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'How rapidly can we cut carbon emissions if civilisation is at stake?'[1] Emissions trading, taxation and other instruments designed to deal with the climate change problem

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> The scientific evidence today overwhelmingly indicates that allowing the emission of greenhouse gases from human activities to continue unchecked constitutes a significant threat to the well-being and continued development of contemporary society. The knowledge that human activities are influencing the climate gives contemporary society the responsibility to act. It necessitates redefinition of humanity's relationship with the Earth and - for the sake of the well-being of society – it requires management of those human activities that interfere with the climate.[3]

1. Introduction

There are a number of policy instruments available to governments to deal with the climate change problem, to cut carbon emissions. The two most widely recognised are a carbon tax and an emission trading scheme (ETS) such as Australia's proposed Carbon Pollution Reduction Scheme (CPRS). While Ross Garnaut believes that a quantity-based agreement is more likely to succeed than a tax or a price-based one,[4] Yale University's William Nordhaus, the most prominent of those advocating a carbon tax over an ETS, clearly prefers a carbon tax domestically and internationally.[5]

This paper examines legal issues which arise as a result of instruments chosen to mitigate the effects of climate change at both the Australian and international levels, and instruments which might be chosen. And such instruments are linked: the CPRS, for example, is designed to reduce Australia's greenhouse gas (GHG) emissions, but it is also designed to (a) give effect to Australia's obligations under the UNFCCC and the Kyoto Protocol; and (b) support the development of an effective global response to climate change. Its national emissions reduction targets are explicitly joined to the content and ambitions of a global climate change agreement.

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1 Gwynne Dyer, *Climate Wars*, 2008, p 131.

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3 International Alliance of Research Universities (IARU), *Synthesis Report: Climate Change – Global Risks, Challenges and Decisions*, 2009, p 7.

4 See, generally, Ross Garnaut, *The Garnaut Climate Change Review*, 2008.

5 See William Nordhaus, *A Question of Balance*, 2008.

Even though climate change law, as others have noted, 'extends beyond new legislation directly aimed at mitigating global warming' to the pre-existing environmental law framework,[6] the focus of this paper is on such new legislation and international agreements. Given the requirement for 'immediate and dramatic emission reductions of all GHGs'[7] if the rise in global temperature is to be contained to 2°C above pre-industrial levels and mass extinction of species is to be avoided – for want of a better term, the 'climate change problem' – the importance of that legislation and those agreements (and their interaction) is clear.

2. 'If civilisation is at stake …': The climate change problem[8]

In explaining the science of climate change, earth and paleo-climate scientist Andrew Glikson states that the recent history of the atmosphere, which includes human-induced global warming, may lead toward mass extinction of species: On a 'business-as-usual scenario,' continuation of carbon emissions 'will result in global warming of 3°C over the 21st century, eliminating a majority (60%) of species on the planet.'[9] He asks whether the human species is leading the biosphere to its sixth mass extinction, a question which Elizabeth Kolbert, writing in the *New Yorker*, also asks.[10]

A new study by the Massachusetts Institute of Technology finds that, absent policy action, on a business-as-usual course, the median probability of surface warming is 5.2°C by 2100, with a 90% probability range of 3.5 to 7.4 degrees, compared to a median projected increase in the earlier 2003 MIT study of just 2.4 degrees – that is, twice as severe.[11] Further, recent observations show that greenhouse gas emissions and other aspects of the climate are changing near the upper end of the Intergovernmental Panel on Climate Change (IPCC) 2007 projections and, in the case of sea level rise, at greater rates than the IPCC projections.[12]

While there is no international consensus on what levels of climate change might be defined as 'dangerous,' there is widespread support for containing the rise in global temperature to 2°C above pre-industrial levels (the '2°C guardrail'); 109 parties to the UNFCCC have adopted this global

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6 SeeTim Bonyhady and Peter Christoff, 'Introduction,' in Bonyhady and Christoff (eds), *Climate Law in Australia*, 2007, pp 2-3.

7 IARU, *Synthesis Report*, 2009, p 18.

8 This section is in part taken, with permission, from David Hodgkinson, 'Introduction to Climate Change Law and Policy' in Hodgkinson (ed), *Climate Change Law and Policy in Australia*, 2009.

9 Andrew Glikson, 'The Science of Climate Change,' in Hodgkinson (ed), *Climate Change Law and Policy in Australia*, 2009.

10 'It is now generally agreed among biologists that another mass extinction is under way. Though it's difficult to put a precise figure on the losses, it is estimated that, if current trends continue, by the end of this century as many as half of earth's species will be gone ... In the end, the most deadly aspect of human activity may simply be the pace of it. Just in the past century, CO2 levels in the atmosphere have changed by as much – a hundred parts per million – as they normally do in a hundred-thousand-year glacial cycle. Meanwhile, the drop in ocean pH levels that has occurred over the past fifty years may well exceed anything that happened in the seas during the previous fifty million:' Elizabeth Kolbert, 'The Sixth Extinction?,' *The New Yorker*, 25 May 2009, pp 54, 63.

11 Sokolov et al, 'Probabilistic Forecast for 21st Century Climate Based on Uncertainties in Emissions (Without Policy) and Climate Parameters,' *Journal of Climate*, 2009, at http://dx.doi.org/10.1175/2009JCLI2863.1.

12 IARU, *Synthesis Report*, 2009, p 12.

warming limit, with some of the most vulnerable states – small island states, for example, and least developed countries – calling for temperature targets as low as 1.5°C. Even with temperature rises of less than 2°C, however, impacts can be significant, and beyond 2°C, 'the possibilities for adaptation of society and ecosystems rapidly decline .....'[13] The IPCC states that atmospheric CO_2 concentration should not exceed 400 ppm (parts per million by volume in the Earth's atmosphere) if global temperature rise is to be contained within 2 - 2.4°C. At present the CO_2 concentration is about 385ppm, rising by 2ppm per year,

> 30 percent above its highest level over at least the last 800,000 years. In the absence of strong control measures, emissions projected for this century would result in the carbon dioxide concentration increasing to a level that is roughly 2 to 3 times the highest level occurring over the glacial-interglacial era that spans the last 800,000 or more years.[14]

Expressed in terms of CO_2 e (CO_2-equivalent), present levels are at 396 ppm, with a CO_2e concentration of 450ppm offering a 50-50 chance of limiting the temperature rise to 2°C or less.[15]

Nicholas Stern argues that the first goal is to hold greenhouse gas concentrations at or below 500ppm CO_2e, reducing global emissions by 50% or more by 2050 on 1990 levels, which target for him 'shapes the whole story, the implications of which are at the heart of the [international] negotiations.' He also notes, however, that the question of targets in terms of concentration levels is 'hotly contested.'[16] For example, James Hansen, perhaps the world's preeminent climate change scientist, argues for a target of 350 ppm CO_2 or about 400 ppm CO_2e.[17] Stern's problem with the Hansen target is that 'we are already at 430 ppm CO_2e (around 380 ppm CO_2) and we are adding about 2.5ppm per annum ... We will surely be at 450 ppm within ten years.' He argues that

> a target of holding below 500 ppm CO_2e is very strong in terms of the action necessary to achieve it. We will have to act clearly and radically and learn very quickly to change the ways we source and use energy ... There is a choice of emissions paths to achieve a given concentration level in the future ... [but] unless global emissions peak around 2020, and strong declines are achieved globally by 2030, it would not be possible to cut by 50% by 2050.[18]

The Australian government's medium term, 2020 reduction target on 2000 levels is an unconditional 5%, and 25% if a global climate change agreement (made between developed and developing nations) is reached. The US targets under the American Clean Energy and Security bill are an unconditional 17% below 2005 levels in 2020 and 83% below 2005 levels in 2050. Australia's 2050 reduction target is 60% on 2000 levels.

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13 IARU, *Synthesis Report*, 2009, p 12.

14 United States Global Change Response Program, *Global Climate Change Impacts in the United States*, 2009, p 13.

15 B Hare and M Meinshausen, 'How much warming are we committed to and how much can be avoided?,' *Climatic Change* 75, 1-2, 2006, pp 111-149.

16 Nicholas Stern, *The Global Deal*, 2009, p 149.

17 See J Hansen et al, 'Target atmospheric CO2: Where should humanity aim?,' *Open Atmospheric Science Journal*, vol 2, 2008, pp 217-231).

18 Nicholas Stern, *The Global Deal*, 2009, pp 150, 151.

Stern cautions against pushing for more significant emission reduction targets. He says that '[t]o push hard for a lower target [than 400ppm CO_{2e}] could disrupt the possibility of agreement in the very near future ... [W]e risk appearing to ask for the impossible.' As McKibben notes,

> It's a good point. But it presumes that the negotiations are being conducted between human beings – between industry and environmentalists, between Chinese and Indians and Americans and Germans. That is true to an extent – indeed, these [climate change negotiations] are the most delicate negotiations that the world has ever engaged in. But the real negotiation is between humans on the one hand and chemistry and physics on the other. And chemistry and physics, unfortunately, don't bargain.[19]

The IARU concludes as follows with regard to emission reductions:

> atmospheric CO_2 concentrations are already at levels predicted to lead to global warming of between 2.0 and 2.4°C ... If society wants to stabilise greenhouse gas concentrations at this level, then global emissions should, theoretically, be reduced by 60-80% immediately ... Given that such a drastic immediate reduction is impossible, greenhouse gas concentrations will continue to rise over the next few decades. An overshoot of the atmospheric greenhouse gas concentrations needed to constrain global warming to 2°C is thus inevitable. To limit the extent of the overshoot, emissions should peak in the near future. Recent studies suggest that if peak greenhouse gas emissions are not reached until after 2020, the emission reduction rates required thereafter to retain a reasonable chance of remaining within the 2°C guardrail will have to exceed 5% per annum. This is a daunting challenge when compared to a long-term average annual increase of 2% in emissions ... (emphasis added).[20]

The urgency of all this is further reinforced by a number of papers published in the first half of 2009.[21] The study by Meinshausen et al finds that GHG emissions must be cut by more than 50% by 2050 as against 1990 levels if the danger of exceeding 2°C is to be limited to 25%. Meinshausen concludes that

> [i]n principle, it is the sum of all CO_2 that matters. In practice, substantial reductions in global emissions have to begin soon, before 2020. If we wait any longer, the required phase-out of carbon emissions will involve tremendous economic costs and technological challenges – miles beyond what can be considered politically feasible today. The longer we wait, the more likely our path will lead us into dangerous territory.[22]

Put another way, the trajectory of emissions reductions is the thing – a point with which Solomon et al are concerned:

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19 Bill McKibben, 'Can Obama Change the Climate?,' *New York Review of Books*, 2009, p 39.

20 IARU, *Synthesis Report*, 2009, p 18.

21 See Meinshausen et al, 'Greenhouse gas emission targets for limiting global warming to 2°C,' *Nature*, 30 April 2009, doi:10.1038/nature08017; Allen et al, 'Warming caused by cumulative carbon emissions towards the trillionth tonne,' *Nature*, 30 April 2009, doi:10.1038/nature08019; Solomon et al, 'Irreversible climate change due to carbon dioxide emissions,' *PNAS*, 10 February 2009, doi:10.1073/pnas.0812721106; and Allen et al, 'The exit strategy,' *Nature Reports*, May 2009.

22 'On the way to phasing out emissions: More than 50% reductions needed by 2050 to respect 2°C climate target,' 30 April 2009, at www.pik-potsdam.de/news/press-releases.

> The severity of damaging human-induced climate change depends not only on the magnitude of the change but also on the potential for irreversibility … the climate change that takes place due to increases in carbon dioxide concentration is largely irreversible for 1,000 years after emissions stop … atmospheric temperatures do not drop significantly for at least 1,000 years.[23]

Finally, the IARU states that

> [t]he conclusion from both the IPCC and later analyses is simple – *immediate and dramatic emission reductions of all greenhouse gases are needed if the 2° C guardrail is to be respected* (emphasis added).[24]

It is this challenge – it's this problem – with which climate change laws, domestic and international, must deal.

After discussing the present and prospective international climate change legal frameworks, Part 3 below examines the two main proposed instruments to address the climate change problem, a carbon tax and an emissions trading scheme. More discussion is offered regarding a carbon tax, in part because there really hasn't been a debate in Australia as to its merits and because of gathering international interest in it. Part 3 also examines the operation of the European Union emissions trading scheme and, in more detail (for reasons discussed in Part 3) and in comparative perspective, US regional cap-and-trade programs and the proposed US emissions trading legislation, the American Clean Energy and Security Act of 2009.

Part 4 deals comprehensively with the CPRS, including action the Government could take following the Senate vote and the implications of that vote for Australia's climate change policy and law generally. Part 5 discusses issues and problems for climate change legislation and conventions, including legal structures for post-2012 climate change agreements.

3. Instruments to deal with the climate change problem

3.1 The International Climate Change Legal Framework

The International climate change legal framework consists of the United Nations Framework Convention on Climate Change (UNFCCC) the Kyoto Protocol to the UNFCCC. Both are examined briefly below.

As Parker and Ramsay note, the use of 'legal framework', rather than system or regime, to describe the UNFCCC and the Kyoto Protocol denotes three central characteristics of those agreements:

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[23] Solomon et al, 'Irreversible climate change due to carbon dioxide emissions,' *PNAS*, 10 February 2009, doi:10.1073/pnas.0812721106, p 1704.

[24] IARU, *Synthesis Report*, 2009, p 18.

1) To secure consensus among the parties, both agreements embody a 'pragmatic compromise.' As such, many UNFCCC and Kyoto Protocol provisions are either "soft" law or require further agreement on how they are to operate.
2) Both agreements are dynamic and flexible, which allows the international climate change legal framework scope to evolve as the understanding of the problem of climate change develops.
3) Although both agreements provide a framework or parameters for action, it is largely a matter for the parties to decide on how the agreements are to be implemented domestically.[25]

(a) The United Nations Framework Convention on Climate Change[26]

The United Nations Framework Convention on Climate Change (UNFCCC or 'Convention') constitutes the foundation of international cooperative efforts dealing with climate change. It was adopted in 1992 at the 'Earth Summit' and entered into force on 21 March 1994. The Convention has received 193 instruments of ratification, as of 26 August 2009, including Australia and the United States

Structure

The Convention provides a framework for future action and cooperation by States on climate change. It sets up a Conference of the Parties (COP), the 'supreme body of [the] Convention ... [which] shall make, within its mandate, the decisions necessary to promote the effective implementation of the Convention' (Article 7.2) and establishes a process, under Article 17(1), by which the COP can adopt protocols to the Convention (for example, the Kyoto Protocol).

There are no legally binding limits on GHG emissions for State parties to the Convention, no quantitative targets. Rather, parties commit to mitigate climate change 'with the aim of returning individually or jointly to their 1990 levels ... anthropogenic emissions of carbon dioxide and other greenhouse gases ...' (Article 4.2(b)). Binding limits are provided for in the Kyoto Protocol, the primary climate change instrument.

Convention parties are divided into three groups:

- Annex I: industrialised countries that were members of the Organization for Economic Co-operation and Development (OECD) in 1992 and countries in transition to a market economy - mainly developed countries;
- Annex II: the OECD members of Annex I; and
- Non-Annex: countries not listed in either Annex I or Annex II - mainly developing countries.

