CLIMATE CHANGE LAW: THE EMERGENCE OF A NEW LEGAL DISCIPLINE

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[In recent times the issue of climate change has catapulted to the forefront of scientific and policy agendas. Climate change threatens to have wide-ranging impacts on ecosystems and presents enormous challenges for conventional modes of socioeconomic governance. Against this backdrop, the last few years have seen the consolidation of a body of legal rules and principles organised around the central problems of mitigating and adapting to climate change. The new climate change law spans from international to local levels of governance, and encompasses the activities of a wide range of actors including governments, businesses and non-governmental environmental groups. This article surveys the scope of the new discipline of climate change law, providing a synopsis of its primary component areas. It also elaborates the main challenges climate change law is likely to face as its development proceeds apace, such as coping with internationalisation of the greenhouse problem, ensuring that avenues for widespread participation in climate change regulation exist, and integrating governance and regulatory frameworks across political and disciplinary boundaries. How climate change law responds to this last challenge, in particular, is likely to be determinative of its effectiveness and cohesiveness as a body of law for dealing with the broad predicted impacts of global warming.]

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I INTRODUCTION

It is only a matter of decades since lawyers first began to hail the emergence of the new field of 'environmental law'.[1] Environmental law has since developed rapidly and now encompasses a range of sub-specialities, including international environmental law, biodiversity law and water law.[2] The latest branch of the metaphorical environmental legal tree to take shape is that of 'climate change law'. It has emerged against the backdrop of intensifying scientific, economic, social and political debates over the impacts of greenhouse gas ('GHG') emissions on the world's climate system. In response, there has been an accumulation of case law, legislative development and international regulation that makes up a distinctive body of legal principles and rules identified as 'climate change law'. As a leading environmental law barrister recently declared, climate change law 'is an organising principle whose time has arrived'.[3]

The birth of a new legal discipline is often a matter of interest only to sub-specialists in an already specialised field. The ramifications of the emergence of climate change law, however, promise to be more far-reaching. For a start, the extent of the climate change problem is so broad that it has the potential to affect many sectors of social life and legal scholarship. To take but a few examples, climate change law is likely to be relevant to insurers considering the scope of risks to include in insurance contracts, international bodies concerned with

[1] For early overviews of the development and scope of environmental law in Australia, see R J Fowler, 'Environmental Law and Its Administration in Australia' (1984) 1 *Environmental and Planning Law Journal* 10; Douglas J Whalan, 'The Structure and Nature of Australian Environmental Law' (1977) 8 *Federal Law Review* 294.

[2] See generally Gerry Bates, *Environmental Law in Australia* (6th ed, 2006). See also P W Birnie and A E Boyle, *International Law and the Environment* (2nd ed, 2002); Philippe Sands, *Principles of International Environmental Law* (2nd ed, 2003); D E Fisher, *Water Law* (2000).

[3] Stephen Keim, '*Climate Law in Australia*' (2008) 25 *Environmental and Planning Law Journal* 147, 149.

threats to peace and security in the face of water shortages, and domestic energy retailers drawing on different sources of power generation to supply consumers. In addition, climate change presents enormous challenges for socioeconomic governance systems. (The federal government's leading climate change adviser, Professor Ross Garnaut, has recently described climate change as 'a diabolical policy problem.')[4] Consequently, devising legal solutions to climate change is likely to involve profound changes to existing governance and regulatory frameworks, with reverberations felt in many other areas of law such as constitutional law, administrative law and property law.

Against this backdrop, this article seeks to provide an introduction to the new field of climate change law and to highlight the key issues that it will face as its development proceeds apace. While the topic of this article is the distinctive area of climate change law, it is argued that an important aspect of this new disciplinary field must be an awareness of, and efforts to ensure effective integration with, other parts of the environmental regulatory framework, as well as with the diverse disciplines (such as science, economics and social science) that underpin conceptions of the climate change challenge. Part II begins with a discussion of the factors that have led to the emergence (or, perhaps more accurately, re-emergence) of climate change law as a dynamic field of legal endeavour. This is followed in Part III by a synopsis of the major areas of legal development and principle that make up the overall body of existing climate change law. Finally, Part IV turns to consider the key issues facing the future development of climate change law, such as the effects of internationalisation of the greenhouse problem, the need to ensure avenues for widespread participation in climate change regulation, and the challenges of integrating and coordinating governance as well as regulatory frameworks across political and disciplinary boundaries.

