond the US and is emblematic of a dramatic reorientation in political discourse internationally. For instance, whereas the G-8 meeting held in Gleneagles in 2005 mapped a 'Plan of Action for Climate Change, Clean Energy and Sustainable Development', the 2006 meeting hosted by Russia declared 'Energy Security' to be the priority. Whereas the 2005 meeting was endeavouring to lay some foundations for the December Montreal meeting of the UNFCCC, the 2006 plan of action was framed by the ambition to open up world energy markets and explore ways to minimise the actual or potentially restrictive practices of state owned or controlled energy reserves. The benefits of economic liberalist policy prescriptions were advocated, including effecting greater transparency in markets, improving the investment climate in the energy sector, enhancing energy efficiency and energy saving, diversifying the energy mix and securing critical energy infrastructure.

A similar reorientation was evident within the European Union. European leaders had already shifted this agenda in formulating the European Union's 'European Energy Charter' the principle objective of which was to liberalise energy markets to promote energy security.

The Australian Government has sought to build on this. The preoccupation with 'energy security' was designated as the priority subject of the November 2006 G-20 forum in Melbourne chaired by the Treasurer Peter Costello – while the subject of climate change was not listed on the agenda (*The Australian Financial Review* 15 November 2006).²⁶ Costello reported that his ambition was to win agreement at the G-20 forum to promote free trade in energy by combating the

²⁶ The tenor of the G-20 meeting was set by Treasury officials who had already indicated their preoccupation with energy market liberalisation. In the lead up to the forum, Treasury officials had pointed to the deleterious effects of programs to nationalise resources, arguing that such moves discouraged private investment in resource development, engendered uncertainty in energy markets and would contribute to long-term supply shortfalls (*The Sydney Morning Herald* 9 November 2006).

monopolies and the cartels that are frustrating supply and investment. Looking to consolidate support for this appeal to the import of the free market, the chief executives of some of the world's largest energy and resource companies had been invited into the forum (*The Australian* 16 November 2006).²⁷

The rationale for this appeal to cooperate on promoting "free trade and open markets" in the interests of enhancing 'energy security' was one that had been laid out before by the Howard government. Helping solve the 'energy security' challenge would be to Australia's obvious advantage, and would help consolidate the nation's standing as the largest exporter of coal, among the largest exporters of natural gas and with the potential to become the largest exporter of uranium. Encapsulating the Howard government's preoccupation with Australia as an exporter of energy not encumbered by the mandating of greenhouse gas emissions, Costello neatly summed up his "vision for achieving global resource security: [establish] an energy and minerals freeway linking suppliers and consumers across the globe" (*The Australian Financial Review* 16 November 2006). A similar position was being promulgated before APEC finance ministers in the lead up to the September APEC forum. The Prime Minister signalled that APEC deliberations would attend to the subjects of climate change and 'energy security', but the real agenda would serve to promote Australia's international fossil fuel export position (*The Australian Financial Review* 13 November 2006). Any progress in advancing agreement on regional climate change policy would necessarily be subordinated to agreement on 'energy security'.

The Australian government's engagement in the A-P6 and the program that the government has devised for the APEC forum have been framed by the concern to secure the internationally competitive position of the energy-intensive resource sector. In so far as the government has sought to engage China and India in the A-P6, winning their endorsement for a regional energy security pact, the government been successful in

²⁷ The irony in the issue of invitations to the chief executives of some of the world's largest energy and resource companies could surely not have gone unnoticed. There has been a substantial consolidation of ownership of companies through mergers and acquisitions of energy and resource companies over the last few years.

elevating the centrality of Australia's comparative advantage as a key supplier of fossil fuels to fire the development of these countries. The enthusiasm with which the government has approached negotiations over the supply of fossil fuel exports to these two countries is further testimony to this preoccupation.

The extent to which this putsch for 'energy security' has been engineered in conjunction with the Bush administration highlights an essential aspect of the rationale for the Howard government's and the Bush administration's refusal to ratify the Kyoto Protocol. Both governments remain wedded to an energy-intensive, fossil-fuel based economy. This is an accumulation model in which the fortunes of the economy are predicated on the continuing reliance upon fossil fuels to fire the engines of the industry and consumption. It is a regime that will be increasingly difficult to readily accommodate within the Kyoto framework.