Unsurprisingly, the per capita emissions of Annex I parties are higher than those of Non-Annex parties, and Annex I parties are economically and institutionally more able to deal with climate

[25] Jim Parker and Fleur Ramsay, 'The UNFCCC and the Kyoto Protocol' in Hodgkinson (ed), *Climate Change Law and Policy in Australia*, 2009.

[26] This section is largely taken, with permission, from chapter 2, 'The International Framework,' in David Hodgkinson and Renee Garner, *Global Climate Change: Australian Law and Policy*, 2009.

change and its impacts. As a result, the UNFCCC equitable principle of 'common but differentiated responsibilities' is a continuing theme throughout the Convention, and Annex I parties are required to 'take the lead in combating climate change and the adverse effects thereof' (Article 3.1).

All parties to the Convention are subject to certain general commitments while developed countries and other Annex I parties are subject to certain specific commitments.

Objective

Article 2 provides, in part, that

> [t]he ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve ... stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

According to the Convention, this level should be achieved in a time period which allows ecosystems to adapt naturally to climate change; ensures food production is not threatened; and enables economic development in a sustainable manner (Article 2). In not providing specific quantitative targets, Article 2 reflects the general nature of the Convention.

Principles

A crucial theme in the Convention is that developed and developing parties have 'common but differentiated responsibilities and respective capabilities' in dealing with climate change. Another is the clear attempt to find an equilibrium between economic growth and protection of the environment – that is, sustainable development. These themes are reflected in the principles of the Convention set out in Article 3. The five principles are:

- the climate system should be protected for the benefit of present and future generations, on an equitable basis and 'in accordance with [the parties'] common but differentiated responsibilities and respective capabilities;'
- consideration should be given to developing parties that would bear a disproportionate or abnormal burden under the Convention, especially those that are particularly vulnerable to the adverse impacts of climate change;
- '[p]recautionary measures to anticipate, prevent or minimise the causes of climate change and mitigate its adverse effects' should be taken by the parties. A lack of scientific certainty should not be used as a reason for delaying such measures where there are threats of serious or irreversible damage to the climate;
- sustainable development policies and measures should be promoted by the parties and such policies should be appropriate for the specific circumstances of each party; and
- parties should 'cooperate to promote a supportive and open international economic system that would lead to sustainable economic growth and development,' particularly in developing countries, in addressing climate change.

Under the Convention it is clear that developing countries 'should take the lead in combating climate change' (Article 3.1) and its effects, thus the division identified above between Annex I, Annex II and Non-Annex parties.

Commitments

The Convention contains a detailed list of commitments, some of which apply to all parties, and others which apply only to developed countries and other parties included in Annex I.

Commitments applicable to all parties

All parties shall, as set out in Article 4.1:

- develop and make available national inventories of anthropogenic emissions by sources and removals by sinks of greenhouse gases;
- formulate, implement and update national and regional programmes including measures to mitigate climate change;
- promote and cooperate in the transfer of technologies 'that control, reduce or prevent anthropogenic emissions of greenhouse gases;'
- promote sustainable management and the conservation and enhancement of sinks and reservoirs;
- cooperate in preparing for adaptation to climate change impacts;
- if feasible, take climate change considerations into account in relevant social, economic and environmental policies and actions;
- promote and cooperate in scientific and other research on climate change;
- promote and cooperate in education and public awareness on climate change; and
- communicate to the COP information relating to implementation of these commitments as required by Article 12 (which contains reporting requirements).

Commitments applicable to Annex I parties

The developed country parties and other parties included in Annex I must

> adopt national policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs. These policies and measures will demonstrate that developed countries are taking the lead in modifying longer-term trends in anthropogenic emissions... (Article 4.2(a)).

Annex I parties must report on the progress of these national policies 'with the aim of returning individually or jointly to their 1990 levels these anthropogenic emissions of carbon dioxide and other greenhouse gases' (Article 4.2(b)).

Commitments applicable to Annex II parties

Annex II parties must:

- provide new and additional financial resources to developing countries so that these countries can comply with their reporting obligations under Article 12 and meet the cost of implementing Article 4.1 measures (commitments which are applicable to all parties)(Article 4.3);
- assist 'developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects' (Article 4.4); and
- to the extent possible, transfer mitigation technologies to developing countries (Article 4.5).

In addition to vulnerability from the physical impacts of climate change, the Convention takes account of potential economic vulnerability through the provision of new and additional financial resources and the transfer of mitigation technologies. Economic vulnerability may manifest itself in developing parties in a number of ways - for example, adverse economic impacts as a result of implementing climate response measures in countries heavily reliant on resource exports.

(b) The Kyoto Protocol

The Kyoto Protocol to the UNFCCC provides a legal framework that addresses global climate change by placing quantifiable obligations upon states to decrease their levels of GHG emissions. It was adopted in December 1997 and came into force on 16 February 2005. 188 countries, including Australia, and the EEC have either ratified, acceded to, approved or accepted the Protocol as at 26 August 2009.

The Protocol is the world's primary climate change agreement and represents the culmination of international efforts to date to address the climate change problem.

Background

Since the UNFCCC entered force in 1994, its Conference of the Parties (COP) meets annually to, among other things, 'review the implementation of the Convention and any related legal instruments that the COP may adopt' (Article 7.2), such as the Kyoto Protocol. At the first COP meeting in Berlin in 1995 (COP 1), parties called for the development of a legal instrument that set quantified limits on GHGs, but voiced concerns about the ability of certain countries to meet such commitments. These matters were expressed in the 'Berlin Mandate,' under which parties agreed

> to begin a process to enable [the COP] to take appropriate action for the period beyond 2000, including the strengthening of the commitments of the Parties included in Annex I to the Convention (Annex I Parties) ... through the adoption of a protocol or another legal instrument.'[27]

[27] United Nations Conference of Parties, *Conference of the Parties: First Session - FCCC/CP/1995/7/ Add.1,* Berlin, 6 June 1995, p 4, available at http://unfccc.int/resource/docs/cop1/07a01.pdf.

Consistent with the principle of 'common but differentiated responsibilities,' parties agreed that only Annex I countries would be subject to quantifiable limits on GHGs.

At the second COP, held in Geneva in 1996 (COP 2), the parties adopted a Ministerial Declaration in which the parties (a) recognised and endorsed the IPCC's Second Assessment Report 'as currently the most comprehensive and authoritative assessment of the science of climate change, its impacts and response options now available;' and (b) called for the further development and implementation of legally-binding targets.[28]

After difficult negotiations, the Kyoto Protocol was adopted at COP 3 on 11 December 1997. Notwithstanding that agreement was reached at Kyoto concerning 'flexibility mechanisms' to assist parties to comply with the Kyoto emissions targets, the rules by which these mechanisms and compliance systems would work remained incomplete. The COPs which followed Kyoto fleshed out these rules, compliance systems and other details, culminating in the 'Marrakesh Accords.'[29]

Structure

Parties to the Protocol are divided into two groups, Annex I and Non-Annex I. Annex I parties in both the UNFCCC and the Protocol are for the most part identical[30] and consist of mostly developed countries.[31] Non-Annex I parties are all other parties.[32]

Unlike the UNFCCC, the Protocol sets legally binding limits on Annex I parties' anthropogenic emissions of greenhouse gases and does so for the commitment period 2008 – 2012 (the 'first commitment period'). In achieving these binding limits, the parties must implement policies and measures in accordance with their particular circumstances.

Certain market-based 'flexibility mechanisms' are provided for to achieve international emissions reductions. These mechanisms are discussed further below.

The Protocol establishes a new institution known as the meeting of the parties to the Protocol (MOP). In 2005, the same year in which the Protocol entered into force, the parties met for COP 11 in Montreal. As a part of the Convention's annual conference, and running in parallel with COP 11, the first ever meeting of the parties to the Protocol (COP/MOP 1) was convened. Past decisions on

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28 United Nations Conference of the Parties, *Conference of the Parties: Second Session – FCCC/CP /1996/15/Add.1,* Geneva, pp 71 and 73 available at http://unfccc.int/resource/docs/cop2/15a01.pdf.

29 United Nations Conference of the Parties, *Conference of the Parties: Seventh Session - FCCC/CP/2001/13/Add.,* 'Marrakesh Accords,' Marrakesh, available at http://unfccc.int/resource/docs/cop7/13a02.pdf.

30 Differences exist between the list of Annex B countries and the original Annex I countries under the UNFCCC due to either a change in the structure of the parties or because they were not parties to the UNFCCC at the time of adoption of the Protocol.

31 Consisting of industrialised countries that were members of the Organization for Economic Co-operation and Development (OECD) in 1992 and countries with economies in transition to a market economy.

32 Note that the Annex I, Annex II and Non-Annex I division of parties under the UNFCCC does not apply to the Protocol.

the Protocol, such as those in the Marrakesh Accords, had previously had been undertaken by the COP. On the entry into force of the Protocol, the COP/MOP became the Protocol's supreme body.

Commitments

Article 3 of the Protocol states that Annex I parties shall

> individually or jointly, ensure that their aggregate anthropogenic carbon dioxide equivalent emissions of the greenhouse gases listed in Annex A do not exceed their assigned amounts, calculated pursuant to their quantified emission limitation and reduction commitments inscribed in Annex B ... with a *view to reducing their overall emissions of such gases by at least 5 percent below 1990 levels* in the commitment period 2008 to 2012 [emphasis added].

Quantified emission limitation or reduction commitments under Annex B are set out for Annex I parties expressed as a base year 1990 percentage. Australia's emissions limitation or reduction target is 108% of its 1990 emissions.

The 'assigned amount' of emissions that a party is allowed to emit over the 2008-2012 commitment period is calculated as a percentage of the party's 1990 baseline emissions (prescribed by Annex B) multiplied by five.

There are no Article 3 commitments for Non-Annex I parties.

As stated earlier, the first commitment period under the Protocol is 2008 to 2012. During this five year period, parties' emissions are averaged out. Adopting a commitment period approach over a number of years increases the chances of avoiding one-off events or fluctuations in economic/ business cycles which could result in abnormal emissions in any shorter period. Although no earlier commitment period was provided for, Article 3.2 of the Protocol requires Annex I parties to 'have made demonstrable progress' in achieving its commitments by 2005. What constitutes 'demonstrable progress' is not made clear.

There are no specific further commitment periods. Instead, post-2012 commitment periods for Annex I parties are to be established through negotiation (Article 3.9).

Coverage

A 'basket' of six greenhouse gases is provided for in Annex A to the Protocol. These six GHGs are carbon dioxide (CO_2); methane (CH_4); nitrous oxide (N_2O); hydrofluorocarbons (HFCs); perfluorocarbons (PFCs); and sulfur hexafluoride (SF6). States produce different GHGs, or a combination of GHGs, and through the inclusion of the six GHGs in the Annex A 'basket,' parties are afforded some flexibility in meeting their Protocol commitments. As mentioned earlier, the Protocol refers to parties' limits in the form of carbon dioxide equivalent emissions (CO_2e).

Sectors/source categories specifically provided for in Annex A of the Protocol are energy; industrial processes; solvent and other product use; agriculture; and waste. Emissions from international aviation and marine bunker fuels are not covered by the Protocol; parties are to pursue limitation or reduction of these emissions working through the International Civil Aviation Organisation (ICAO), the specialised UN aviation agency, and the International Maritime Organisation (IMO).

Implementing policies and measures

The Protocol provides a non-exhaustive list of policies and measures which parties can implement to meet their Article 3 emission limitation and reduction commitments. These are:

- enhancement of energy efficiency;
- protection and enhancement of sinks and reservoirs of GHGs;
- promotion of sustainable forms of agriculture;
- research on, and promotion and increased use of, renewable energy, sequestration technologies and other advanced and innovative environmental technologies;
- reduction or removal of incentives, exemptions and subsidies in sectors which emit GHGs;
- encouragement of reforms which promote policies and measures which would limit or reduce GHG emissions;
- measures to limit GHG emissions in the transport sector; and
- limitation and/or reduction of methane emissions through recovery and use (Article 2.1(a)).

There is no obligation on parties to implement any specific policy or measure or combination of them. Parties are at liberty to determine the appropriate individual policy or measure, or combination, in accordance with their national circumstances.

Flexibility mechanisms

> The Kyoto Protocol broke new ground by defining three innovative "flexibility mechanisms" to lower the overall costs of achieving its emissions targets. These mechanisms enable Parties to access cost-effective opportunities to reduce emissions or to remove carbon from the atmosphere in other countries. While the cost of limiting emissions varies considerably from region to region, the effect for the atmosphere of limiting emissions is the same, irrespective of where the action is taken.[33]

The Protocol establishes three flexibility mechanisms:

- Clean Development Mechanism (CDM)(Article 12);
- Joint Implementation (JI) (Article 6); and
- international emissions trading (Article 17).

[33] UNFCCC, *The Mechanisms under the Kyoto Protocol:The Clean Development Mechanism, Joint Implementation and Emissions Trading,* available at http://unfccc.int/kyoto_protocol/mechanisms/items/1673.php.

Under JI and CDM, an Annex I entity invests in emissions reduction projects in either other Annex I countries (JI) or Non-Annex I countries (CDM), and gains credits. JI credits are called emissions reduction units (ERUs) and CDM credits are called certified emission reductions (CERs). The unit traded under international emissions trading (Article 17) is an assigned amount unit (AAU). All units are equal to one ton of carbon dioxide equivalent (CO_2e). The three mechanisms operate on the basis of these accounting units which are recorded through national registries administered by each Annex I party.

Credits acquired by Annex I countries through the operation of the mechanisms count towards meeting their Annex B quantified emission limitation or reduction commitments.

The underlying concept behind the mechanisms is straightforward: one ton of carbon dioxide, (for example) will impact the climate regardless of where it is emitted, as will reduction or removal of one ton of carbon dioxide, regardless of the source of that reduction or removal. Mitigation costs vary from country to country and, thus, the opportunity exists to reduce carbon dioxide at sources where the cost of mitigation is lowest. The mechanisms give Annex I parties the flexibility to achieve emissions reductions in the most cost-effective manner.

The flexibility mechanisms are innovative in aligning environmental outcomes with economic incentives, and in this sense could be seen as consistent with the UNFCCC's principle of pursuing sustainable development. This is because it is expected that the costs of achieving global abatement will be lower in developing parties (Non-Annex parties) and the funds spend on abatement will assist economic development.

Land use, land use change, and forestry

Measures involving land use, land use change and forestry (LULUCF) are unique means of reducing emissions and, thus, are treated distinctly under the Protocol. Most LULUCF activities are non-permanent - for example, a tree planted to sequester GHGs can be cut down or otherwise destroyed. Article 3.3 of the Protocol states that parties can, by contributing net changes in GHG 'emissions by sources and removals by sinks resulting from direct human-induced ... afforestation, reforestation and deforestation,' meet, in part, their Article 3.1 commitments. In other words, afforestation, reforestation and deforestation can assist Annex I parties to meet their emissions targets. An example of removal of GHGs through sinks, albeit a controversial one, is the planting of trees.

The Marrakesh Accords provide for additional LULUCF activities that may assist parties to meet their targets. These are forest management, cropland management, grazing land management and revegetation.