II THE BACKDROP FOR THE EMERGENCE OF CLIMATE CHANGE LAW

As Tim Bonyhady and Peter Christoff note in their 2007 book *Climate Law in Australia*, the problem of climate change and legal responses to it have some history.[5] Indeed, the first scientific article discussing possible global warming as a result of carbon dioxide ('CO_2') emissions was published in 1896,[6] though an international scientific and legal framework for dealing with climate change did

[4] Ross Garnaut, *The Garnaut Climate Change Review: Final Report* (2008) xviii ('*Garnaut Review*') <http://www.garnautreview.org.au/index.htm>.

[5] Tim Bonyhady and Peter Christoff, 'Introduction' in Tim Bonyhady and Peter Christoff (eds), *Climate Law in Australia* (2007) 1, 1–2.

[6] Svante Arrhenius, 'On the Influence of Carbonic Acid in the Air upon the Temperature of the Ground' (1896) 5th ser 41 *London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science* 237. See also Roger Revelle and Hans E Suess, 'Carbon Dioxide Exchange between Atmosphere and Ocean and the Question of an Increase of Atmospheric CO_2 During the Past Decades' (1957) 9 *Tellus* 18. Revelle was a leading figure in the field of climate change science. He headed up the Scientific Advisory Committee Panel on Environmental Pollution that, in 1965, published the first authoritative United States government report in which CO_2 from fossil fuels was officially recognised as a potential global problem: see Environmental Pollution Panel, President's Science Advisory Committee, United States, *Restoring the Quality of Our Environment* (1965). A subsequent article was widely read and had an influential impact on public opinion with respect to global warming: see Roger Revelle, 'Carbon Dioxide and World Climate' (1982) 247(2) *Scientific American* 35.

not develop until a century later in the early 1990s.[7] In recent years, we have witnessed more intense scientific and sociopolitical debates over climate change, with a growing sense of urgency regarding the need to address the problem. In Australia, Bonyhady and Christoff comment that 2006 was the year that climate change matured into an issue of significant public (and inevitably political) concern.[8] This has led to a profusion of legal developments that together coalesce to form the new body of law dubbed 'climate change law'.

A number of factors have been important in bringing about a renewed focus on climate change issues and in paving the way for the emergence of climate change law. A major influence has been the consolidation of scientific data on climate change that has marginalised (albeit not entirely silenced) climate change sceptics. For instance, the Intergovernmental Panel on Climate Change ('IPCC') — whose work is underpinned by the contributions of hundreds of scientists worldwide — released its *Climate Change 2007: Synthesis Report — Summary for Policymakers* ('*IPCC Fourth Assessment Report*') in 2007 declaring warming of the Earth's climate system to be 'unequivocal'.[9] The IPCC also warned that global warming of more than two degrees Celsius above 1990–2000 levels threatens to have a variety of severe impacts, such as increases in human mortality, widespread loss of biodiversity, mass coral reef mortality, deglaciation, a greater frequency of extreme weather events, decreasing global agricultural productivity and food shortages.[10] In the face of such scientific consensus and concern, even the most reluctant governments have acknowledged the reality of climate change and the importance of taking actions to address the problem. In Australia, for example, the former federal government led by John Howard gave up its long-professed scepticism over climate change in 2007. The then Prime Minister announced a raft of measures in July 2007, including the introduction of an emissions trading scheme.[11] Other government institutions, such as the courts, have followed suit by recognising (with some exceptions) the reality and importance of climate change.[12]

[7] In particular, the Intergovernmental Panel on Climate Change ('IPCC') (providing scientific assessments of climate change risk and impacts) was established in 1988, followed by the international framework treaty, the *United Nations Framework Convention on Climate Change*, opened for signature 9 May 1992, 1771 UNTS 107 (entered into force 21 March 1994) ('*UNFCCC*').

[8] Bonyhady and Christoff, above n 5, 2. This article does not seek to engage with the complex question of what constitutes (or should constitute) a scholarly or practical discipline in the law. Rather, the intention is to illustrate the development of a significant body of law with a new focus around the issue of climate change.

[9] IPCC, *IPCC Fourth Assessment Report* (2007) 2 <http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf>.