The Australian opposition to the Kyoto Protocol is captive of two dimensions of this fossil-fuel based economic model. On the one hand, the emission targets advocated within the Kyoto framework will likely impede the continued expansion of energy-intensive industries. On the other, the prospect that the targeting of emissions would be extended to incorporate the rapidly developing economies of China and India could arrest the continued expansion of the coal export industry. Likewise, the confidence that the government places in the potential contribution that Australian exports of uranium could make as a source of 'green' power could be easily undermined, given the energy-intensity of mining and processing the uranium (Barnaby & Kemp 2007; ISA 2006).

This prompts another reflection on the Australian Government's refusal to ratify the Kyoto Protocol. Opposition to the Protocol has entailed more than simply refusing to ratify the Protocol. The opposition is reflected in a raft of initiatives that have gathered pace in the last two years and that are directed at cobbling together an alternative international framework. Australia's UN representative has articulated the different elements of this very neatly before the UN General Assembly (Hill 2007). Hill outlined the several pillars of this alternative that include: focusing the energies of the APEC deliberations to evaluate the economic effects of climate change; the constructive architecture

organised in the A-P6, which promises to reduce greenhouse gas emissions by promoting greater energy efficiency fostered through energy market reform and technology innovation and diffusion; and, support to be provided to protect old-growth forests from illegal logging, with encouragement afforded for reforestation and afforestation through the multilateral Global Initiative on Forests and Climate Change.

Each one of these projects, in one way or another, were they to receive broader endorsement by interested governments, could serve to weaken the Kyoto framework. The original draft agenda for the APEC forum had canvassed the possibility of establishing a regionally-based emissions trading system that would be more flexible in form, and would not be so firmly set within an emissions target objective, as is the case with the Kyoto emissions trading scheme. The proposed system would have been consistent with the ambitions of the A-P6, and it would accommodate the growing demand for energy by the developing economies of China and India. It would, in addition, reward technology innovation and diffusion through the issue of carbon credits. This loosening up of the other side of carbon markets, namely the scope for generating carbon offsets and credits, is a feature of the Global Initiative on Forests. The initiative is proposing to credit reforestation and afforestation programs and thus extend the remit of carbon offsets beyond what has been agreed under the terms of the Kyoto Protocol.²⁸

The APEC forum was being promoted as providing the opportunity to build on the foundations of the A-P6. Whereas the A-P6 explored the possibility of a six-country trading scheme, at one stage in the discussions on the APEC agenda the Prime Minister envisaged the multilateral organisation providing the springboard for a regionally-based, namely non-Kyoto based, emissions trading system which, he

²⁸ Pressed by business and leading state economists, the Environment Minister has proselytised the benefits of valuing forests as effective 'greenhouse sinks' and, therefore, worthy of inclusion in a global emissions regulatory regime. And, faced with resistance to the incorporation of the sequestration of carbon because of uncertainties about the real value of forests as carbon sinks, the Minister has entrusted the Australian Greenhouse Office with the task of demonstrating that a carbon accounting system could establish the tools for measuring the value of carbon sequestered (Hill 2000; Australian Greenhouse Office 2000).

declared, would be of direct benefit to Australian businesses (*The Australian Financial Review* 18 July 2006).

While each of these initiatives may be seen to be chipping away at the foundations of the Kyoto Protocol, to date these manoeuvrings have had only limited purchase.²⁹ In part this is because the intended objective of effecting a retreat from the ambitions of the UN Framework Convention on Climate Change introduces multiple layers of uncertainty, most especially with respect to the regulatory framework that is likely to be built on the mantle of the Kyoto Protocol as it is renegotiated beyond 2012. The political climate has also shifted considerably. Gore's *An Undeniable Truth*, *The Stern Review* and the recent IPCC reports, as well as a number of influential reports prepared for business, have brought to the fore a greater appreciation of the potential risks in not taking early action to mitigate greenhouse gases (Allen Consulting Group 2006). The consequence has been that support for the fossil-fuel based economic model that has defined the Australian Government's position is fast dissipating.