Units gained by parties undertaking LULUCF activities as a means of reducing emissions are called removal units (RMUs). RMUs can be traded under Article 17 (emissions trading). Afforestation and reforestation activities can be undertaken in Non-Annex I countries under CDM. Once removals are verified by expert review teams, RMUs will be deemed valid.

(c) A climate change legal framework post-2012

The first commitment period for the Kyoto Protocol runs from 2008 to 2012. The development of a post-2012 climate change legal framework began at COP 13 in Bali. The 'Bali Road Map' sets out in general terms a 'shared vision for long-term cooperative action;' substantive issues are not dealt with. Under the Bali Road Map, developed parties agree to consider 'nationally appropriate mitigation commitments or actions, including quantified emission limitation and reduction objectives,' and developing parties agree to consider 'measurable, reportable and verifiable' mitigation actions 'supported and enabled by technology, financing and capacity building.'[34]
The Executive Secretary of the UNFCCC, Yvo de Boer, has said that the four essential decisions to be made in Copenhagen are the size of emissions reduction targets for developed counties; the nature of nationally appropriate mitigation actions by Non-Annex parties (particularly India and China); the level of financial and technological support to be provided to developing countries both for mitigation and adaptation; and the nature of the institutional framework necessary to deliver support for mitigation and adaptation.

As Parker and Ramsay note any post-Kyoto agreement 'should learn from the Kyoto Protocol experience' and take account of criticisms such as:

- targets are only binding on some parties, excluding developing parties;
- targets are modest and do not meet the stabilisation objective under the UNFCCC;
- the Kyoto Protocol did 'too little, too fast:' There is no specified commitment period or targets set beyond 2012 and a longer term focus is needed;
- it is questionable whether market-based mechanisms are adequate to mitigate environmental problems; and
- conversely, it is questionable whether UN bureaucratic structures are sufficiently adapted to facilitate the efficient operation of market-based mechanisms.[35]

The Bali Road Map is not concerned with the form a post-Kyoto agreement could take. Possible legal options for a post-2012 agreement could include a new protocol under the UNFCCC; amendments to the Kyoto Protocol; and a new protocol and amendments to Kyoto.

These matters are examined in more detail below.

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34 UNFCCC, *Report of the Conference of the Parties on its 13th session*, FCCC/CP/20077/6/Add.1.

35 Jim Parker and Fleur Ramsay, 'The UNFCCC and the Kyoto Protocol' in Hodgkinson (ed), Climate Change Law and Policy in Australia, 2009.

3.2 Mitigation of climate change at the national level[36]

(a) Introduction: Mitigation of climate change

Many of the impacts of climate change, the IPCC states, can be 'reduced or delayed by mitigation ... A portfolio of adaptation and mitigation measures can diminish the risks associated with climate change.'[37] Climate change mitigation involves reducing greenhouse gas (GHG) emissions, reducing the rate and magnitude of global warming. Adaptation means coping with or adjusting to climate change. With mitigation, adaptation becomes easier. Mitigation and adaptation are not alternatives.

This section is concerned with climate change mitigation action, with a specific focus on policy instruments available to governments. After a general overview of mitigation policies, measures and instruments it then looks in detail at the two most widely recognised market-based instruments to mitigate climate change: a carbon tax and an emissions trading scheme (ETS), both of which put a price on carbon. While the Stern Review, for example, concludes that a choice must be made between these two instruments, it also concluded that an ETS 'may be the most straightforward way of establishing a common price signal across countries.'[38] William Nordhaus, however, clearly prefers a carbon tax at both domestic and international levels.[39]

The basic principle behind both a carbon tax and an ETS is the same: 'a financial penalty is placed on emitting greenhouse gases and transmitted through markets, creating an incentive to cut emissions.'[40]

(b) Actions to mitigate climate change

There are, broadly, three ways in which emissions can be reduced: by reducing (a) gross domestic product (GDP); (b) the energy intensity of GDP; and (c) the emission intensity of energy.[41] The 2007 Fourth Assessment Report of the IPCC found that a variety of policies, measures and instruments were available for governments to create the incentives for such mitigation action. These include:

- Integrating climate policies in broader development policies;
- regulations and standards;
- taxes and charges;
- tradeable permits;
- financial incentives (such as subsidies and tax credits);

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36 This section and those following concerned with principles of taxation and emissions trading are taken, in part, with permission, from Jessica Smith and David Hodgkinson, 'Mitigation of Climate Change: The International Context,' in Hodgkinson (ed), *Climate Change Law and Policy in Australia*, 2009.

37 IPCC, *Working Group II Contribution to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, 2007, p 20.

38 Nicholas Stern, *The Economics of Climate Change: The Stern Review*, 2006, p 351.

39 William Nordhaus, *A Question of Balance*, 2008.

40 IARU, *Synthesis Report*, 2009, p 7.

41 Scott Barrett, 'A multitrack climate treaty system,' in *Architectures for Agreement*, 2007, p 243.

- voluntary agreements between industry and government;
- information instruments such as awareness campaigns; and
- research development and demonstration,[42]

the last with the aim of producing energy at lower cost than fossil fuel and lowering the cost of reducing emissions.

For all of these, however, there are advantages and disadvantages and 'manifold' barriers to their implementation.

In the short and medium term (until 2030), in terms of energy supply, mitigation technologies and practices including improved supply and distribution efficiency; fuel switching from coal to gas; nuclear power; renewable heat and power such as hydropower, solar, wind, geothermal and bioenergy; and early applications of carbon capture and storage, are all currently commercially available.[43]

Nicholas Stern's view is that there are a number of mitigation options available to reduce GHG emissions 'in both developed and developing economies on the scale necessary for stabilisation in the required range,' but 'strong, deliberate policy action is required to motivate their take-up'[44]

For mitigation in the long term – that is, after 2030 (the short and medium term was referred to above) – the IPCC is of the view that stabilization of the concentration of GHGs in the atmosphere, with emissions peaking and then declining, 'can be achieved by deployment of a portfolio of technologies that are currently available and those that are expected to be commercialised in coming decades' – on the assumption that effective incentives are in place for technology development, deployment and diffusion.[45]

Jeffrey Sachs, director of the Earth Institute at Columbia University concludes as follows with regard to mitigation:

> [M]itigation efforts will involve increased energy efficiency, carbon capture and sequestration, development of nonfossil technologies, green buildings, hybrid cars, and other promising technologies. These will be spurred by putting a price on carbon emissions, implemented through a combination of *emission taxes* and *tradable permits* as well as by industry standards in key emitting sectors [emphasis added].[46]

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42 IPCC, *Working Group II Contribution to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, 2007, p 19.

43 IPCC, *Working Group II Contribution to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, 2007, pp 10 and 16.

44 Nicholas Stern, *The Economics of Climate Change: The Stern Review*, 2006, p xviii.

45 IPCC, *Working Group II Contribution to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, 2007, pp 10 and 16.

46 Jeffrey Sachs, *Common Wealth: Economics for a Crowded Planet*, 2008, p 110.

3.3 Taxation

(a) Introduction: Price or quantity?

In terms of policy instruments to mitigate climate change – to increase the price of carbon, to limit emissions and to encourage the development of alternative energies – the question is whether to rely on price-based or quantity-based instruments. The prime example of the former is a carbon tax and, of the latter, an ETS such as the CPRS. A tax sets a price on carbon, and emitters choose how much to emit; an ETS sets a total quota for emissions; emitters – the market – work out the price. A carbon tax, unlike an ETS, does not involve a quantitative target.

It should be noted that there hasn't been a substantive debate in Australia over the relative merits of a carbon tax and an ETS. The *Garnaut Climate Change Review* refers to the advantages of a carbon tax only briefly. The Australian Government's Carbon Pollution Reduction Scheme *Green Paper* (released in July 2008), its *Carbon Pollution Reduction Scheme: Australia's Low Pollution Future* White Paper (released in December 2008) and *Australia's Low Pollution Future - the Economics of Climate Change Mitigation*, the Treasury Department's economic modelling of the potential economic impacts of reducing emissions over the medium and long term, are all concerned substantively with details of an ETS alone. And while an ETS and its operation may be generally understood, given the debate over the CPRS, a carbon tax may be less understood – thus there is rather more focus in this section on carbon taxes than on emissions trading.

Reference is made here to 'carbon' and a 'carbon tax,' reflecting their use in the general literature. Such reference, however, should be taken not just as a reference to carbon dioxide (CO_2) but also as a reference to the other five greenhouse gases provided for in Annex A to the Kyoto Protocol to the UNFCCC.

(b) Carbon taxes

A carbon tax – a direct pricing mechanism, as opposed to an indirect mechanism such as an ETS – imposes a fee for every ton of carbon produced. Put another way, a carbon tax imposes a fee on fossil fuels – coal, oil, natural gas – in proportion to the carbon they contain. Fuels which are more carbon-intensive (such as coal, for example) become more expensive under a carbon tax; fuels such as solar become more competitive. A carbon tax would raise the price of fossil fuels.

Such a tax could begin at a relatively low level (so as to avoid disruption) and would increase steadily, and predictably, over time, providing incentives to affected corporations to lower emissions and encouraging such corporations to use energy more efficiently and to move to lower emissions technology. Accurate assessments of the costs of investing in lower emissions technology can be made because the amount of the tax imposed is certain, unlike the carbon price under an ETS which can be highly volatile.

While there are a number of points at which to impose a carbon tax, there is some agreement that the most simple and efficient way is for it to be introduced as close to the source of the fuel as

possible, that is, as far 'upstream' in the energy supply chain as possible. One result of an upstream approach is that increased costs would be passed along by suppliers and would be borne, ultimately, by consumers; they would be passed into downstream prices of electricity, for example, and energy-intensive goods. The tax is applied to all sectors of the economy that use fossil fuels and, thus, would have a very broad scope. In principle, as the Pew Center notes, a carbon tax

> regardless of where it is levied ... will bring about the same behavioural response and economic burden to firms and consumers (prior to any potential decisions about how to compensate them with tax revenues). This might not be the case, however, if downstream consumers are sluggish to respond to price increases unless faced with a more visible tax.[47]

No matter its rate, a carbon tax could be introduced progressively, over time, which may assist both affected entities and consumers in terms of adjusting to it.

Calculating the amount or the value of such a tax is, of course, the key issue. While an ETS fixes the quantity of carbon to be emitted, and the market works out the price, under a carbon tax the price is fixed by the government and the market works out the quantity; a carbon tax is price-based, not quantity- based. Given the absence of any debate surrounding a carbon tax in Australia, its amount is difficult to estimate, and estimates are uncertain. For Cooper, in general, an initial charge 'should be high enough to affect behaviour significantly, but not so high as to lead to unwarranted adjustments.'[48] Further, while the amount of carbon reductions at a specific charge per tonne of carbon cannot be easily calculated, Cooper notes (at p 9) that such a charge will affect emissions in three ways:

- Households will reduce energy expenditure and expenditure on energy-intensive products;
- corporations will produce goods that are more energy efficient and in ways that will use less energy; and
- high carbon–emitting fuels will be replaced with low emitting fuels, where possible, in energy-using processes.

For William Nordhaus, just as generally, a carbon price 'might be determined by estimates of the price necessary to limit GHG concentrations or temperature changes below some level thought to be "dangerous interference,"' although Nordhaus is concerned to implement such a tax as part of a system of internationally harmonised domestic taxes on carbon emissions.[49] More specifically, in an Australian context, Humphreys models a carbon tax at both AUD 15 and AUD 30 per tonne of CO_{2e},[50] and Switkowski suggests that a tax of AUD 15 – 40 per tonne would be necessary for nuclear power to be competitive with coal.[51]

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47 Pew Center on Global Climate Change, *Tax Policies to Reduce Greenhouse Gas Emissions*, 2008, p 9.

48 Richard N Cooper, *The Case for Charges on Greenhouse Gas Emissions*, 2008, p 5.

49 William Nordhaus, 'Economic Issues in Designing a Global Agreement on Global Warming,' 2009, p 5.

50 John Humphreys, *Exploring a Carbon Tax for Australia*, 2007, pp 5-6.

51 Australian Government, Department of the Prime Minister and Cabinet, Uranium Mining, Processing and Nuclear Energy Review, *Uranium Mining, Processing and Nuclear Energy – Opportunities for Australia*, 2008.

In any event a carbon tax must establish a price that reflects the damage cause by emissions; emitters would face the full social costs of their emissions.[52] Estimates of the social costs of carbon vary significantly, from USD 3 to 95 per tonne of carbon, with an average coat of USD 12; most estimates range between USD 5 and 20.[53] A tax would attach environmental costs to carbon, and would be designed – as would a carbon price established through an ETS, although by the market and not government – to reduce carbon emissions by transforming the production of energy from that which is carbon- intensive to that which is less carbon-intensive.

(c) Distribution of revenue from a carbon tax

It is argued by those on both the left and right that a carbon tax would provide government revenue which could then be used to reduce or offset other forms of taxation, primarily corporate and personal income taxes (perhaps, for the latter, through an increase in the tax-free threshold), thus making a carbon tax 'revenue neutral.' For Inglis and Laffer, '[a] carbon tax that was fully offset (with payroll or income taxes cut by a dollar amount equal to the revenues generated by the new tax) would be as bold as the threat [from climate change] that we face.'[54] Revenue from a carbon tax could also be used to subsidise alternative fuel industries and projects, technology development and development of less expensive, low carbon fuels which could over time result in a lower carbon tax.

In general, revenue distribution – or recycling – can be either general or selective. Under a policy of general recycling, a revenue neutral carbon tax could be created, with the beneficiaries of tax cuts or reductions not limited to those entities the subject of the carbon tax. As mentioned previously, increased costs resulting from a carbon tax would ultimately be borne by consumers. Under selective revenue recycling, taxes other than the carbon tax are altered with the effect that entities the subject of the carbon tax do not face an increase in their overall tax burden,[55] with a result not dissimilar to providing free permits. Revenues from a carbon tax can also be recycled to entities the subject of the tax in the form of subsidies.

(d) Advantages of a carbon tax

In outline form claims made for the imposition of a carbon tax, both in isolation and as against an ETS, are as follows, in no particular order. It should be noted, however, that '[t]he specific effects of both a carbon tax and tradeable permit program would depend on the specific levy (carbon tax) or allocation scheme (tradeable permit) chosen, the scope of the program, the timing of the reductions, and the recycling of any revenues:'[56]

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52 See Nicholas Stern, *The Economics of Climate Change: The Stern Review*, 2006, p 353.

53 IPCC, 'Perspectives on Climate Change and Sustainability,' *Fourth Assessment Report, Working Group II, Impacts, Adaptation and Vulnerability*, 2007; Richard Tol, 'The Social Cost of Carbon: Trends, Outliers and Catastrophes,' *Economics: The Open-Access, Open-Assessment E-Journal*, vol 2, 2008-25, 12 August 2008.