[10] Stephen H Schneider, Serguei Semenov and Anand Patwardhan, 'Assessing Key Vulnerabilities and the Risk from Climate Change' in Working Group II, IPCC, *Climate Change 2007: Impacts, Adaptation and Vulnerability* (2007) 780–810 <http://www.ipcc.ch/ipccreports/ar4-wg2.htm>.

[11] Katharine Murphy, 'PM to Unveil Details of Carbon Trading Plan', *The Age* (Melbourne), 17 July 2007, 3. For an account of the Howard government's attitude and response to climate change from a Liberal Party insider, see Guy Pearse, *High & Dry: John Howard, Climate Change and the Selling of Australia's Future* (2007).

[12] See, eg, *Gray v Minister for Planning* (2006) 152 LGERA 258, 287 (Pain J) ('*Anvil Hill*'); *Walker v Minister for Planning* (2007) 157 LGERA 124, 192 (Biscoe J) ('*Walker*'). See also *Massachusetts v Environmental Protection Agency*, 549 US 497, 504–5, 521–3 (Stevens J for Stevens, Kennedy, Souter, Ginsburg and Breyer JJ) (2007). Cf *Re Xstrata Coal Queensland Pty*

Another factor instrumental in altering governmental attitudes to climate change has been the release of major economic analyses predicting the high cost over the long-term of a failure to address anthropogenic climate change (that is, climate change due to human activities). For instance, *The Economics of Climate Change: The Stern Review* ('*Stern Review*') released in 2006 had an enormous impact worldwide.[13] The *Stern Review*, commissioned by the British Treasury, stressed that the benefits of strong and early action to address climate change far outweigh the economic costs of not acting, and also warned of very serious impacts on economic growth and development if climate change went unmitigated.[14] In Australia, the findings of the *Stern Review* have recently been echoed in the various reports prepared by the federal government's climate change adviser, economist Ross Garnaut.[15] In *The Garnaut Climate Change Review: Final Report* ('*Garnaut Review*'), Garnaut points out that Australia has a larger interest in a strong mitigation strategy to address climate change than other developed countries as:

> We are already a hot and dry country; small variations in climate are more damaging to us than to other developed countries. We live in a region of developing countries, which are in weaker positions to adapt to climate change than wealthy countries with robust political and economic institutions. The problems of our neighbours would inevitably become our problems. And the structure of our economy means that our terms of trade would be damaged more by the effects of climate change than would those of any other developed country …[16]

For the general public, scientific and economic analyses of global warming may have been less salient in influencing opinion than media reporting of probable dire consequences for the climate, coupled with recent weather patterns that are suggestive (though by no means probative) of warming already occurring. Many point to the influence of Al Gore's 2006 film, *An Inconvenient Truth*, in bringing the looming 'climate crisis' to worldwide public attention.[17] In Australia, public concern was further excited by reports describing 2005 as the 'hottest year on record'[18] and by continuing conditions of severe drought in many areas of the country.[19] Such factors may well have been influential in the Australian Labor Party's success at the November 2007 election, campaigning on

Ltd [2007] QLRT 33 (Unreported, Koppenol P, 15 February 2007) [16]–[18] ('*Xstrata* (first instance)'); revd *Queensland Conservation Council Inc v Xstrata Coal Queensland Pty Ltd* (2007) 155 LGERA 322 ('*Xstrata* (appeal)').

13 Nicholas Stern, Cabinet Office and Her Majesty's Treasury, United Kingdom, *The Economics of Climate Change: The Stern Review* (2006).

14 Ibid vi–ix.

15 For copies of all these reports and background information on the *Garnaut Review*, see <http://www.garnautreview.org>.

16 *Garnaut Review*, above n 4, xix.

17 *An Inconvenient Truth* (Directed by Davis Guggenheim, Paramount Classics and Participant Productions, 2006).

18 Bureau of Meteorology, Australian Government, 'Annual Australian Climate Statement 2005: Australia's Hottest Year on Record' (Press Release, 4 January 2006) <http://www.bom.gov.au/announcements/media_releases/climate/change/20060104.shtml>.