Revisiting risk and uncertainty in the Kyoto age

It is now more generally accepted that the appeal to uncertainty, to justify not taking early steps to mitigate emissions in the hope of forestalling global warming, places too much emphasis on one side of the economic risk ledger. Business and broader community concerns have turned to reflect more critically on the immediate and longer-term risks and the associated actual and potential costs in postponing moves to establish governance frameworks to regulate greenhouse gas emissions. It is now widely recognised that the failure to act engenders a raft of risks and uncertainties that will likely carry considerable and ever-increasing economic costs.

²⁹ Thus, while there has been considerable publicity celebrating the achievements of A-P6 in Australia, there has been next to no reporting in the media on A-P6 in Japan, South Korea and China, very limited reporting on A-P6 in India, and the US Congress has restricted the magnitude of the Bush administration's A-P6 funding promises.

There is the immediate cost associated with Australia's refusal to ratify the Kyoto Protocol. Australian-registered businesses will not be able to reap the supplementary reward of carbon credits issued under the terms of the Kyoto emissions trading mechanism when investing in emissions reduction projects in developing economies. Australian companies will not be able to benefit from the Kyoto joint implementation schemes or clean development mechanisms and emissions banking system.³⁰ Similarly, companies cannot earn carbon credit benefits from exporting energy-efficient or renewable energy technologies to developing countries under the terms of the Kyoto Protocol.

The uncertainty relating to commercial transactions that confronts Australian-registered companies under the Kyoto framework extends beyond these obvious Kyoto instruments. It is, for instance, unclear as to whether it would be legitimate for a coal exporter to entice prospective buyers with offers of carbon credits to offset the emissions they would generate when burning coal and thereby assist the buyers to meet their emissions quota obligations. For international corporations, such as BHP-Billiton, the largest publicly-registered company in Australia, this makes for considerable business uncertainty (*The Australian* 29–30 October 2005).

Of comparable and more direct significance has been the impact on business, and especially the fortunes of insurance companies, of the growing number of instances of extreme weather and catastrophic events. *The Stern Review* gave further voice to these concerns by modelling the potential economic risks in not acting in the face of uncertainty. Australian business had previously been acquainted with this quite different reflection on uncertainty through the report prepared by, among others, the Allen Consulting Group (2006). The thrust of these analyses has been that it is no longer appropriate to approach the uncertainties associated with global warming through the conventional economic oeuvre. Global warming will have comprehensive effects, many of which will be economically deleterious and irreversible. Some of these effects will undermine the capacity of communities to sustain

³⁰ The New Zealand government, which is a signatory to the Kyoto Protocol, has been advertising the advantages that Australian companies could reap by transferring their headquarters

themselves. Adapting to the changed environmental circumstances, or resorting to substitutes which a conventional analysis would pose as a solution, may simply not be possible.³¹ A very powerful case has been made for acting early to mitigate emissions and thus reduce the magnitude of climate change and the likely measure of economic costs this will likely engender in the future.

In the face of the uncertainties arising from the government's timidity to act decisively in formulating regulations to govern emissions, many businesses have taken the initiative to implement company-based emissions management and carbon monitoring strategies. There is now abundant evidence of businesses which, while not necessarily adapting business practices to be consistent with the Kyoto regime, have established mechanisms internal to the company that provide incentives for more focused monitoring and control of energy use and emissions minimisation. Some have established in-house carbon trading systems as best practice business management. Others have determined that building tradeable emissions platforms in Australia is good business practice in anticipation of the likelihood that the Australian government will eventually be forced to ratify the Protocol.

There is also considerable pressure being brought to bear on companies to adopt emissions management and carbon monitoring strategies. With market capitalisation being influenced by the impact that climate change, and prospective regulatory frameworks, might have on the fortunes of industries and individual enterprises, investment and superannuation funds are factoring into their investment strategies risk assessments appraising the greenhouse gas emissions management credentials of existing and prospective investments. Companies registered on the Australian Stock Exchange are being pressured by investor groups and fund managers to report on how they are preparing to meet the challenge of climate change (*The Australian Financial Review* 2 June 2006). This focus on the green credentials of corporations is not only moved by a concern with the risks attached to the funds management and investment houses' direct investments. It is also motivated by the more