54 Bob Inglis and Arthur B Laffer, 'An Emissions Plan Conservatives Could Warm to,' *New York Times*, 28 December 2008.

55 David Russell, *Tax and Climate Change – New Horizons for Tax Practitioners*, 2007, p 31.

56 Larry Parker, *Global Climate Change: Market-Based Strategies to Reduce Greenhouse Gases*, 2002, p i.

- Taxation is a proven instrument. Tax systems 'are mature and universally applied instruments of policy. Countries have used taxes for centuries, and their properties are well understood. Every country uses taxes, has an administrative tax system, has tax collectors, and needs revenues.'[57] For Nordhaus, such advantages are even clearer when compared to the operation of an international ETS, with which the world has no experience.
- Taxes capture revenue more easily than quantitative instruments such as emissions trading schemes, and are less costly. As mentioned above, tax infrastructure is in place domestically and internationally; pre-existing collection mechanisms exist. Further, carbon trading has higher administrative and compliance costs than does taxation.
- Taxation is more direct and more transparent than emissions trading, and affords less opportunity for corruption; there are no artificial scarcities to encourage rent-seeking. A carbon tax is more 'honest.'[58] Money moves from polluters directly to the government.
- A carbon tax provides price certainty and stability, as opposed to high level price volatility associated with emissions trading schemes and the price of permits, and a fixed price for carbon emissions across all economic sectors and markets, although 'at the expense of an uncertain reduction in emissions.'[59]
- Carbon price certainty which a tax provides allows corporations more easily to determine new, clean technology investment.
- A carbon tax would provide revenue which could be used to cut, offset or remove other taxes.
- A tax has a much broader scope than an ETS.

(e) A global tax on carbon

Just as any discussion of domestic emissions trading schemes takes account of linking those schemes internationally – on the basis that climate change, as a global problem, requires a global solution – so too any discussion of domestic carbon taxes as an alternative climate change mitigation strategy to emissions trading must take account of how such taxes can be implemented as part of an international carbon taxation system. Russell suggests three models for an international carbon tax:

- An internationally administered emissions tax;
- an internationally harmonised domestic emissions tax; and
- independent non-harmonised domestic emissions taxes (which Russell regards as unsatisfactory).[60]

Yale University's Nordhaus, perhaps the most prominent economist advocating a carbon tax over an ETS, favours a domestic tax which is internationally harmonised, the revenues from which would be collected and retained domestically. The features of such a tax, and Nordhaus' arguments in favour of it include the following:

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57 William Nordhaus, 'Economic Issues in Designing a Global Agreement on Global Warming,' 2009, p 5.

58 James Hansen, 'Carbon Tax & 100% Dividend vs. Tax & Trade,' 2009, p 3.

59 Frank Ackerman, *Carbon Markets and Beyond: The Limited Role of Prices and Taxes in Climate and Development Policy*, 2008, p 4.

60 *Tax and Climate Change – New Horizons for Tax Practitioners*, 2007, pp 19-21.

- It would fit naturally into domestic taxation systems;
- it is designed to raise the price of carbon, with participating countries using the revenues according to individual, domestic priorities; and
- countries agree only to guarantee that their domestic carbon price would not fall below the level of the international standard.[61]

The carbon price under such a tax was referred to earlier (see [ ]).

Nordhaus' other arguments in favour of an internationally harmonised, domestically collected and retained tax mirror to some extent those made in favour of carbon taxes generally.

As mentioned earlier, carbon taxes – unlike emissions trading which is at the heart of the Kyoto Protocol – don't involve quantitative carbon constraints or targets. As a result, while prices are certain under a carbon tax regime, reductions in emissions are not. However, as Kyoto reveals, quantitative targets themselves are problematic in terms of how they can be achieved – a reduction in emissions by 2050 on year 2000 levels of 80%, for example; the politicised nature of target negotiations; and how to include both developed and developing nations. It is argued that one of the advantages of a price-based system is that, using the Nordhaus approach, it makes it easier for countries, developed and developing, to become parties to a universal climate change agreement.

(f) Conclusion

The argument for carbon taxation is made concisely by Cooper:

> Decisions to consume goods and services made with fossil fuels are made by over a billion households and firms in the world. The best and indeed only way to reach all these decision makers is through the prices they must pay. If we are to reduce CO_2-emitting activities, we must raise the prices of those activities. Levying a charge on CO_2 emissions does that directly. A cap-and-trade ... scheme ... does so indirectly, if less transparently.'[62]

[61] William Nordhaus, 'Economic Issues in Designing a Global Agreement on Global Warming,' 2009, p 6.

[62] Richard N Cooper, *The Case for Charges on Greenhouse Gas Emissions*, 2008, p 3.

3.4 Emissions trading

> The global economic crisis has battered the free market's reputation, but the market nevertheless remains a powerful tool both for allocating capital and for effecting social change. Nowhere is this truer than with the challenge of confronting and reversing climate change. Of all the market-based tools available for addressing the problem, the most potent are cap-and-trade systems for greenhouse gas emissions.
>
> - Joel Kurtzman, *Foreign Affairs*, 2009[63]

(a) Types of ETS

An emissions trading scheme is intended to find the least cost method for reducing emissions through market-based mechanisms. There are two broad, alternative types of emissions trading schemes most commonly adopted, 'cap-and-trade' and 'baseline and credit.'

Under the 'cap and trade' model, the scheme sets a maximum ('cap') quantity of emissions for a year (or longer) compliance period, across the whole sector to which the scheme applies. Permits or allowances are issued by the scheme administrator, totalling that cap. An emitter must obtain and surrender to the scheme administrator at the end of the compliance period a permit or allowance for each unit of its emissions during the compliance period. The initial issue of permits or allowances may be allocated free of charge, auctioned, or given for some other value or consideration.

An emitter has an election as to whether to structure its business to reduce its need for permits, or to acquire the necessary permits from the administrator or other parties. An emitter that reduces its emissions is advantaged by having a reduced cost of acquiring permits, or access to revenue from selling its surplus permits to others that need them. An emitter which fails to surrender sufficient permits covering its emissions during the compliance period faces some tax, penalty charge or other penalty. The supply and demand for permits, the cost of abating emissions, and the consequences of failure to surrender sufficient permits, influence the price at which scheme participants are prepared to buy and sell permits, and hence the market price of permits.

Under a 'baseline and credit' model, a target level of emissions per unit of production is set by the scheme administrator. Producers which reduce emissions below the baseline earn credits, and producers whose emissions exceed the baseline must either purchase and surrender credits equal to the excess over the baseline, or face a tax, charge or other penalty under the scheme. The level of the baseline, the cost of abatement of emissions to meet the baseline, and the supply and demand for credits influences the price of the emission credits.[64]

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63 Joel Kurtzman, 'The Low-Carbon Diet,' *Foreign Affairs*, 2009, p 114.

64 Graeme Dennis, 'Emissions Trading,' in Hodgkinson (ed), Climate Change Law and Policy in Australia, 2009.

Baseline-and-credit systems have been criticised for a number of reasons. First, they suffer from the problem that the economic incentive involved is to create additional credits, rather than to reduce emissions.[65] Second, baseline-and-credit systems can be administratively complex and costly since they require verification and monitoring of emissions data for each participant. Accordingly, baseline-and-credit systems have been far less widely used than cap-and-trade systems.

(b) Targets

Any ETS should operate against a framework of medium- and long-term emissions reduction targets for the country or region in question.

Developed country parties to the Kyoto Protocol have committed to reducing their emissions by certain amounts in the period between 2008 and 2012. These targets were set by reference to levels of emissions in 1990. A number of countries have since set targets for reducing their carbon emissions for the period to 2020 and also to 2050, and with reference to levels of emissions in different years (2000 and 2005, for example).

The Australian government's targets are discussed later in this paper.

(c) Cap

Setting an appropriate overall cap on emissions is fundamental to the success of an ETS. Similar considerations apply when setting a cap as apply to the setting of emissions reductions targets. If the cap on emissions is too high, then this will undermine the environmental integrity of the scheme. However, if the cap is too low, then the ETS will place too great a burden on participants and may have a detrimental impact on the economy. The cap should be consistent with a long-term emissions reduction target.

Other important considerations are the degree of flexibility in setting the cap and the duration of the cap. Given that the scientific understanding of climate change is constantly evolving, it is important that the cap can be adjusted in order to take this into account. On the other hand, it is necessary that there be some level of certainty in the cap to allow investors to make investment decisions with confidence.[66]

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65 See, for example, Parliamentary Library, Parliament of Australia, *Canadian emissions trading scheme*, www.aph.gov.au/Library/Pubs/ClimateChange/governance/foreign/canadian.htm, 9 April 2009.

66 National Emissions Trading Taskforce, *Possible Design for a National Greenhouse Gas Emissions Trading Scheme*, December 2007, pp 38-40; Department of Climate Change, Carbon Pollution Reduction Scheme *Green Paper*, July 2008 (Green Paper), pp 177-188; Department of Climate Change, Carbon Pollution Reduction Scheme White Paper: *Australia's Low Pollution Future*, (White Paper), p 4-2-4-3; see www.climatechange.gov.au/emissionstrading/index.html; follow the links to 'National Emissions Trading Taskforce Report,' 'Green Paper' and 'White Paper' respectively).

(d) Coverage

The scope of an ETS is determined by which greenhouse gases and industry sectors are covered by the scheme, and which entities are liable for acquitting permits. The general view is that the broader the scheme's coverage, the lower the costs will be across the economy and the less volatile the market.

Liability for acquitting permits may be imposed in three main ways. It may be imposed at the top of the supply chain, on producers or processors of fuels - an 'upstream' approach; it may be imposed directly on emitters - a 'downstream' approach; or some combination of the two approaches may be used - a 'hybrid' approach. Factors influencing whether a particular approach is adopted include the transaction costs involved, the accuracy of emissions measurement, and the breadth of coverage.

(e) Allocation of permits

The primary methods of allocating permits under an ETS are free allocation and auctioning. These approaches may be used alone or in combination. Free allocation generally occurs by a process known as 'grandfathering,' whereby permits are allocated to existing emitters according to their historical emissions. Auctioning involves the release of permits into the market by the government through an auction process.

Although free allocation has so far been widely used in various emissions trading schemes around the world (often in combination with auctioning), much of the literature on allocation of permits deals with the disadvantages of such allocation.

The free allocation of permits may distort incentives to reduce emissions. For instance, where participants are aware that the number of permits allocated will be based on their historical emissions data, they may in fact increase their emissions so as to receive more permits once the scheme comes into effect. Another issue is that where there is a one-off allocation of permits, new companies may find it harder to enter the market because they will be required to purchase permits but will be in competition with established companies that received free permits.

Second, free allocation may result in windfall profits for companies that are able to pass through their costs to households. This may result in the costs of the ETS being borne predominantly by those companies that are unable to pass through their costs and by households.

In contrast, the revenue derived from auctioning may be used by the government to address equity issues - for example by compensating low-income households for higher energy prices - or to fund the development of less carbon-intensive technologies, as discussed above.

(f) Assistance

One of the most contentious issues concerning the introduction of an ETS is what assistance (if any) should be given to various industry sectors in order to smooth the transition to the scheme. Different groups argue that they should receive special treatment under the ETS, in the form of compensation or free permits. However, as discussed above, it is preferable for the coverage of an ETS to be as broad as possible. Thus, any decision to make exceptions for certain sectors should be taken with care, since this will increase the burden placed on other sections of the economy.

It is argued that assistance is warranted for emissions-intensive trade-exposed (EITE) industries; that is, those industries that 'rely significantly on emissions-intensive production processes, and are substantially unable to pass costs of emissions through to customers because the price of the commodity or good is determined on international markets.'[67] The argument is that if one country introduces an ETS (Country A), but other countries do not, companies in EITE industries in Country A will suffer from a lack of competitiveness due to their facing higher emissions prices than their foreign trade competitors. This could lead to EITE companies in Country A relocating their operations overseas. This situation is known as 'carbon leakage.' On this basis, it is argued that assistance should be provided to EITE industries to address the failure of other countries to place limits on carbon emissions. Usually such assistance would take the form of free permits.

Assistance is a common feature of all emissions trading schemes. The question is, in determining such assistance, how much? to whom? and for how long?

(g) Advantages of an ETS

When compared to other instruments used to mitigate climate change, there are a number of advantages associated with an ETS. First, the fact that there is a limit on the total quantity of carbon that can be emitted means that an ETS (at least in theory) provides certainty about the level of emissions reductions that will occur. Instruments such as a carbon tax, in contrast, may not provide such certainty. In addition, the focus on reducing emissions may lend greater credibility to an ETS, since the link between the policy instrument and the environmental objective is clear.[68]

Second, an ETS provides flexibility in the way that emissions reductions can occur, whereas other instruments, such as technology standards - which stipulate a particular technology that must be used, for example - do not. This flexibility allows participants to find the most cost-effective way to reduce emissions.

Third, it may be easier to link an ETS to international markets than it is to link other policy instruments to such markets.

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67 Garnaut Climate Change Review, *Emissions Trading Scheme Discussion Paper*, March 2008, available at http://www.garnautreview.org.au and follow the links.

68 Department of Prime Minister and Cabinet, *Report of the Task Group on Emissions Trading*, 2007, available at http://www.climatechange.gov.au/emissionstrading/index.html and follow the links to 'Prime Ministerial Task Group on Emissions Trading - Final report,' p 50.

(h) The European Union Emissions Trading Scheme (EU ETS)

The EU ETS is the largest multi-country, multi-sector ETS in the world. It began operating on 1 January 2005. It is a cap-and-trade scheme which, as of 1 January 2008, covers not only the 27 European Union member states, but also Norway, Iceland and Liechtenstein. The EU ETS is divided into a number of different phases, including:

- Phase One was the period between 2005 and 2007;
- Phase Two is the period between 2008 and 2012; and
- Phase Three is the period between 2013 and 2020.

The EU ETS has so far operated in such a way that individual member states are responsible for deciding on the quantity of permits – 'European Union allowances' (EUAs) – to be allocated within their member states, as well as how those allowances are to be allocated.[69] These 'national allocation plans' must be approved by the European Commission and must also meet certain criteria, one of which is that they are consistent with the member state's obligations to limit emissions under the Kyoto Protocol. [70] The overall scheme cap has therefore been determined by the total number of EUAs allocated under the national allocation plans.

There was an over-allocation of permits in Phase One of the EU ETS, due in part to reliance on inaccurate emissions data – a mistake which the Australian Government, through its National Greenhouse and Energy Reporting Scheme (NGERS) seeks to avoid. The fact that decisions on the number of permits to be allocated were made at so many different levels may have also played a part.[71] As a result, the price of EUAs dropped significantly and it is unlikely that emissions were substantially reduced.

In Phase Three, there will be a single EU-wide cap and national allocation plans will no longer be used.[72] The cap will then decrease in a linear manner from 2013-2020.[73]

While examination of the EU ETS provides some practical context for an examination of the proposed Australian ETS, it has limited use – given the unique nature of the EU – as an example against which the proposed Australian scheme can be measured. Of rather more use is the United States ETS as proposed in the 2009 American Clean Energy and Security Act of 2009. Both the US and

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69 Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003, establishing a scheme for greenhouse gas emissions allowance trading within the EC and amending Council Directive 96/61/EC[1003] OJ L275/32 (Directive 2003/87/EC), Article 9).

70 Directive 2003/87/EC, Article 9 and Annex III.

71 M Grubb et al, 'Allowance allocation in the European emissions trading scheme: a commentary,' *Climate Policy*, 5 (2005), pp 127-136

72 Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009, amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community (Directive 2009/29/EC), Articles 1(9) and (10).