19 Bureau of Meteorology, Australian Government, 'Drought Statement: Rainfall Deficiencies Expand in Southeastern Australia' (Press Release, 5 November 2008) <http://www.bom.gov.au/announcements/media_releases/climate/drought/20081105.shtml>.

a platform of a new approach and urgency of policy development in the area of climate change. Certainly, it was significant that the first major act of the Rudd government after its election was to ratify the *Kyoto Protocol to the United Nations Framework Convention on Climate Change* ('*Kyoto Protocol*'),[20] the centrepiece of the international regulatory framework for addressing climate change.[21]

III THE SCOPE OF CLIMATE CHANGE LAW

Scientific, economic and sociopolitical developments regarding climate change have prepared fertile ground for the emergence of a new body of law designed to address the problem. As Bonyhady and Christoff point out, this novel legal field is not confined simply to international treaties and new legislation aimed directly at mitigating global warming.[22] Rather, it encompasses aspects of the existing environmental and broader legal framework, employing them in new ways to respond to aspects of the climate change problem.[23] While legal tools are not the only means used to address greenhouse pollution and its impacts, the law nonetheless stands to make a very important contribution to managing climate change. In particular, legislation (domestic and international) is needed to underpin the governance and regulatory frameworks put in place to control human behaviours that have effects on the climate system. The law also has a vital part to play in providing a forum for mediation between the many different interests and actors involved in the field of climate change policy. In this regard, legal mechanisms such as those facilitating participation, accountability, (judicial) review and dispute resolution can be employed to enhance the quality and social acceptance of climate change initiatives.

As for its sister field of environmental law, climate change law has a very broad scope, touching on areas often not considered 'environmental' in nature.[24] Given that the scale of climate change can be pitched globally (for example, ocean warming) or locally (for example, extinction of a rare species with climate-induced habitat changes), climate change law involves governance systems extending from the international level to the national and local levels. While maintaining a common focus on addressing the issue of climate change, the regulatory tools of climate change law are likewise drawn from a wide range of legal fields, including administrative law, property law, tort law, corporations law, human rights law and international law. The following sections within this Part of the article provide an overview of the main categories of climate change

20 Opened for signature 16 March 1998, 37 ILM 22 (entered into force 16 February 2005).

21 Tony Hill and Lisa Moore, Blake Dawson, 'Australia Ratifies the *Kyoto Protocol*' (Greenhouse Update, December 2007) 3 <http://www.blakedawson.com/WorkArea/DownloadAsset.aspx?id=47029>. For a further discussion of the *Kyoto Protocol*, see below Part III(A).

22 Bonyhady and Christoff, above n 5, 2–3.

23 Ibid. For an analysis of the extent to which current Australian environmental and planning laws cover GHG emissions, see D E Fisher, 'The Statutory Relevance of Greenhouse Gas Emissions in Environmental Regulation' (2007) 24 *Environmental and Planning Law Journal* 210.

24 For instance, climate change law has subsumed many of the issues concerned with energy production and distribution: see generally Rosemary Lyster and Adrian Bradbrook, *Energy Law and the Environment* (2006).

law that are now emerging. These are organised by reference to two criteria: (1) those of scale (for example, international, national or local); and (2) the most critical or prominent actors operating in the area (for example, governments, courts or non-governmental actors).[25] Although categorisation is employed to ease the task of comprehending climate change law, an important issue for the field remains how the various parts link together to form a cohesive whole (a challenge to which I return in Part IV of the article).

A *International Climate Change Regulation*

1 *The Global Climate Change Regime: The* UNFCCC *and the* Kyoto Protocol

The negotiation of a framework convention on climate change at the United Nations Conference on Environment and Development in 1992 may well be looked to as the birth of climate change law. The *United Nations Framework Convention on Climate Change* ('*UNFCCC*') is by no means an ambitious legal framework for addressing global warming as it contains no firm commitments for countries to reduce GHG emissions.[26] Nonetheless, the *UNFCCC* sets out key guiding principles for international climate change regulation and establishes the institutional machinery necessary for the ongoing operation and adaptation of the climate change regime.[27] One of the most important of the principles elaborated by the *UNFCCC* is that parties should protect the climate system 'in accordance with their common but differentiated responsibilities and respective capabilities.'[28] Accordingly, developed country parties (listed in Annex I of the Convention) are to 'take the lead in combating climate change and the adverse effects thereof.'[29] This principle forms the basis for a delineation between the responsibilities of developed and developing (or Annex I and non-Annex I) countries regarding climate change, with the former expected to undertake the majority of action necessary to reduce GHG emissions to sustainable levels. While this division of responsibility remains a perennially controver-

[25] This is by no means the only way of ordering the field, but it is one that makes sense in light of Australia's federal structure (that tends to separate out the domains of international, national, state and local levels of governance) and the historical division in environmental law between the activities of governments (conventionally seen as the main source of regulation) and those of non-governmental actors.