³¹ The possibility that global warming could undermine the capacity of communities to sustain themselves has spawned a literature on the social and political risks associated with forced migration.

general objective of wanting to minimise the potential global risk that environmental catastrophes present for the stability of stock markets.³²

Within the financial sector, emissions risk assessments have emerged as integral to the appraisal of companies' long-term exposure to risk. Citigroup has, for instance, provided quite detailed assessments of the carbon profile of the top 100 listed companies in Australia (Citigroup 2006). This translated into an average liability of between one and two per cent of companies' capitalisation. In the case of BlueScope the CO₂ emissions liability amounts to the equivalent of some 3.5 per cent of capitalisation. Such evaluations have brought considerable pressure to bear on companies to begin planning how they will contribute to the mitigation of greenhouse gases.

Indeed, the desire to be registered as a good, and green, corporate citizen has resulted in more formal monitoring and appraisal systems being established in non-government arenas. A number of prominent corporations have signed up to the Global Disclosure Project which monitors the efforts of some of the world's largest companies to reduce CO₂ emissions.³³ The formation of the Australian Climate Group in 2003 has lifted the profile of Australian companies petitioning for action. Several major Australian corporations have recently joined forces to publicly commit to reducing their emissions and, for some, to become carbon neutral.³⁴

³² Based on the Carbon Disclosure Project, a coalition of investors, bringing together the National Australia Bank, VicSuper, AMP Capital Investors, BT Financial Group and the Catholic Superannuation Fund, is proposing to request companies that they hold shares in to provide them with details of carbon emissions and energy-emission management policies (*The Age* 5 October 2005).

³³ The details and company assessments are available at: <http://www.cdproject.net>.

³⁴ The Australian Business Roundtable on Climate Change was formed by Westpac, Insurance Australia Group, BP Australasia and Origin Energy with the Australian Conservation of Australia, in April 2006. IAG had previously joined the WWF, the World Wide Fund for Nature, to establish the Australian Climate Group in 2003, and their reports on the threat of climate change was endorsed by the New South Wales, South Australian and Victorian governments. The Climate Institute, associated with the Australia Institute, launched in October 2005 a \$10 million campaign with the support of business to pressure the government to ratify the Kyoto Protocol. There are a growing number of Australian corporations that have

Attention has also turned to reflecting on the risks posed by climate change to public infrastructure, and the need for government to be taking steps to secure the future integrity of this infrastructure. The government's chief scientific officer has argued the case for measures to be put in place to protect critical public infrastructure from the effects of climate change (*The Financial Review* 17 June 2007). This has prompted calls for moving quickly to begin formulating strategies to facilitate adaptation now.

There is increasing reflection on the risks that could be engendered by the uncertainty in climate change governance given the government's insistence that regulatory frameworks should be nation specific. In a global context, the contention that Australia should be afforded special consideration and that this be built into the climate change institutional framework to "take ... account of differing national circumstances and goals for sustainable development" and which would allow "countries to adopt a range of policies to reduce their needs", is a recipe for governance uncertainty (Hill 2007). Contrary to the position advocated by McKinnon and others, a position that has provided the conceptual justification for Australia's 'special case' argument in the Framework Convention negotiations, international businesses especially are arguing the case for uniformity of approach in an internationally comprehensive regulatory framework. Uniformity provides the most amenable means for aligning costs and management structures and consistency in accounting practices and operations across the global enterprise (Kolk & Pinkse 2005). Anything less makes for regulatory uncertainty.

The government's conservative approach to the threat of global warming is engendering uncertainty within the business community, which is demanding action to redress this position. The executives of major corporations acknowledge that global warming will likely impact on their fortunes and are now pressing for some government action to ensure greater certainty in the business investment environment.³⁵

signed on to the Global Disclosure Project, which aims to monitor the efforts of some of the world's largest companies to reduce CO₂ emissions.

³⁵ The most recent survey of corporate executives documents a significant shift in corporate thinking on global warming, PricewaterhouseCoopers, 2006.

The government's confidence in the promise of technology has also been called into question. It is, for example, not evident that geo-sequestration will provide a safe and enduring means of storing carbon, let alone one that will be cost effective. The promise of this technology is uncertain, and paradoxically this is not the case with a number of other proven renewable technologies whose development the government has not supported to anywhere near the same extent.