73 Directive 2009/29/EC, Article 1(9).

Australia are federal systems; both have drafted cap-and-trade emissions trading scheme legislation; and both have previously proposed and launched state-based emissions trading schemes; the virtues of comparison, thus, are obvious. Legislation dealing with emissions trading and *targets* has also been prepared by both countries ahead of the Copenhagen climate change conference in December.

3.5 Emissions trading in the United States

(a) The Regional Greenhouse Gas Initiative

The Regional Greenhouse Gas Initiative (RGGI) is the first mandatory cap-and-trade ETS in the US, which currently covers ten North-eastern and Mid-Atlantic states. Under a Memorandum of Understanding dated 20 December 2005,[74] seven states – C onnecticut, Delaware, Maine, New Hampshire, New Jersey, New York and Vermont – agreed to participate in the scheme, while Massachusetts and Rhode Island signed as observer states. Subsequently, Massachusetts, Rhode Island and Maryland officially joined the RGGI.

The participating states have developed a Model Rule[75] which is a set of regulations that forms the basis for each State to implement the RGGI.

The first compliance period of the RGGI began on 1 January 2009. Pre-compliance auctions were held in September and December of 2008.

(b) Western Climate Initiative

The Western Climate Initiative (WCI), launched in February 2007, is a collaboration of seven US states – Arizona, California, Montana, New Mexico, Oregon, Utah and Washington – and four Canadian provinces – British Columbia, Manitoba, Ontario and Quebec – to identify, evaluate and implement ways to reduce GHGs. Formal observer parties of the WCI include six other US states, another Canadian province and six Mexican states. The WCI also encourages participation from US tribes.

The most important part of this collaboration is the 2012 implementation of a regional cap-and-trade ETS. Through this ETS the WCI aims to reduce GHGs by 15% on 2005 levels by 2020 as well as to encourage new green technologies and build a clean-energy economy. The multi-sector WCI will cover more than 70% of Canada's emissions and 20% of US emissions, making it the largest cap-and-trade scheme in North America.[76]

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74 Available at http://www.rggi.org/about/history/mou.

75 Available at http://www.rggi.org/about/history/model_rule.

76 See WCI, "Statement of Regional Goal," 22 August 2007; "Ontario Joins Largest North American Climate Collaborative," 18 July 2008; and "US States, Canadian Provinces Announce Regional Cap-and-Trade Program to Reduce Greenhouse Gases," 23 September, 2008, all available at www.westernclimateinitiative.org.

Reporting begins in 2011 for 2010 emissions, with mandatory emissions measurement and monitoring beginning on 1 January 2010 for covered entities. The scheme is scheduled to commence on 1 January 2012. Compliance periods are three years in duration. The scheme's second phase begins in 2015.

(c) American Clean Energy and Security Act of 2009

> The ACES Act combines ambitious but achievable targets for reducing the greenhouse gas emissions that cause climate change with a market-based program that will reward business leaders for deploying clean energy technologies as quickly and inexpensively as possible. Enactment of the ACES Act will allow the United States to help lead the efforts toward a global agreement in which the major economies of the world, both developed and developing, play their part to address the climate challenge.
>
> - Eileen Claussen, President, Pew Center on Global Climate Change, 24 June 2009[77]

> The climate change legislation which the US House of Representatives passed in June 2009 embodies a cap-and-trade approach to addressing greenhouse gases. Most US economists and many environmentalists, at least privately, no longer support this approach, especially compared with the alternative of a refundable, carbon-based tax. Their concerns were only heightened by the rampant horse-trading to win votes for the Waxman-Markey Bill in the House, which substantially weakened its effective cap on emissions. Whatever plan the US Congress ultimately approves, with whatever flaws it contains, will become the US response to climate change for a decade or more. That's why many environmental groups and businesses … are giving further consideration to the alternative of carbon taxes.
>
> - Robert Shapiro, 11 September 2009[78]

Introduction

On 26 June 2009 the American Clean Energy Security Act (the Bill) — legislation 'to create clean energy jobs, achieve energy independence, reduce global warming pollution and transition to a clean energy economy' — passed the US House of Representatives by a vote of 219–212. Amongst other things the Bill sets GHG emission reduction targets for the United States of 17% by 2020 and 83% by 2050 on 2005 levels.[79]

It is the first time either house of Congress has approved legislation designed to reduce GHG emissions. The legislation has been described as 'the most ambitious energy and climate change legislation ever introduced in Congress.'[80]

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77 Eileen Claussen, 'Pew Center urges vote for Waxman-Markey Clean Energy Bill (H.R.2454),' 24 June 2009 at http://www.pewclimate.org/letter/HR2454.

78 Robert Shapiro, 'Cooling to the cap-and-trade push,' *The Australian Financial Review*, 11 September 2009, p 56.

79 See www.energycommerce.house.gov and follow the "Publications" links.

80 John Broder, 'With Something for Everyone, Climate Bill Passed,' *New York Times*, 1 July 2009.

The Bill is now being considered by the US Senate. Its chances of passing the Senate are uncertain. While the Bill is also concerned with clean energy, energy efficiency and the transition to a clean economy, at its heart is a cap-and-trade emissions trading scheme (ETS). This outline examines the significance of the Bill and provides an overview of its main features, with a focus on the proposed ETS. It compares the Bill with relevant Australian climate change legislation, most specifically that pertaining to the Carbon Pollution Reduction Scheme (CPRS).

United States regional climate change action

Prior to the election of President Obama and in the absence of government action on developing climate change policy, states and regions in the US took action (as did states and territories in Australia in the absence of Commonwealth government climate change initiatives during the years of the Howard Government). For example, as discussed, the RGGI was the first mandatory cap-and-trade ETS in the United States; it currently covers ten Northeastern and Mid-Atlantic states. Further, the WCI, launched in February 2007, is a collaboration of seven US states and four Canadian provinces to identify, evaluate and implement ways to reduce GHGs.

Under the Bill passed by the US House of Representatives on 26 June, however, the RGGI and the WCI would be put on hold for 5 years pending the success or otherwise of the ETS established under that legislation.

Main features of the Bill

The Bill, also known as the Waxman-Markey bill after its sponsors, is concerned with more than just setting up an ETS. It sets out energy legislation under four titles: clean energy, energy efficiency, reducing global warming pollution and transitioning to a clean energy economy. It is more than 1400 pages long (from an initial 648 pages), and is more comprehensive and ambitious than the CPRS — although direct comparison is perhaps unfair given the broader scope of the Bill and the single focus of the CPRS. The Bill also contains significantly stronger GHG reduction targets.

An emissions trading scheme

In order to reduce global warming 'pollution,' the Bill proposes in Title III, 'Reducing Global Warming Pollution,' a cap-and-trade ETS to address the climate change problem which, the Bill states:

> poses a significant threat to the national security, economy, public health and welfare, and environment of the United States, as well as of other nations … Because they induce global warming, greenhouse gas emissions cause or contribute to injuries to persons in the United States … (ACES Act, Title III, s 311).

If enacted the legislation would take effect in 2012 (the same as Australia in terms of commencement of full market trading) with compliance periods of two years (versus one year for Australia).

Targets

GHG emission reduction targets for capped sources are 3% by 2012, 17% by 2020, 42% by 2030 and 83% by 2050 on 2005 levels. Economy-wide targets are the same with the exception of the 2020 target which is 20%. The US medium-term 2020 target is higher than Australia's unconditional 5% one, as is its long-term 2050 target; Australia's 2050 target is a reduction of 60% on 2000 levels.

No cap is specified.

Coverage

Sources covered by the ETS include electricity sources; stationary industrial sources (many, such as manufacturers or importers of industrial gases, subject to a threshold liability of 25,000 tons of $CO_{2\text{-}e}$ emissions per year); producers (ie refineries) or importers of all petroleum fuels where the fuel combusted would produce 25,000 tons of $CO_{2\text{-}e}$ emissions per year or more; and certain natural gas distributors. Agriculture is not included in the scheme except as a source of offsets.

About 85% of US emissions would be covered by the ETS; Australian coverage is about 75%.

Liability commences from scheme commencement (2012) but for industrial sources (from 2014) and natural gas distributors (2016).

GHGs covered are the six Kyoto GHGs together with nitrogen trifluouride and any other gas designated as a GHG by the Environmental Protection Agency (EPA).

Covered sources must obtain an allowance for each tonne of $CO_{2\text{-}e}$ emitted.

Allocation of permits

At the commencement of the scheme about 15% of allowances ('permits' under the CPRS) would be auctioned and 85% would be allocated for free (or grandfathered). It should be noted that free allowances don't undermine the effectiveness of an ETS. Even when covered entities receive free allowances, an incentive still exists for such entities to reduce their emissions; excess allowances can be sold to someone else. Most free allowance allocations, then, can be traded on the market.

Allowances allocated freely would reduce over time. By 2031, about 70% of allowances would be auctioned.[81]

Of those allowances allocated for free, about one-fifth would be allocated to liable parties (see 'Coverage' above) so as to reduce the impact of the scheme on such parties. About two-thirds would be allocated to non-covered parties so as to support clean technology development and to reduce

[81] Committee on Energy and Commerce, The American Clean Energy and Security Act (HR 2454), Committee Summary of the Bill as Reported, US House of Representatives, 2 June 2009, p 4.

the impact of the ETS on low- and middle-income households. About 10% would be allocated to (a) support the transition to a clean economy; (b) adaptation; and (c) international technology transfer.

Allowances which are auctioned will have a minimum price of USD10 at scheme commencement, with the price in-creasing in real terms by 5% each year. A strategic reserve of allowances will also be maintained as a cost-containment measure, to be made available by auction if the price of allowances rises to unexpectedly high levels. The estimated price of an allowance at scheme commencement is about USD13, such price to rise as emission limits come down (although there are protections to prevent the cost of allowances rising too quickly in any one year). The EPA estimates an allowance price of USD16 in 2020 (the Congressional Budget Office [CBO] estimate is USD22), USD26–27 in 2030 and USD69-70 in 2050. In terms of annual cost to US households, the EPA estimates that cost at USD49–61 in 2020 (USD175 for the CBO) rising to USD123–174 in 2050.[82]

Banking and borrowing

Unlimited banking of allowances is permitted. Covered entities can borrow from one year ahead without any penalty. Restricted borrowing is permitted for two to five years ahead, with interest.

Assistance

As already discussed, one of the most contentious issues concerning the introduction of an ETS is what assistance, if any, should be given to various industry sectors to smooth the transition to any scheme. Assistance to EITE industries is a feature of emissions trading systems generally. Given the EITE assistance debate in Australia, detail of such assistance provided under the Bill's ETS is warranted.[83]

Under the Bill, as the Background Note from the Commonwealth Parliamentary Library notes:

> Subject to maximum limits on free allowances as a percentage of the total permit pool, the bill allows for up to 100 per cent compensation of all direct and indirect costs to industries that are assessed as EITE, for as long as less than 70 per cent of global output in the relevant sector is produced in countries with similar emissions constraints (satisfying certain criteria). That is, EITE industries will receive up to 100 per cent free permit allocation, and will furthermore be compensated for indirect costs such as higher energy prices.[84]

Again, the US ETS would commence in 2012; industrial sources are only liable from 2014. Up to 100% compensation extends to 2025, at which point it declines by 10% each year. However:

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82 Pew Center on Global Climate Change, Climate Policy Memo #3, 'Cost of the American Clean Energy and Security Act of 2009 Found to be Small According to Government Analyses,' June 2009.

83 See Julie Styles, 'The US Waxman-Markey climate change bill,'Background Note, 2009, pp 15–18 at http://www.aph.gov.au/library/pubs/BN/2008-09/ClimateChangeBill.htm for a comparison table of the Bill and the CPRS.

84 Julie Styles, 'The US Waxman-Markey climate change bill,' Background Note, 2009, p 6.

- there must be a Presidential determination by 30 June 2022 and every four years thereafter on whether more than 70% of global output in eligible EITE sectors occurs in countries subject to emissions constraints that meet certain criteria. If the President determines that less than 70% of global output is subject to such constraints, then the 100% compensation continues. Otherwise, it declines by 10% each year; and

- the free permit allocations are subject to maximum limits for each year. The free allowance cannot exceed two per cent of the nation-wide emissions cap from 2012 to 2013 (during which industrial sources are not directly covered, but are compensated for indirect costs). This limit becomes 15% of the cap in 2014, and then reduces from 15% each year thereafter by the rate at which the cap declines (by 1.75% per year from 2015 to 2020, then by 2.5% per year from 2021 to 2025).

As a result, and subject to the maximum allowance, 'industries with proportionally high import and/or export values are potentially fully shielded from the scheme until the majority (greater than 70 per cent) of global production in that sector is subject to emissions pricing.'[85]

Other features

State and regional programs

It is clear from the draft legislation that it is open to US states and regions to implement policies and programs (but for emissions trading schemes) which go further than those of the federal government. With regard to emissions trading schemes, any such existing state or regional schemes (for example, the Regional Greenhouse Gas Initiative or the Western Climate Initiative, discussed earlier) would be in abeyance from 2012-7. If after 2017 the federal ETS was found to be inadequate, states could restart or commence emissions trading. Those in possession of allowances is-sued under the RGGI or by California before the end of 2011 would be compensated by the federal government.

Emissions offsets

Liable parties under the ETS may use up to 2 billion offset credits annually to meet emissions caps; up to half may be obtained from international projects. Offset credits available for use include emission reductions from reduced deforestation. The final form of the offset provisions reflects late changes sought by the agriculture community. For example, the list of activities that would qualify as offsets has been broadened, and the US Department of Agriculture (as opposed to the EPA) under the Bill has authority to oversee new, generous agriculture offsets and forestry offsets.

[85] Julie Styles, 'The US Waxman-Markey climate change bill,' Background Note, 2009, pp 6–7.

Imposition of mandatory trade penalties on countries that do not adopt emission reduction limits

Another late compromise made to the Bill to ensure its passage through the House was incorporation of a provision which requires the president to impose, from 2020, a border adjustment charge (or tariff) on energy-intensive goods imported from countries without emissions caps or targets comparable to those of the US – a provision which Harvard's Robert Stavins labels as 'risky protectionism.'[86] The president may determine that the charge is not in the US national interest, but only if the Congress passes a resolution agreeing with the president's determination will that determination hold. The president's discretionary power for the imposition of this charge has now been removed. In commenting on the Bill after it had passed the House, President Obama said that the Bill was an "extraordinary first step" but that while:

> American industries like steel, aluminium, paper and glass had legitimate concerns about competition from developing nations … trade sanctions based on the extent to which other countries curbed carbon dioxide emissions might be illegal and counterproductive.[87]

As Nicholas Stern notes:

> For any US administration, overcoming the misconception that policies to reduce emissions will harm the economy, and making convincing arguments that domestic support for change is possible without resorting to trade barriers, is a key challenge. Competitiveness issues affect only a few sectors to any serious degree, al-though the political voice of these sectors is relatively loud [emphasis added].[88]

Clean energy

The Bill, in Title I, 'Clean Energy,' requires retail electricity suppliers to meet a growing percentage of their load with electricity generated from renewable resources and electricity savings. At least 15% of electricity generated must come from renewables by 2020 (down from 20% in earlier versions of the Bill; 20% is also the Australian target). It should be noted that almost 30 US states have set renewable energy production targets, many of which exceed the Bill's proposed national standard.