[26] At most, there is a tortuously worded provision in art 4(2)(a) of the *UNFCCC*, opened for signature 9 May 1992, 1771 UNTS 107 (entered into force 21 March 1994) that recognises that the return to 'earlier levels' of GHG emissions by the year 2000 'would' contribute to the modification of longer term trends in emissions production consistent with the objective of the Convention.

[27] For example, the *UNFCCC* sets up: a decision-making body, named the 'Conference of the Parties' (ibid art 7); various subsidiary advisory bodies (arts 9–10); and a mechanism for providing funding and technology transfer principally to developing countries (art 11).

[28] Ibid art 3(1).

[29] Ibid. The other guiding principles of the Convention are those requiring full consideration of the specific needs and special circumstances of developing countries and countries most vulnerable to the impacts of climate change (art 3(2)); the precautionary principle calling for measures not to be postponed on the basis of scientific uncertainty (art 3(3)); the principle of sustainable development (art 3(4)); and the importance of cooperation 'to promote a supportive and open international economic system that would lead to sustainable economic growth and development in all Parties, particularly developing country Parties, thus enabling them better to address the problems of climate change' (art 3(5)).

sial aspect of the international climate change regime,[30] it would appear to have widespread support as evidenced by the 192 ratifications that the *UNFCCC* has received.

The absence of more than 'soft targets and timetables with many loopholes'[31] in the *UNFCCC* quickly led to negotiations for a more stringent international agreement, eventually resulting in the conclusion of the *Kyoto Protocol* in 1997.[32] This treaty has an overall goal of reducing developed country parties' emissions of relevant GHGs[33] 'by at least 5 per cent below 1990 levels in the commitment period 2008 to 2012.'[34] No such obligation is placed on developing countries.[35] Developed country parties, however, accepted *differentiated* targets in order to meet this overall goal, with some countries, such as the members of the European Union, agreeing to 8 per cent reductions by 2012 relative to 1990 levels, whereas others such as Australia agreed to more generous targets.[36] In Australia's case, the designated 2012 target is 8 per cent *above* 1990 levels, which nonetheless represents a significant reduction from current levels of GHG emissions.[37] No targets for commitment periods beyond 2012 are specified by the *Kyoto Protocol*: these are instead the subject of ongoing international negotiations. The Bali Conference of the Parties in late 2007 saw discussions on possible post-2012 targets, with emissions cuts of the order of 25–40 per cent below 1990 levels by 2020 being considered for developed countries and some proposals to introduce targets for developing countries. So far, however, agreement has been limited to a commitment for ongoing international engagement intended to result in a new agreement by the end of 2009.[38]

30 For an analysis of the 'common but differentiated responsibilities' principle and its manifestation in international climate change law, see Christopher D Stone, 'Common but Differentiated Responsibilities in International Law' (2004) 98 *American Journal of International Law* 276.

31 Sands, above n 2, 365.

32 *Kyoto Protocol*, opened for signature 16 March 1998, 37 ILM 22 (entered into force 16 February 2005). The treaty languished for many years after its conclusion in the face of opposition by major developed countries such as the US. However, the World Summit on Sustainable Development in 2002 was a turning point, providing the stimulus for the critical ratifications of Canada and Russia.

33 The *Kyoto Protocol* covers six GHGs — carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride: ibid Annex A.

34 Ibid art 3(1).

35 See *UNFCCC*, opened for signature 9 May 1992, 1771 UNTS 107, art 4(2), Annex I (entered into force 21 March 1994).

36 For a complete specification of these targets, see *Kyoto Protocol*, opened for signature 16 March 1998, 37 ILM 22, Annex B (entered into force 16 February 2005).

37 Australia also benefits substantially from art 3(7) of the *Kyoto Protocol*, which allows countries with net emissions from land clearing in 1990 to include those emissions in calculating their 1990 starting baseline. A baseline inflated via land clearing emissions means that the reductions Australia must make to meet the eight per cent target are similarly reduced. See further Clive Hamilton and Lins Vellen, 'Land-Use Change in Australia and the *Kyoto Protocol*' (1999) 2 *Environmental Science & Policy* 145.