The government's promotion of the economic benefits in expanding uranium exports and possibly establishing nuclear power plants as a solution to global warming speaks volumes about the fixation with maintaining Australia's place in a fossil-fuel intensive global economy.³⁶ Issues of uncertainty and risk are effectively dismissed as being manageable and this gives cause for considerable alarm.

Yet in its determination to secure the future of Australia as a global supplier of fossil fuels, the government could well be exacerbating the risks and uncertainties in the fossil-fuel intensive economic regime, and there are many. Nuclear power does not provide a short-term means of reducing greenhouse gas emissions. The mining and processing of uranium and construction of nuclear power plants can actually exacerbate the magnitude of CO₂ emissions.

There remains the question of managing and storing nuclear waste, and engaging the uranium-nuclear power industry could well increase the problem, the risks and the costs this presents for Australia. Interests associated with uranium mining and enrichment have been promoting the geological advantages of Australia as a safe site for storing nuclear waste matter. The Switkowski Taskforce concurred with this position, and recommended that storage facilities could be developed as a dimension of a more expansive uranium-nuclear industry in Australia, a position also supported by the International Atomic Energy Agency (The Switkowski Report, Australia 2006; *The Australian* 5–6 August 2006). Discussions between the US President and the Australian Prime Minister on the possibility of Bush administration's proposal to establish

³⁶ The A-P6 forum introduced nuclear power to the energy resource mix as a means of enhancing 'energy security'.

a 'global nuclear energy partnership' appear to be linked to Australia agreeing to establish a nuclear waste storage facility.

The July 2007 recent earthquake that damaged the Kashiwazaki-Kariwa nuclear power plant in Japan, the largest facility in the world, highlights the risks with nuclear power. But there are still greater risks and uncertainties engendered by the pace at which the scale of uranium exports is being expanded because it is occurring in the context of the parlous state of international non-proliferation safeguards. The International Atomic Energy Agency has indicated that its ability to effectively monitor and police access to and use of nuclear material is deficient, and that it does not have the resources to monitor adherence to the Nuclear Non-Proliferation Treaty. The US Department of Homeland Security has reported a doubling of incidents of trafficking and mishandling of nuclear material in the last five years (*The Sydney Morning Herald* 28 December 2006).

Australia has now agreed to export uranium to India, which is not a signatory to the Nuclear Non-Proliferation Treaty. This is occurring under the protective umbrella negotiated by the Bush administration that will provide for IEA inspection of civilian nuclear power plants in return for the US providing nuclear material and technology for civilian purposes. (The arrangement is not dissimilar to the contract to export uranium to Taiwan, which is also not a signatory to the Nuclear Non-Proliferation Treaty,³⁷ and to the export deal with China, which provides for the uranium to be used only for peaceful purposes, and its use to be monitored by the IAEA.³⁸ As much as the architects of these

³⁷. The contract between BHP-Billiton and Taipower to export uranium employed an 'indirect sale arrangement', with uranium being shipped first to the United States for enrichment before being transhipped to Taiwan, and was sanctioned by an Australian-US bilateral agreement (*The Sydney Morning Herald* 18 December 2006). The machinery to bypass obligations under the Nuclear Non-Proliferation Treaty to support an arrangement to export uranium to Taiwan was negotiated in 2001 (<http://www.austlii.edu.au/au/other/dfat/nia/2001/28.html>).

³⁸ *The Australian Financial Review* 7 December 2006. Richard Broivnoski, in his submission to the Switkowski taskforce, raised concerns that the effect of the arrangement would be to further undermine the force of the Nuclear Non-Proliferation Treaty. (http://www.dpnc.gov.au/umpner/submissions/40_sub_umpner.pdf).

arrangements contend that this brings non-signatory nations into an NPT-equivalent fold, the Indian government has sought to console critics that the terms and conditions negotiated with the US will not impede the continuing development of India's nuclear military facilities and nuclear strike capabilities (*The Financial Times* 3 August 2007).