Title I is generally concerned with standards for conventional and renewable energy technologies. It also provides funds (USD190 billion) for the development of clean energy projects and technologies. Features include:

- emissions performance standards for new coal-fired power stations, which would make carbon capture and storage (CCS) mandatory by 2025; and
- development of smart grid technologies and infrastructure.

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86 Robert Stavins, "A Quick Look Back at Waxman-Markey and the Road Ahead", 29 June 2009 at http://communities.thomsonreuters.com and then follow the links.

87 John Broder, 'Obama Opposes Trade Sanctions in Bill,' *New York Times*, 29 June 2009.

88 Nicholas Stern, *The Global Deal*, PublicAffairs, New York, 2009, p 185.

Nuclear energy

The Bill's renewable, or clean, energy provisions and those dealing with energy efficiency (see below) are clearly significant. However, it has been argued that the 'biggest winner' as a result of the Bill is nuclear energy. While this might not be evident from the Bill's text:

> it is evident from a study of the EPA and EIA data. In the absence of the bill, the EIA [Energy Information Administration] estimated that there would be 7GW of new nuclear capacity by 2025 and 12 GW of new nu-clear capacity by 2050. However, if we look at the EPA analysis, they estimate that with the passage of the bill, new nuclear capacity would increase to 34 GW in 2025 and 161 GW in 2050. There is a certain rationale behind these results: fossil fuel generation is forecast to fall dramatically; the renewable energy targets are not massively higher than the EIA was already forecasting; and the energy efficiency measures are very modest. These facts combine to create a significant gap in supply, which (rightly or wrongly) the EPA expect nuclear to fill.[89]

Energy efficiency

With regard to Title II of the Bill — energy efficiency — there are building standards (new buildings to be 30% more efficient in 2012 and 50% more efficient in 2016), energy efficiency appliance standards and fuel standards for certain vehicles. Subsidies are also provided for improvements in household energy efficiency.

Transitioning to a clean energy economy

Title IV provides funds to (a) reduce impacts on low and middle-income earners; (b) offset increases in energy prices; and (c) assist displaced workers. Funds are also provided for domestic US adaptation, prevention of tropical deforestation and international technology transfer.

The Bill deals with renewable energy, energy efficiency, the transition to a clean energy economy and emissions trading together. By comparison, legislation in Australia deals with these matters separately.

Senate consideration of the Bill

The US Senate is now dealing with the Bill, and it will follow the same path — committee consideration to debate to vote — as it did in the House. The Senate may approve, reject or amend it. The Senate has previously considered climate change legislation — the Lieberman-Warner Climate Security Act of 2007, for example, and the Climate Stewardship and Innovation Act of 2007, both of which were concerned with establishing a market for emissions.

Majority Leader Harry Reid and the Environment and Public Works (EPW) Committee Chair Barbara Boxer have said that the EPW Committee would consider ETS legislation with the aim of passing a

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89 Craig Windram, 'Some of the Numbers Behind the Waxman-Markey Bill,' 25 June 2009 at www.thinkcarbon.wordpress.com.

bill in the Senate this (northern) autumn.[90] Other senators are also working on draft legislation dealing with energy and climate change.

It is possible that such legislation, together with measures passed by various other Senate committees, may be combined to create the Senate counterpart to the Bill.[91] If such a bill passed the Senate, differences between that Senate bill and the Bill would need to be reconciled; any bill approved by the House and the Senate must be in identical form.

However, 'the Senate will not be an easy sell,' as the New York Times notes,[92] and it will consider issues not dealt with in the Bill and some issues in more detail. For example, the Senate may well be more interested in constraining the maximum and minimum market prices of allowances. The Senate has refused to pass less comprehensive climate change legislation than the Bill before and, while 60 filibuster-proof votes are required for legislation to pass, just 45 Senators (mostly Democrats) may vote for climate change legislation. 23 Senators are 'fence-sitters' and climate change legislation such as that represented by the Bill enjoys little Republican support. The New York Times on 10 August editorialised that the Bill

> has virtually no Republican support. There is talk of a turf war between two key Democrats, Barbara Boxer and Max Baucus, whose committees share jurisdiction over the bill. On Thursday [6 August 2009], 10 Democrats from states that produce coal or depend on energy-intensive industries said they could not support any bill that did not protect American industries from exports from countries that did not impose similar restraints on emissions.[93]

Democratic Senator Blanche Lincoln stated that she saw 'the cap-and-trade being a real problem.[94]

(d) The United States as a participant in international climate change negotiations

Questions were raised during debate over the Bill as to whether the US should be moving to enact significant climate change legislation ahead of the Copenhagen climate change conference in December (the 15th Conference of the Parties to the UNFCCC and 5th Meeting of the Parties to the Kyoto Protocol); similar questions have been raised in Australia. It has been argued that passage of the Bill provides President Obama, who supports the Bill and lobbied for its passage, with a real opportunity and stronger case to assert US leadership on climate change. Stavins argues that

> the credibility of the US as a participant [in international climate change negotiations], let alone as a leader, in shaping the international regime is dependent upon [the United States'] … demonstrated willingness to take actions at home.[95]

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90 Van Ness Feldman, *Climate Change Policy Update*, 22–26 June 2009, at www.vnf.com.

91 See the Pew Center, 'The American Clean Energy and Security Act (Waxman-Markey Bill),' 26 June 2009 at www.pewclimate.org/print/6462.

92 'Climate in the Senate,' editorial, 1 July 2009.

93 'A Real Bill for the Climate.'

94 'Four Dem Sens: Yea on Renewables; Nay on CO2 Cap,' *Carbon Offsets Daily*, 16 August 2009.

95 Robert Stavins, "A Quick Look Back at Waxman-Markey and the Road Ahead", 29 June 2009 at http://communities.thomsonreuters.com and then follow the links.

4. The Carbon Pollution Reduction Scheme (CPRS)

4.1 Introduction

In its December 2008 White Paper, *Carbon Pollution Reduction Scheme: Australia's Low Pollution Future*,[96] the Australian Government stated that an emissions trading scheme – the CPRS – would be the main mechanism through which Australia would meet its GHG emissions reduction objectives. Importantly, however, the Government also stated that there would be three other complementary measures to its emissions reduction strategy: the national renewable energy target; carbon capture and storage; and energy efficiency, all three of which would 'focus on reducing emissions from stationary energy sources, which emit the largest proportion of Australia's greenhouse gases and have the greatest potential for transformation.'[97]

On 14 May 2009 the 11 bills which make up the Government's CPRS legislative package were introduced by the Government into the Commonwealth Parliament.[98] The three objectives of the CPRS, as set out in section 3 of the Carbon Pollution Reduction Scheme Bill 2009 (the CPRS Bill), a 'Bill for an Act to reduce pollution caused by emissions of carbon dioxide and other greenhouse gases, and for other purposes,'[99] are to:

- give effect to Australia's obligations under the United Nations Framework Convention on Climate Change and the Kyoto Protocol;
- support the development of an effective global response to climate change; and
- take action directed towards:
    - meeting Australia's target of reducing GHG emissions to 25% below 2000 levels by 2020 'if Australia is a party to a comprehensive international agreement that is capable of stabilising atmospheric concentrations of greenhouse gases at around 450 parts per million of carbon dioxide equivalence or lower;' or
    - if Australia is not party to such an agreement, meeting Australia's targets of reducing net GHG emissions to 60% below 2000 levels by 2050 and to between 5% and 15% below 2000 levels by 2020.

On 13 August 2009 the Senate voted down the Government's CPRS legislative package, 42 votes to 30; all non-government senators voted against them.

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96 Australian Government, Department of Climate Change, White Paper http://www.climatechange.gov.au/whitepaper/index.html (White Paper).

97 Australian Government, Department of Climate Change, White Paper, chapter 19, p 19-4.

98 The Australian Government's proposed climate change legislation can be found at the Commonwealth Department of Climate Change dedicated website, http://www.climatechange.gov.au/emissionstrading/legislation/index.html.

99 See http://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;query=Id%3A%22legislation%2Fbillhome%2Fr4127%22.

4.2 **Outline** (with reference to the legislation which failed to pass the Senate in August)

The CPRS – a cap-and-trade ETS – will commence on 1 July 2011 (assuming eventual passage of the legislation through Parliament), with a compliance period of a year beginning on 1 July and ending on 30 June; most other emissions trading schemes use a calendar year compliance period. The Commonwealth will issues permits, called Australian Emission Units (AEUs), up to the annual permitted emission level of GHGs in the scheme's covered sectors, and will require the permits to be surrendered annually against annual reporting of emissions by liable entities.

Emitters will need to acquire a permit for every tonne of GHG they emit. At the end of each year, each liable entity will need to surrender a permit for every tonne of emissions that they produced in that year. Firms will compete to purchase the number of permits that they require. Firms that value the permits most highly will be prepared to pay most for them, either at auction or on a secondary trading market. For some firms, it will be cheaper to reduce emissions than to buy permits.

EITE industries will receive an administrative allocation of permits as transitional assistance; those permits can be used or sold.

The scheme was to have commenced in 2010, but the government delayed its introduction 'to manage the impacts of the global recession.'

4.3 Coverage

The CPRS will apply to all large emitters (those who emit in excess of 25,000 tonnes per annum, with some sectoral variation) in nearly all industry sectors; such emitters must surrender one permit for each ton. Liability is based on scope 1 emissions alone. This will affect around 1000 firms and is likely to cover about 75% of Australia's total emissions.

Sectors covered include stationary energy; industrial processes; synthetic greenhouse gases; transport and biofuels; waste; fugitive emissions; and forestry on opt-in basis. The main unaffected sector is agriculture (due to the difficulty of measuring emissions from the wide range of different agricultural activities), although it may be covered from 2015; a decision is to be made in 2013.

All 6 Kyoto gases are covered.

4.4 Targets, caps and trajectories

Emission reduction targets under the CPRS were referred to above at [ ]. The total number of AEUs (in carbon dioxide equivalent tonnes) that may be issued at auction or as compensation for a year is the "national scheme cap number". National scheme cap numbers for 2012 through 2014 will be set by regulation before 1 July 2010. Subsequently the Minister must take all reasonable steps to ensure that regulations declaring the national scheme cap number for a year are made at least 5 years before the end of the applicable year.

The first indicative national emissions trajectory will be (a) 2010-11: cap at 109% of 2000 levels; (b) 2011-12: cap at 108% of 2000 levels; and (c) 2012-13: cap at 107% of 2000 levels

4.5 Permits

Permits – AEUs – will be *auctioned* to all emitters that are covered by the scheme unless they are eligible for free permits. Permits have a 'vintage', the earliest year they can be used, but no expiry date. Permits, thus, can be 'banked' for future use. Entities can also borrow permits – using the next year's permits for up to 5% of the current year's liabilities.

For the first 2011-2012 year of operation, the price of a permit will be fixed at $10. The price of permits will be capped at A$40 from the second year (designed to ensure that AEU prices are not pushed beyond reasonable levels due to unexpected demand), rising at 5% per annum. Below the cap, the market price is uncertain, to be determined by supply and demand. Treasury modelling suggested that the permit price may be around A$23 at the time the scheme commencement (although that modelling assumed a start date of 2010 and not 2011). There will be an unlimited number of permits available from the Government at the capped $40 price, but they cannot be banked or transferred.

Auction participation is universal.[100] Ultimately the CPRS will move towards full auctioning of permits. Permit auction will be held on a monthly, 'ascending clock auction' basis, whereby the auctioneer continues to raise the price until the number of permits bidders demand matches the number for sale. Put another way, the Government will release a set number of carbon permits into the market and ask bidders how much they would be willing to buy at a certain price level. If demand at that price level is higher than the supply of permits, the auction goes into a next round, the asking price is slightly increased and bidders respond again. The process ends when supply and demand are equal. At that point the uniform price for a carbon permit is established.

Liable entities must surrender AEUs (or alternatives) by 15 December. A national registry in which permits are held, transferred and monitored has been established. Parties wishing to hold AEUs must open a Registry account; the registry is electronic and maintained by the Authority

It is anticipated that, in the compliance period 2012-2013, about 40% of the revenue from permits will be spent on assistance for Australian low and middle income households to lessen the impacts of the CPRS through a package of direct cash assistance and tax offsets.

There is provision for AEUs to be earned as a forestry offset, for increases in carbon sequestration stocks from reforestation activity undertaken in Australia since June 2010 from recognised "Kyoto" forests. Free AEUs may also be earned from voluntary destruction of synthetic greenhouse gases.

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[100] This paper does not deal with the classification of AEUs and eligible international emissions units as 'financial products,' any requirement for CPRS participants to hold an Australian Financial Services licence with appropriate authorisations if they provide a 'financial service' in relation to AEUs, or which market participants in the CPRS are likely to require licensing.

4.6 Permits – CERs

Liable entities under the CPRS can also meet their domestic obligations under the scheme through acquittal of 'eligible Kyoto units' (as defined in the CPRS legislation). Eligible Kyoto units are CERs (except lCERs and tCERS), ERUs and RMUs. There will be *no restriction* on the number of eligible Kyoto units that may be used to meet domestic CPRS liabilities; entities have the opportunity to achieve CPRS compliance in the most cost-effective manner. Kyoto units (CERs, for example) can be sourced internationally where prices are expected to be lower as the costs of domestic abatement rises. Put another way, depending on the CER price, many companies would presumable use CERs. Permits, thus, may be imported (in the form of CERs); they cannot be exported.

4.7 Liability

The CPRS employs two principal liability mechanisms: (a) a liability for direct greenhouse gas emissions from the operation of large facilities; and (b) a liability for the supply of carbon fuels (other than for export or to large facilities). As Dennis notes,

> Under the first liability mechanism, the controlling corporation of the entity with operational control of the large facility is liable to surrender AEUs equating to the greenhouse gas emissions occurring directly from the large facility.
>
> Under the second liability mechanism, the importer or producer of carbon fuels is liable to surrender AEUs equating to the greenhouse gas emissions likely to be emitted from the eventual combustion of the fuels (unless the fuels are exported, or used in a large facility for which there is a direct emissions liability).
>
> In this way, broad coverage of emissions from most large and small sources is achieved, with a minimal number of liable entities.
>
> There are mechanisms to transfer liability for direct emissions within corporate groups, or to parties with interests in the relevant facility. There is also a mechanism to voluntarily transfer liability for the supply of carbon fuels to persons downstream of the initial supply point.[101]

4.8 Assistance/compensation

Emissions-intensive, trade-exposed (EITE) industries may be unable to pass on their increased costs to customers because of competition from exporters in other countries that do not impose an emissions penalty. The Government will provide transitional assistance to EITE industries by allocating around 25% [although I think that percentage is slightly higher now] of the total scheme permits for free.

Under the original terms of the CPRS, trade-exposed entities with an emission intensity of greater than 2000 tonnes per $1 million of revenue would be eligible to receive 90% of the permits they

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[101] Graeme Dennis, 'Emissions Trading,' in Hodgkinson (ed), *Climate Change Law and Policy in Australia*, 2009.

were required to acquit under the scheme for free. Trade-exposed entities with an emission intensity of 1000 - 2000 tonnes per $1 million of revenue would have been eligible for 60% free permits. Under changes announced in May 2009, however, for a limited time, entities which were eligible for 90% free permits would receive an extra 5% of their permits for free, and those eligible for 60% would receive an extra 10%.