38 Grant Anderson, *What Happened in Bali* (23 January 2008) Lawyers Weekly Online <http://www.lawyersweekly.com.au/articles/What-happened-in-Bali_z142381.htm>. Little progress occurred at the 14th Conference of the Parties held in Poznań, Poland, from 1–12 December 2008. No significant breakthroughs were achieved, meaning that negotiators face a hectic year in 2009 to finalise new treaty arrangements by the time of the next Copenhagen meeting: see International Institute for Sustainable Development, 'Summary of the Fourteenth Conference of Parties to the UN *Framework Convention on Climate Change* and Fourth Meeting of Parties to

A key aspect of international climate change law to emerge out of the *Kyoto Protocol* that will have ongoing significance for any post-2012 agreement was the endorsement of market mechanisms as a means of facilitating developed countries' reduction of emissions at lowest cost.[39] These mechanisms — known as 'joint implementation', the 'clean development mechanism' and 'emissions trading' — essentially allow developed countries to shift part of the burden of undertaking emissions reductions offshore where GHG abatement can be undertaken at lower cost.[40] For example, a country such as Japan with limited opportunities for reducing emissions at home might fund projects in country areas of Australia to plant forests that absorb CO_2 from the atmosphere, claiming the carbon savings achieved towards its own domestic target.[41] Alternatively, a company in Australia might invest in a hydroelectric power plant in a developing country such as Fiji in order to secure carbon credits that can be used to meet emission standards back at home.[42] These mechanisms of the *Kyoto Protocol* have facilitated the emergence of an international carbon trading market whereby developed countries will be able to buy and sell carbon credits generated from global emissions reduction activities in order to satisfy the targets established under the *Kyoto Protocol*.[43] These targets are given some teeth by the relatively stringent compliance procedures of the *Kyoto Protocol* that allow complaints of noncompliance to be brought before the Enforcement Branch of the Compliance Committee of the Kyoto Protocol. The Enforcement Branch is capable of applying sanctions, such as a suspension from eligibility to participate in international carbon trading.[44]

the *Kyoto Protocol*' (15 December 2008) 12(395) *Earth Negotiations Bulletin* <http://www.iisd.ca/download/pdf/enb12395e.pdf>.

39 Detailed discussion of these mechanisms cannot be attempted here, but see Sebastian Oberthür and Hermann E Ott, *The Kyoto Protocol: International Climate Policy for the 21st Century* (1999) chs 13–15.

40 See *Kyoto Protocol*, opened for signature 16 March 1998, 37 ILM 22, arts 6, 12, 17 (entered into force 16 February 2005). For analysis of international carbon trades, particularly the use of the clean development mechanism, see Martijn Wilder and Monique Miller, 'Carbon Trading Markets: Legal Considerations' in Tim Bonyhady and Peter Christoff (eds), *Climate Law in Australia* (2007) 67, 70–3.

41 This would be an example of a joint implementation project. Note that sink activities (which result in net carbon absorption) as well as emissions reductions can be counted towards targets in the first commitment period: *Kyoto Protocol*, opened for signature 16 March 1998, 37 ILM 22, art 3(3) (entered into force 16 February 2005).

42 This would be an example of a project under the clean development mechanism. For a discussion of these types of projects in developing Pacific Island nations, see Atul Raturi, 'Sustainable Development Recipe', *Fiji Times* (online), 2 July 2008 <http://www.fijitimes.com/story.aspx?id=93817>.

43 Nonetheless, Annex I parties of the *Kyoto Protocol* must ensure that domestic actions (as opposed to use of the market mechanisms under the *Kyoto Protocol*) are a 'significant element' of the efforts made to meet their targets: Conference of the Parties, *Principles, Nature and Scope of the Mechanisms Pursuant to Articles 6, 12 and 17 of the Kyoto Protocol*, Decision 15/CP.7, 7th sess, 8th plen mtg, 2, UN Doc FCCC/CP/2001/13/Add.2 (21 January 2002) 2 <http://unfccc.int/resource/docs/cop7/13a02.pdf#page=2>.