There is good cause to not be too sanguine that these arrangements will contribute to advancing the cause of world peace. The Pakistani government for one has taken issue with the civil nuclear cooperation agreement as possibly triggering an escalation in the arms race on the Indian sub-continent (*The Financial Times* 3 August 2007). The eagerness with which the government has supported major resource companies to strike uranium export contracts has paid little heed to how this has weakened non-proliferation standards and the extent to which this could contribute to unsettling world peace and security. The purchase of the government's commitment to a fossil-fuel export-oriented economy presents real risks to the geo-political order.

The enthusiasm with which the government has promoted Australia's international comparative advantage in fossil-fuels is also likely selling Australia short because, in the eagerness to ensure its position in the 'energy security' agenda, the government has been prepared to negotiate contracts that set prices below international standards.³⁹ It is this tendency to fall short of meeting international standards and expectations that has framed the Australian Government's approach to meeting the challenge of global warming. This comes at a cost, it feeds uncertainty and exacerbates risk.

³⁹ This was the case with the negotiation of contracts with China for the sale of Liquid Natural Gas, negotiations in which the Prime Minister was directly involved. In fact, when these contracts were being negotiated, not only did the government provide substantial investment assistance, it also provided assurances that it would not support any further developments in a global greenhouse gas emissions regime that would be detrimental to this, the North West Shelf project, as well as other LNG projects.

The Australian government's climate change agenda: a policy cul-de-sac?

The formulation of Australia's climate change management policy initiatives in terms of a "blend of prudent conservatism and economic liberalism" suggests coherence in approach and integrity in policy design. The adherence to 'prudent conservatism' has been motivated by the fixation with acting under conditions of uncertainty. This is by and large in keeping with the orthodox economic convention. The appeal to 'economic liberalism' lends credence to the notion that responses to global warming are best left to decision-making in the free market, and to individuals and businesses to make the decisions in response to the challenge of global warming for they are best placed to make the appropriate decisions in the face of uncertainty.

In many respects, this is quite specious. Firstly, the challenge the world faces from global warming is not one that presents in individual locales or confronts individuals or businesses in isolation. The challenge is one that confronts us all; it is a universal one. Secondly, the nature of uncertainty and the associated risks that have to be addressed are not temporally uniform. They are cumulative, and it is no doubt the case that the damaging impacts of global warming upon the capacity of some communities will be irreversible, and they will become more pronounced. Herein lies the intellectual force of the proposition articulated in *The Stern Review* that uncertainties and certainly the risks that will be engendered by global warming can be mitigated by acting sooner rather than later. And this necessitates governments responding to this logic to formulate and implement policies to mitigate greenhouse gas emissions and to begin developing strategies to facilitate our capacity to adapt to the impacts of climate change.

The Australian Government's conservative approach to the climate change challenge is being overshadowed by events. There has, as observed, been a change in sentiment across the political landscape. The executives of major corporations acknowledge that global warming will likely impact on their fortunes and are now pressing for some government action to ensure greater certainty in the business investment

environment.⁴⁰ In many instances, business is no longer waiting for the government to take the lead, as across the industrial and financial spectrum, plans are being formulated and practices adopted that place them ahead of the regulatory requirements that government has set.⁴¹

But the government has not only fallen behind popular opinion in Australia and growing business sentiment on the need for decisive action to be taken. The various initiatives the government has lobbied for within the international, or at least the regional, political arena appear to be falling considerably short of the mark. The A-P6 has not proved to be the defining institution that was envisaged. Nor has the A-P6 proved to be a foundation for refocusing the September Asia-Pacific Economic Cooperation forum. In fact, the ambitions of the government to set the agenda with the object of recovering the momentum of the key concerns Australia sought to project through the A-P6, and then as a springboard for the *Climate Change Policy*, appear to have foundered.

Indeed the Howard government's leadership in debate on the form of an international climate change regulatory framework is looking decidedly like the position of the 'emperor with no clothes'. The government's opposition to the Kyoto Protocol has been maintained in unison with the Bush administration in support of the energy-intensive/fossil-fuel based accumulation model. As we have noted, this partnership was instrumental in the 'clean coal' technology commitment. The A-P6 is, in effect, the embodiment of that partnership. Australia's advocacy of a nuclear energy solution to global warming is the child of the Bush-Howard liaison.