The Government expects allocations to EITE sector to be around 25% initially (35% including agriculture), increasing to around 45% by 2020.

4.9 How will liable entities be able to meet their emissions targets?

Liable firms will be able to meet their emissions targets by purchasing permits, either at auction or on the secondary market; by using less emissions-intensive energy sources; by switching to more efficient production technology; or by investing in abatement schemes. They could also meet emissions targets by cutting back production.[102]

4.10 National Greenhouse and Energy Reporting Scheme

The National Greenhouse and Energy Reporting Act 2007 (the NGER Act), together with the Energy Reporting Regulations 2008, forms part of the National Greenhouse and Energy Reporting Scheme (NGERS). The object of the NGER Act (as set out in section 3) is to introduce a single national reporting framework for the reporting and dissemination of information related to GHG emissions, GHG projects, energy consumption and energy production of corporations to, amongst other things:

- underpin the introduction of the CPRS;
- inform government policy formulation and the Australian public;
- meet Australia's international reporting obligations; and
- assist Commonwealth, State and Territory government programs and activities.

A more comprehensive discussion of NGERS is outside the scope of this paper.

4.11 Complementary measures

Reference has previously been made to measures complementary to the CPRS as part of the Commonwealth's emissions reduction strategy. In 2008 the Government established the *Strategic Review of Australian Government Climate Change Programs* (the 'Wilkins Review')

> to determine whether existing climate change programs were efficient, effective, and complementary to the [CPRS] ... so that climate change can be addressed at least cost to the economy. The Wilkins Review considered 58 active climate change programs and made recommendations as to whether or

[102] ResourcesLaw International, 'A Preliminary Review of the White Paper on Australian Carbon Pollution Reduction Scheme (CPRS),' 16 September 2008, p 4.

> not they would complement the CPRS, should be considered as transitional programs, or did not complement the CPRS.[103]

The Wilkins Review recommended, amongst other things, that the Government should adopt five 'principles for complementary policies' as a framework for deciding whether its policies – either existing or proposed – would help or hinder the work of an emissions trading scheme, as follows:

> ***Principle 1***: The Government should rely on the ETS to achieve least cost abatement and only take action in addition to the scheme where there is a demonstrable and compelling case that the market is not working efficiently and that government action will not distort or undermine the scheme.
>
> ***Principle 2***: The Government's key role in adaptation should be to facilitate informed decision making across the economy.
>
> ***Principle 3***: The Government should take into account the potential for its non-climate change policies to compromise or enhance the ability of the ETS to achieve least cost abatement.
>
> ***Principle 4***: The Commonwealth should be primarily responsible for mitigation policy and all jurisdictions [including State and Territory Governments] should contribute to a nationally coordinated approach to adaptation.
>
> ***Principle 5***: As in all areas of policy, climate change measures should conform to best practice policy design, including the need for an evidence-based assessment of options and rigorous evaluation.[104]

A further recommendation was that the Government should seek agreement from the States and Territories to withdraw from policies or programs with the potential to undermine the CPRS.

The government in response

> indicated that these principles align with the Council of Australian Governments Working Group on Climate Change and Water's *Principles of Complementarity*[105] which will be used to guide the government's assessment of emission reduction measures,[106]

with programs complementary to the CPRS to continue, transitional programs to continue until a fully functioning CPRS exists, programs that could be redesigned to be complementary to the CPRS amended, and those programs not complementary to the CPRS to be phased out or terminated.

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103 Senator the Honourable Penny Wong et al, *Budget: Climate Change*, 12 May 2009, p 35.

104 Roger Wilkins, *Strategic Review of Australian Government Climate Change Programs*, Commonwealth of Australia, 31 July 2008, p 8, at www.finance.gov.au and follow the links.

105 COAG, *COAG Principles for Jurisdictions to Review and Streamline their Existing Climate Change Mitigation Measures*, http://www.coag.gov.au/coag_meeting_outcomes/2008-11-29/docs/20081129_complementarity_principles.pdf.

106 Australian Government, *Government Response To Recommendations Of The Strategic Review Of Australian Government Climate Change Programs* (2009) at http://www.environment.gov.au/minister/wong/2009/pubs/wilkinsresponse.pdf.

4.12 Action the Government could take following the Senate vote/implications of the vote for Australia's climate policy and law generally[107]

(a) Possible Government action following the Senate vote

Reintroduce the bills

As a result of the 13 August Senate vote the government may, after a 3-month period, reintroduce the CPRS bills in the same form; if the Senate again votes the bills down the government will have a trigger to dissolve both houses of parliament and call an early election which would likely focus on the issue of climate change.

Reintroduce the bills after negotiating amendments

The government could also, in the 3 months between August and November, negotiate amendments to the bills so as to ensure their passage through the Senate; all non-government senators voted against the bills. The Greens have written to the government offering to negotiate, calling for tougher 2020 emission reduction targets and less assistance for large EITE industries. The Liberal Party has also indicated a willingness to negotiate, highlighting several concerns including ensuring the level of protection afforded EITE industries is as generous as that offered in jurisdictions such as the United States. The National Party, on the other hand, had indicated it would not support the passage of these bills until after the UNFCCC conference on climate change in Copenhagen this December. This suggests that there is some way to go to negotiate amendments to the bills, although the willingness of the parties to negotiate in relation to the expanded renewable energy target (discussed below) together with the prospect of an early election, may prompt cooperation going forward.

It should be noted that other countries in addition to Australia are dealing with the passage of emissions trading legislation. In those jurisdictions, as in Australia, many of the same problems arise - assistance to EITE industries, for example, chief amongst them. In the United States, the American Clean Energy and Security Act of 2009 passed the House of Representatives by a vote of 219-212. As discussed, however, in the US Senate passage of climate change legislation appears fraught with difficulty. In addition to EITE industry assistance, matters including the distribution of allowances (or permits) and 'border adjustment' – or tariffs – are at issue.

It should also be noted that with the exception of Member States of the European Union, very few countries will have emissions trading legislation in place by the time of the UNFCCC climate change conference in Copenhagen in December.

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107 This section is in large part taken, with permission, from David Hodgkinson, Tess Burton and Sharon Mascher, 'The Carbon Pollution Reduction Scheme: What Now For Climate Law in Australia?," in Hodgkinson (ed), *Climate Change Law and Policy in Australia*, 2009.

Postpone vote on the bills until after Copenhagen

It is also possible that the government could postpone anther vote on the bills until after the UNFCCC climate change conference in Copenhagen in December. This would, however, seem an unlikely option for the Government given its many statements concerning the desirability of having an ETS in place prior to the Copenhagen conference and the statement by the Minister for Climate Change, Penny Wong, that the Government 'will bring these [CPRS] bills back before the end of the year because, if we do not, this nation goes to Copenhagen with no means to deliver our targets.'[108]

(b) Implications of the Senate vote for climate law in Australia generally

UNFCCC climate change conference in Copenhagen

While passage of its domestic emissions trading legislation prior to Copenhagen could be regarded as optimal as it would ensure that Australia had a mechanism was in place to deliver reductions commitments, it is not imperative that this occurs. The head of the United Nations' Secretariat on climate change, Yvo de Boer has said that 'what people care about in the international negotiations is the commitment that a government makes to take on a certain targets.'[109]

Again, section 3 of the CPRS Bill sets as an objective of the legislation to take action directed towards meeting Australia's target of reducing GHG emissions to 25% below 2000 levels by 2020 'if Australia is a party to a comprehensive international agreement that is capable of stabilising atmospheric concentrations of greenhouse gases at around 450 parts per million (ppm) of carbon dioxide equivalence or lower' or, if Australia is not party to such an agreement, meeting Australia's targets of reducing net GHG emissions to 60% below 2000 levels by 2050 and to between 5% and 15% below 2000 levels by 2020.

Whether or not the CPRS bill is passed prior to Copenhagen, the Australian Government has confirmed in a May 2009 submission to the Ad Hoc Working Group on Long-Term Cooperative Action under the UN FCCC (ADG-LCA) and Ad How Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (WG-KP) its commitment to these targets heading into the international negotiations.

The most ambitious target, reducing GHG emissions to 25% below 2000 levels, is dependent on a comprehensive international agreement that is capable of stabilising atmospheric concentrations of greenhouse gases at around 450 ppm. This is the benchmark set by the International Panel on Climate Change in 2007 in order to avoid dangerous climate change. However, with the United Nation's top climate scientist, Rajendra Pachauri, adding his support 'as a human being' to the goal of stabilising atmospheric carbon dioxide concentrations at 350 ppm, it may be that the

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[108] Minister for Climate Change and Water, Penny Wong, remarks at the conclusion of the CPRS Second Reading Debate, 13 August 2009.'

[109] The World Today, Pacific, 'Australia should co-operate on climate, says UN,' 24 August 2009.

commitment embodied in section 3 of the CPRS Bill has become outdated even before passing into law.[110]

Related legislation

National Greenhouse and Energy Reporting Scheme

Notwithstanding its close link with the CPRS – reporting by affected corporations under NGERS forms the basis for the CPRS – the operation of NGERS is unaffected by the Senate's rejection of the Government's CPRS legislative package (and, indeed, as it is unaffected by the delay of the commencement of the CPRS until 1 July 2011). 30 June 2009 marked the end of the first reporting year under the NGER Act, with the 2009-2010 reporting year commencing on 1 July 2009.

Renewable energy target

An expanded Renewable Energy Target (RET) is also part of the Government's climate change mitigation strategy such that at least

> 20% of Australia's electricity needs will be met by renewable sources [as opposed to coal and oil fuels, for example] by 2020. A renewable energy target places an obligation on energy retailers to purchase a certain proportion of their energy from renewable sources in the form of renewable energy certificates …'[111]

Legislation to expand the RET through amendment to the Renewable Energy (Electricity) Act 2000, together with the Renewable Energy (Electricity)(Charge) Act 2000, was introduced by the Government into the Commonwealth Parliament in June 2009. At the time, that proposed legislation was linked with the commencement of the CPRS, particularly in relation to industry assistance in the form of exemptions from liabilities under the RET. Thus, while the RET could operate without any CPRS, there would be no industry assistance or exemptions. The Commonwealth Department of Climate Change explained the linkage thus:

> … a number of firms and industry associations put in a submission to say,'You should take account of the cumulative impact of the CPRS and the RET,' and … if you are eligible for emissions-intensive trade-exposed assistance under the CPRS, you would also be eligible for assistance on basically the same rates of assistance as you would for the Renewable Energy Target, representing the cumulative impact of those two policies. One way of thinking about it is that, if you have a dollar of additional cost that comes through either the CPRS or the RET, you get the same rate of assistance for that.[112]

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110 Marlowe Hood, 'Top UN climate scientist backs ambitious CO2 cuts,' 25 August 25 2009.

111 Shannon, Green and Thompson, 'Commonwealth Policy and Legislation' in Hodgkinson (ed), *Climate Change Law and Policy in Australia*, LexisNexis, 2009 at [5-205].

112 Senate Economics Legislation Committee, *Renewable Energy (Electricity) Amendment Bill 2009 and a related bill [Provisions]*, Commonwealth of Australia, 2009 at p 55, citing Mr Blair Comley, Department of Climate Change).

However, following the rejection of the bills by the Senate on 13 August, the Government agreed to 'decouple' or separate assistance arrangements under the RET from the CPRS such that EITE assistance would be provided for directly in RET legislation.

On 19 August the Government and Opposition parties agreed to pass the RET legislation on the basis that EITE firms will be supported if costs from the RET increase above a certain point. According to the Minister for Climate Change and Water, Penny Wong, support for industry would operate as follows:[113]

- The CPRS industry assistance provisions would be replicated for the purposes of the RET; partial exemptions would be provided for all activities qualifying for EITE assistance under the CPRS. The same eligibility thresholds under the CPRS would be used by the Government with partial exemptions of 90 and 60% depending on the activity's emissions intensity.

- With regard to assistance for additional costs under the present Mandatory Renewable Energy Target (MRET), the Government

  > recognises that the increased costs associated with the expansion of the RET has two components … [f]irst, if the REC [Renewable Energy Certificate] price increases above the level of around $40, then the increased REC price increases the cost impact of meeting the current MRET liability of 9,500 Gwh … [and s]econd, the higher annual targets under the expanded RET increase the costs associated with the RET.

  As a result, the Government intends, assuming passage of the CPRS legislation, to provide additional assistance under the RET for eligible EITE activities by adjusting the partial exemption rate to ensure that the same assistance rate (90% or 60%) applies to the increase in costs associated with the expansion of the RET. The Government will use a REC price of $40 to calculate the increased costs above the existing MRET liability.

- The Government will extend the proposed CPRS review provisions as set out in the White Paper to industries that will be potentially affected by the RET once the RET has commenced. For the Government,

  > these arrangements allow firms – including those that do not qualify for industry assistance – to make representation to the Government to request that the Government commission the Productivity Commission to undertake an assessment of the RET's impact on their industry. The Government will not necessarily refer all requests to the Commission; it will take into account the nature and details of the request.

Beyond assistance to EITE activities, concerns were raised during the Senate debate about the ability of emerging technologies such as solar thermal, solar concentrator energy, ocean thermal energy, tidal energy and geothermal, to participate in the RET. However, the suggestion that a percentage

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[113] See material provided by the Minister attached to press release, 'Rudd Government Secures Passage of 20 per cent Renewable Energy Target,' 19 August 2009.

of the RET be set aside for emerging technologies was not incorporated in the legislation. The role of solar hot water heaters, including heat pump water heaters, in the RET legislation was also the subject of debate in the Senate with concern that their inclusion reduced the amount of renewable energy generated under the scheme from large scale renewable energy projects. To address these concerns the Government indicated an intention to pass regulations relating to long term use of solar hot water heaters and left the eligibility rules under the RET relating to heat pumps and new small-scale technologies for COAG during the coming months.

The legislation passed the Senate with no opposition and received final approval from the House of Representatives on 20 August 2009.

The passage of the expanded RET, which will come into effect from January 2010, in no way assuages the Government's desire to move forward with the CPRS legislation. Rather than a replacement, the expanded RET is a complementary measure to the CPRS providing transitional assistance to 'ensure that renewable energy technologies can be readily deployed when the price signal under the [CPRS] makes those technologies more competitive.'[114] However, the expanded RET cannot alone serve to stop Australia's escalating emissions.

Issues of programs and legislation complementary to the operation of the CPRS were discussed above.