Yet, as much as the energy-intensive/fossil-fuel development agenda is predicated on the American model and the Bush administration's antipathy towards the ratification of the Kyoto Protocol, it is not immediately evident that this position will endure. Bush conceded at the July 2007 G8 forum to working with and not against others to progress

⁴⁰ As previously noted, the most recent survey of corporate executives documents a significant shift in corporate thinking on global warming. PricewaterhouseCoopers, 2006.

⁴¹ The same might not be said of some of the peak business and industry councils, which have applauded the government's *Climate Change Policy*.

negotiations on an international regulatory framework in the post-Kyoto UN Framework Convention. The US House of Representatives has passed a series of bills requiring power companies to generate 15 per cent of energy from renewable sources and has imposed taxes on companies which, with tax breaks, will provide further support for renewable energy and conservation.

An even more intriguing development has been the apparent shift in the public position of US oil companies with respect to greenhouse gas emissions regulatory frameworks. In what has been one of the most comprehensive studies of the United States energy market for decades, and one commissioned by the Bush administration to investigate the future security of oil and gas supplies, the National Petroleum Council in *Facing the Hard Truths about Energy* has submitted to the Bush administration what looks like a dramatic rethink on energy and energy security (National Petroleum Council 2007). The report recognises the challenges ahead for the United States, noting the reality of 'peak oil' and, given finite supplies of uranium, the nuclear energy counterpart to 'peak oil'. It also reiterates security concerns, especially with respect to the accumulating risks frustrating the continuity of supplies from traditional sources and the thwarting of endeavours to access non-conventional sources. In a surprising recommendation, the NPC has made a case for responding to the concerns about possible supply shortfalls by arguing that immediate steps should be taken to contain the growing demand for energy. A first step that is advocated is to adopt more concerted efforts to enhance efficiency in energy use. Surprisingly, the report expresses little confidence in the capacity of technological solutions to enable access to hitherto untapped energy sources. While it does not chart an abandonment of the fossil-fuel fired economy, it does stress the need to broaden the range of energy resources drawn upon.

But, in what amounts to an about face for energy company interests, the report chaired by former ExxonMobil chairman, Lee Raymond, advocates efforts to contain the growth in energy consumption and to set a price on CO₂ emissions as a key component in a focused energy demand management strategy. Still more intriguing is the recommendation that this carbon price be introduced in conjunction with 'an effective global framework for carbon management

incorporating all major emitters of CO₂'.⁴² The report advocates the United States joining a global framework for managing carbon emissions. This, of course, does not necessarily translate into a Kyoto-based emissions cap-and-trade system, let alone advocating the ratification of the Kyoto Protocol.⁴³ It does, however, signal an end to the Bush administration's unilateralism in the international political arena. It foreshadows the case for the US becoming more constructively and positively engaged in joining a multilateral framework that has more substance than the A-P6 and which is not predicated on ever-increasing inputs of fossil fuels.

This shift in thinking highlights the potential magnitude of the Australian government's isolation in global warming governance debate. It has become increasingly evident the Australian government's resistance to formulating a well-defined policy to either put a price on carbon or set emission reduction targets or to ratify the Kyoto Protocol has meant that the nation has been placed in a veritable policy cul de sac. The concessions to business that have been signalled – and particularly assurances regarding the grandfathering of emission entitlements and acknowledgement of early initiatives – have not been sufficient to allay concerns that more substance has to be injected into an emissions management policy framework. Key industry sectors have appealed for the government to bring forward a decision to set targets and establish an emissions trading system. Without these and without the government retreating from its opposition to negotiating a more expansive post-Kyoto regulatory framework under the multilateral auspices of the UN Framework Convention on Climate Change, the government will simply be exacerbating the uncertainty that it contends justifies its historical reluctance to engage the challenge of climate change. This can only serve to magnify the risks that are consequent upon inaction, as well as to exaggerate investment uncertainty. The *Climate Change Policy* as it has

⁴² Interestingly, this coincides with ExxonMobil's public disclaimer that the corporation is no longer funding the conservative think tanks that have been responsible for much of the propaganda questioning the integrity of the science of global warming (*The Australian Financial Review* 10–11 February 2007).

⁴³ The US Under-Secretary of State for global affairs, Paula Dobriansky, reiterated that the Bush administration was not entertaining introducing an emissions trading systems, arguing that such systems are unworkable and discourage investment in new technology (*The Sydney Morning Herald* 25 July 2007).

been presented encapsulates the policy cul-de-sac. It is politically, as well as environmentally unsustainable.

Conclusion

The government has over the last decade justified its opposition to the Kyoto Protocol in terms of economic uncertainty. The uncertainties with respect to the pace and intensity that modelling suggests global warming will occur and to the likely economic impacts of climate change, it has been contended, do not justify precipitous initiatives to regulate business activity to reduce GHG emissions. Acting in the face of these uncertainties could present immeasurable economic risks. But there has been more to the government's opposition to the Kyoto Protocol than the possible harm a meaningful climate change could have for the fortunes of Australia's energy-intensive industries. The government has also been concerned to secure the future of another sphere of Australia's international competitive advantage by opposing initiatives that could disadvantage fossil-fuel exports and coal exports in particular. This has driven the government, in partnership with the Bush administration, to lobby regional trading partners to join in moulding an alternative international 'climate change' regulatory framework to the Kyoto Protocol. The success of this endeavour is looking more and more improbable. With the government's *Climate Change Policy*, Australia confronts the challenge of global warming from the vantage point of a policy cul-de-sac.

The government's vision has rested on a myopic appreciation of the analytical purchase of economic uncertainty. This has been made abundantly clear by *The Stern Review* and other investigations of the likely impact of climate change, including CSIRO researchers. These interventions in debate on global warming have turned the government's position on its head. The uncertainties associated with global warming are temporally asymmetrical; the likely damaging, if not devastating, economic impacts will become more pronounced through time. It makes good economic sense to minimise future risks by acting sooner to mitigate GHG emissions and to not postpone this action.

While the government continues to define the thrust of policy in the interests of energy-intensive industries and fossil-fuel exports, the business community more generally has come to the realisation that the real economic risk lies in policy inaction. Certainly some businesses are preoccupied with the commercial opportunities that the production of a new trading instrument, carbon, will present. But a longer term vision has also become entrenched within corporations and investment houses that rest on an appreciation of the fundamental interconnection between the sustainability of the global environment and the future of business. This necessitates a more robust approach to managing uncertainty and risk than the government's conservatism has dictated.

The real challenge in confronting the threat of global warming is how to reorient the focus of economies away from the energy-intensive, fossil-fuel based accumulation model. This necessitates confronting the Australian economy's reliance upon coal-fired resource processing and coal export industries. It requires moving beyond the short-term bias of conventional approaches to economic uncertainty to a longer-term vision that appreciates the comprehensive nature of the challenge that global warming presents, and that it makes no logical human sense to discount the value of the future. It also means giving greater emphasis to the risks that the government is sewing in consolidating its fossil-fuel based accumulation model in removing barriers to uranium exports by agreeing to export uranium to countries that are not signatories to the Nuclear Non-Proliferation Treaty. This is not policy formed on the foundations of a "blend of prudent conservatism and economic liberalism". Nor is it the market at work. Rather, it is a government-initiated recklessness, and it engenders untold risks.

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State of the environment reporting by local government: Australian evidence on compliance and content

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Abstract

This chapter explores State of the Environment (SoE) reporting by local governments. SoE reporting is an integral part of local government strategic planning and management processes and, in the state of New South Wales (NSW) in Australia, SoE reporting is mandatory. A study was conducted to analyse the content of 2003 supplementary SoE reports and their compliance with reporting guidelines. A sample of 136 SoE reports was analysed using the NSW Department of Local Government State of the Environment (SoE) Reporting Guidelines as a framework for content analysis. The results revealed significant variability in the SoE reporting practices. This variability was encountered, not only in volume of information reported, but also in the nature of the issues addressed, the indicators employed and in compliance with the guidelines. Further, while SoE reports are intended to provide data integral to the development of strategic management plans and processes, on average across all environmental sectors, only half of the councils surveyed provided information in sufficient specificity to address the environmental issues identified in SoE reports. In conclusion, we argue that councils are experiencing difficulties in implementing the requirements of the Local Government Act in relation to SoE reporting.