5. 'A Global Deal'?[115] Issues and problems for climate change conventions and legislation

5.1 Introduction

It was stated at the outset that the purpose of this paper is to examine issues which arise as a result of instruments chosen to mitigate the effects of climate change at both the Australian and international levels, and instruments which might be chosen. Hopefully, some of those issues have become clear through an examination of the principles of carbon taxes and emissions trading and a discussion of the emissions trading schemes proposed by both Australia and the United States. Again, climate change law does – of course –extend 'beyond new legislation directly aimed at mitigating global warming' to the pre-existing environmental law framework;[116] however, the focus of this paper has been on new or proposed legislation and the relationship with international agreements, such relationship at its most obvious when emissions reduction targets are discussed. The proposed CPRS, for example, is designed to reduce Australia's greenhouse gas (GHG) emissions, but it is also designed to (a) give effect to Australia's obligations under the UNFCCC and the Kyoto Protocol; and (b) support the development of an effective global response to climate change. Its

114 White Paper at 19-4..

115 Nicholas Stern, *The Global Deal: Climate Change and the Creation of a New Era of Progress and Prosperity*, 2009.

116 SeeTim Bonyhady and Peter Christoff, 'Introduction,' in Bonyhady and Christoff (eds), *Climate Law in Australia*, 2007, pp 2-3.

national emissions reduction targets are explicitly joined to the content and ambitions of a global climate change agreement.

It was also stated earlier that, given the requirement for 'immediate and dramatic emission reductions of all GHGs'[117] if the rise in global temperature is to be contained to 2°C above pre-industrial levels, the importance of domestic climate change legislation and international climate change agreements – and their interaction – is clear.

This section of the paper examines some issues and problems – largely legal ones – for climate change conventions and legislation not so much related to the kinds of instruments chosen but, rather, to the operation (prospective or otherwise) of such conventions and legislation and any climate change 'global deal.'

5.2 Australia

(a) The final form of the Australian ETS, if any, is unclear.

On 13 August 2009 the Senate voted down the Government's CPRS legislative package. As previously discussed, the Government may, after a 3-month period (that is, in November), reintroduce the bills which make up the package in the same form and, if they are voted down again, the government would be provided with a double dissolution trigger. The government could also reintroduce them after negotiating amendments with a view to securing their passage and, thus, implementation of the CPRS. However, the fact that the vote was lost in the Senate by 42 votes to 30, with all non-government senators voting against the bills, reflects the significance of the division that exists across the political spectrum in relation to key elements of the main bill, the Carbon Pollution Reduction Scheme Bill 2009.

At this stage, then, the final form of the CPRS – the main mechanism through which the Government proposes Australia meet its GHG emission reduction objectives – is not clear. It's also not clear whether the Government will have in place legislative approval for an ETS prior to the Copenhagen conference. The implications of that were discussed earlier.

(b) Complementary measures

As previously noted, Australia – like the US and other jurisdictions – proposes to rely on other complementary measures in addition to an ETS to achieve emissions reductions. In the event that the CPRS legislation is not passed by the Senate the shape and content of those measures, of course, is also uncertain, as is the future of the many State and Territory-based programs which, the Wilkins Report recommended, should be withdrawn if they had the potential to undermine the CPRS . The centrality of the CPRS to the Government's emissions reduction strategy, however, is made clear in the Wilkins Report, which it endorses:

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[117] IARU, *Synthesis Report*, 2009, p 18.

> The Government should rely on the ETS to achieve least cost abatement and only take action in addition to the scheme where there is a demonstrable and compelling case that the market is not working efficiently and that government action will not distort or undermine the scheme.[118]

5.3 Internationally

(a) There is a gap between targets and emissions reduction timeframes which science tells us are required and those which are presently proposed in legislation or treaty proposals

It was said earlier, with reference to papers this year in *Science*, *Nature* and the *Proceedings of the National Academy of Sciences* that

> atmospheric CO_2 concentrations are already at levels predicted to lead to global warming of between 2.0 and 2.4°C ... If society wants to stabilise greenhouse gas concentrations at this level, then global emissions should, theoretically, be reduced by 60-80% immediately ...[119]

and that

> [i]n practice, substantial reductions in global emissions have to begin soon, before 2020. If we wait any longer, the required phase-out of carbon emissions will involve tremendous economic costs and technological challenges – miles beyond what can be considered politically feasible today. The longer we wait, the more likely our path will lead us into dangerous territory.[120]

There appears to be a discrepancy between targets and emissions reduction timeframes which science tells us are required and those which are presently proposed in legislation or proposed by parties to the Kyoto Protocol. While there may be a consensus that any post-2012, post-Kyoto agreement should 'provide a structure for steep long-term reductions in greenhouse gas emissions,' Dernbach in the *Georgetown International Environmental Law Review* argues that such an agreement

> also needs to achieve substantial short-term reductions in GHG emissions … [t]his case is grounded on increasingly clear and compelling scientific evidence that we need to stabilize greenhouse gas concentrations at the lowest possible level in order to reduce the impacts of climate change on humans and their environment.[121]

A legal structure that could achieve short-term reductions in a post-2012 agreement

> includes an explicit goal for stabilizing greenhouse gas emissions by not later than 2020 and a framework in which both developed and developing countries would find ways to reduce their

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118 Roger Wilkins, *Strategic Review of Australian Government Climate Change Programs*, Commonwealth of Australia, 31 July 2008, p 8.

119 IARU, *Synthesis Report*, 2009, p 18.

120 Meinshausen et al, 'On the way to phasing out emissions: More than 50% reductions needed by 2050 to respect 2°C climate target,' 30 April 2009, at www.pik-potsdam.de/news/press-releases.

121 John C Dernbach, 'Achieving Early and Substantial Greenhouse Gas Reductions Under a Post-Kyoto Agreement,' (2008) 20 *Georgetown International Environmental Law Review* 573 at 617.

> emissions. This framework includes an extension and deepening of the Kyoto Protocol's quantified emission reductions under a cap-and-trade program. *It also includes supplemental international policy-based or economic sectoral agreements* that would apply to both developed and developing countries. These additional agreements, which are authorized by the Bali Action Plan, would be designed to achieve early results concerning specific policies or in specific economic sectors. The combination of a cap-and-trade program with these supplemental agreements would achieve greater emission reductions more quickly than a cap-and-trade program alone [emphasis added].
>
> Substantial and short-term emissions reductions need to be part of a post-Kyoto agreement.[122]

Although, for Michael Levi , Senior Fellow for Energy and the Environment at the Council on Foreign Relations, '[t]he odds of signing a comprehensive treaty in December are vanishingly small,' he also proposes 'bottom up,' sectoral initiatives on the basis that '[t]he core of the global effort to cut emissions will not come from a single global treaty.' [123] It's an approach favoured by the Garnaut Climate Change Review:

> Effective sectoral agreements could and should be struck quickly, as they are relatively straightforward and are important to help facilitate strong mitigation policies in many countries including Australia. A 2013 start date for sectoral agreements should be the goal, directly following the Kyoto Protocol's first commitment period. If coordination among candidate countries begins immediately, there is a good chance to have some agreements in place by then.[124]

For the Royal Society, sufficient climate change mitigation actions might not be introduced in time:

> It is likely that global warming will exceed 2°C this century unless global greenhouse gas emissions are cut by at least 50% of 1990 levels by 2050, and by more thereafter. There
> is no credible emissions scenario under which global mean temperature would peak and then start to decline by 2100. Unless future efforts to reduce greenhouse gas emissions
> are much more successful then they have been so far, additional action may be required should it become necessary to cool the Earth this century.[125]

Such additional action according to the Royal Society might involve geoengineering – deliberate, large-scale intervention in the Earth's climate system 'in order to moderate global warming.'[126] And 'geoengineering' in the form of techniques for extracting atmospheric CO_2 has also been considered by Hans Joachim Schellnhuber who, in the course of reviewing an article by Ramanathan and Feng in the *Proceedings of the National Academy of Sciences*[127] in which they suggest that the earth is already committed to anthropogenic warming in the range of 1.4-4.3°C (where 2.4°C is the most

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122 617-618

123 Levi, 'Copenhagen's Inconvenient Truth: How to Salvage the Climate Conference,' *Foreign Affairs*, September/October 2009, pp 92 and 96.

124 Ross Garnaut, *Garnaut Climate Change Review*, 2008, p 232.

125 The Royal Society, *Geoengineering the climate: Science, governance and uncertainty*, September 2009, p ix.

126 The Royal Society, *Geoengineering the climate: Science, governance and uncertainty*, September 2009, p ix.

127 V Ramanathan and Y Feng, 'On avoiding dangerous anthropogenic interference with the climate system: Formidable challenges ahead,' 23 September 2008, *PNAS* vol 105, no 38, pp 14245-14250.

likely amount) and that no conceivable international strategy, including any agreement from the Copenhagen conference, can avoid largely unmanageable climate impacts, says that

> [m]y conclusion is that we are still left with a fair chance to hold the 2°C line, yet the race between climate dynamics and climate policy [and agreements] will be a close one ... However, the quintessential challenges remain, namely bending down the global Kyoto-GHG output curve in the 2015–2020 window (further procrastination would render necessary reduction gradients too steep thereafter) and phasing out carbon dioxide emissions completely by 2100. This requires an industrial revolution for sustainability starting now.[128]

Finally the importance of short-term reductions in a post-2012 agreement is made by Parry et al:

> [W]e now have the knowledge to make a more informed choice regarding the optimal balance between mitigation and adaptation, and we know that immediate investment in adaptation will be essential to buffer the worst impacts. This does not mean that mitigation can be delayed, but quite the opposite: the longer we delay mitigation, the more likely it is that global change will exceed our capacity to adapt.[129]

(b) Likely form of a climate change convention?[130]

Nicholas Stern recently outlined in his book *The Global Deal* what he believes to be the key elements of the structure of a global climate change convention in terms of targets and emissions trading:[131]

- A 50% cut in global emissions on 1990 levels by 2050;
- developed countries take the lead in setting country-level targets now, cutting emissions by 20% to 40% by 2020, and committing to emission reductions of at least 80% by 2050. In so doing, developed countries 'clearly and convincingly demonstrate that low-carbon growth is possible and affordable, including sharing technologies;'
- developing countries agree that, if the developed countries meet their commitments, they will agree to their own targets no later than 2020; and
- national emissions reductions and carbon trading schemes to be adopted, such schemes designed to integrate trading mechanisms with other countries, including with developing countries before and after their adoption of targets.

The optimism inherent in Lord Stern's book subtitle – *Climate Change and the Creation of a New Era of Progress and Prosperity* – is not reflected elsewhere in terms of a post-2012 agreement. In parallel negotiations under the UNFCCC and the Kyoto Protocol, all developed countries but for the United States (which is not party to the Kyoto Protocol) have now made *initial* proposals for post-2012

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128 Hans Joachim Schellnhuber, 'Global warming: Stop worrying, start panicking?,' 23 September 2008, *PNAS* vol 105, no 38, p 14240.

129 M Parry et al, 'Squaring up to reality,' *Nature Reports*, June 2008, vol 2, pp 69-70.

130 See, generally, Daniel Bodansky, 'Legal Form of a New Climate Agreement: Avenues and Options,' Pew Center on Global Climate Change, April 2009.

131 Nicholas Stern, *The Global Deal: Climate Change and the Creation of a New Era of Progress and Prosperity*, 2009, pp 146-7.

emission reduction targets. Taken all together, they represent reductions of between 16 to 21% below 1990 levels. However,

> [f]inal numbers are unlikely, however, without agreement on rules for emissions trading and accounting of land use emissions, and without clarity on commitments by the United States and major developing countries.[132]

Further, the Pew Center on Global Climate Change believes that the aim of the Copenhagen climate change conference should be only an interim framework agreement 'on the fundamentals of a new multilateral framework … [which] should establish the basic legal and institutional architecture of a post-2012 framework within which governments can then negotiate a final agreement containing specific national commitments.'[133] Such an interim agreement should:

- Set an ambitious level of effort, including: a global goal of reducing emissions at least 50 percent by 2050; an aggregate target or range for developed country reductions in 2020; and a peaking year for developing country emissions;
- [o]utline a legal framework for verifiable mitigation commitments by all major economies, to include absolute economy-wide emission reduction targets for developed countries and policy-based commitments for developing countries;
- [d]etermine the nature and level of new mitigation and adaptation support for developing countries;
- [e]stablish basic terms for the measurement, reporting and verification of countries' actions and support; and
- [s]et a clear mandate to conclude negotiations on a final agreement by a date certain,

with the ultimate goal [at some future post-Copenhagen point] being a ratifiable treaty.[134]

Although the Harvard Project on International Climate Agreements believes that the best international climate change strategy may ultimately be to 'pursue a variety of approaches simultaneously,' it does highlight three potential frameworks for a post-Kyoto treaty:

- emissions caps established using a set of formulas that assign quantitative emissions limits to countries in every year through 2100;
- a system of linked international agreements that each address separate sectors and gases, together with key issues, with particular focus on research and development; and
- harmonised domestic taxes on GHG emissions where the tax would be internationally adjusted periodically and each country would collect and retain revenue generated (the Nordhaus approach considered earlier in this paper).[135]

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132 Pew Center on Global Climate Change, 'The Outlook Toward Copenhagen,' September 2009 at http://www.pewclimate.org/international/outlook-toward-copenhagen.

133 Pew Center on Climate Change, 'A Copenhagen Climate Agreement,' September 2009 at http://www.pewclimate.org/print/6978.

134 Pew Center on Climate Change, 'A Copenhagen Climate Agreement,' September 2009 at http://www.pewclimate.org/print/6978.

135 Harvard Project on International Climate Agreements, *Designing the Post-Kyoto Climate Regime: Lessons from the Harvard Project on International Climate Agreements*, December, 2009, p 27. The

No matter the international climate change framework agreement or architecture concluded or chosen, however, the principle of 'common but differentiated responsibilities' – with parties agreed that only Annex I (or developed) countries would be subject to quantifiable limits on GHGs – will likely endure. China's climate change ambassador, Yu Qingtai, recently stated in the context of 'emission debts' that China would not drop demands for significant cuts from developed countries:

> We have all along believed that due to the historical responsibility of the developed nations, they must continue to take the lead with large reductions beyond 2012.[136]

In Copenhagen, in March this year, the International Alliance of Research Universities held an international scientific congress on climate change. The purpose of the congress was to bring together new knowledge that has emerged since the 2007 Fourth Assessment Report of the IPCC and that 'furthers understanding of the impacts of human influence on the climate and the response options and approaches that are available' to deal with climate change. The Synthesis Report from the congress concludes as follows:

> Many past environmental problems were solved when humans realised that their own activities were leading to consequences deleterious to their health and well-being. They responded by changing behaviour and developing new technologies. Will our contemporary society respond in a similar way to the climate change challenge now facing us? Climate change is fundamentally different from the environmental problems humanity has dealt with until now. The risks, scales and uncertainties associated with climate change are enormous and there is a significant probability of a devastating outcome at the global scale.
>
> The nature of the climate change challenge demands visionary and innovative thinking ...
>
> [I]n 2009 society cannot precisely determine the "right" or the "best" pathway all the way to 2050 and beyond. There will be technological, societal and value changes in the future that will cause the trajectory to change. There should be no penalty for not getting it absolutely right the first time. The most important task is to start the journey now.[137]

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authors also note that '[r]egardless of which overall international policy architecture is chosen, a number of key design issues will stand out as particularly important, including burden-sharing, technology transfer, CDM reform, addressing deforestation, and making global climate policy compatible with global trade policy.'

136 'A history of CO2 emissions,' *Carbon Offsets Daily* (accessed 5 September 2009) at http://www.carbonoffsetsdaily.com/global/a-history-of-co2-emissions-11390.htm.

137 IARU, *Synthesis Report*, 2009, pp 5, 36.