44 Conference of the Parties, *Procedures and Mechanisms Relating to Compliance under the Kyoto Protocol*, Decision 24/CP.7, 7th sess, 8th plen mtg, s XV, UN Doc FCCC/CP/2001/13/Add.3 (21 January 2002) <http://unfccc.int/resource/docs/cop7/13a03.pdf>. This mechanism is now fully operational and has recently found Greece to be in noncompliance with the national system requirements for Annex B parties of the *Kyoto Protocol*. For further information, see Enforcement Branch of the Compliance Committee, *Final Decision*, UN Doc CC-2007-1-8/Greece/EB

2 *Climate Change Issues in Broader International Law*

While the *UNFCCC* and the *Kyoto Protocol* make up the core of international climate change law, they are by no means the only global legal fora in which issues of climate change are addressed. Indeed, the refusal of the former United States administration of President George W Bush to ratify the *Kyoto Protocol* has encouraged the institution of other international mechanisms concerned with climate change.[45] In the Australasian region, an important mechanism is the Asia-Pacific Partnership on Clean Development and Climate.[46] This mechanism has been strongly criticised for its weak stance on emissions targets and its potential to undermine the *Kyoto Protocol*.[47] Nonetheless, it serves an important function in bringing together major emitters such as the US, India and China, and has led to substantial funding commitments — Australia has pledged $100 million for 2006–10 — directed principally to devising technological solutions to climate change including the promotion of renewable energy.[48]

Beyond environmental fora, we might expect to see the emergence of climate change-related law in a range of international legal settings in the near future. For instance, climate change has been identified as a potential threat to international peace and security,[49] raising the prospect that the issue might one day be the subject of United Nations Security Council resolutions and action.[50] Likewise, climate change is emerging as an important issue to many international human rights bodies, with a particular focus on addressing the phenomenon of 'climate change refugees': peoples from low-lying island nations likely to be rendered homeless and stateless if sea levels continue to rise.[51] International law in the areas of trade and financial regulation will most probably also have many points of intersection with climate change law in the future. During the period

(17 April 2008) <http://unfccc.int/files/kyoto_protocol/compliance/enforcement_branch/application/pdf/cc-2007-1-8_greece_eb_final_decision.pdf>. See also The Secretariat, Compliance Committee, *Informal Information Note by the Secretariat: The Compliance Procedure with Respect to Greece* (14 November 2008) <http://unfccc.int/files/kyoto_protocol/compliance/application/pdf/informal_info_note_by_the_sec_on_the_compliance_procedure_with_respect_to_greece-rev-2.pdf>.

45 For a discussion, see Rosemary Lyster, 'Chasing Down the Climate Change Footprint of the Private and Public Sectors: Forces Converge' (Pt 1) (2007) 24 *Environmental and Planning Law Journal* 281, 298–9.

46 For details, see Asia-Pacific Partnership on Clean Development and Climate <http://www.asiapacificpartnership.org>.

47 See, eg, Peter Christoff and Robyn Eckersley, 'The *Kyoto Protocol* and the Asia Pacific Partnership on Clean Development and Climate' in Tim Bonyhady and Peter Christoff (eds), *Climate Law in Australia* (2007) 32; Alexandra Woollacott, 'International Cooperation on Climate Change' [2007] 1 *National Environmental Law Review* 47.

48 See Australian Government, *Asia-Pacific Partnership on Clean Development and Climate* <http://www.app.gov.au>.

49 United Nations, *A More Secure World: Our Shared Responsibility — Report of the Secretary-General's High-Level Panel on Threats Challenges and Change* (2004) 26 <http://www.un.org/secureworld/report2.pdf>.

50 On 17 April 2007, the United Nations Security Council held its first ever debate on the impact of climate change on peace and security: see Department of Public Information, News and Media Division, United Nations, 'Security Council Holds First-Ever Debate on Impact of Climate Change on Peace, Security, Hearing over 50 Speakers' (Press Release, 17 April 2007) <http://www.un.org/News/Press/docs/2007/sc9000.doc.htm>.

51 See, eg, Emma Brindal, 'Asia-Pacific: Justice for Climate Refugees' (2007) 32 *Alternative Law Journal* 240.

when Australia stood outside the *Kyoto Protocol* as the only developed country besides the US to refuse to ratify the treaty, there were murmurs in Europe about resorting to trade measures to tax Australian products produced in a GHG-intensive manner.[52] In years to come, increased border taxes and other trade measures may be used by some countries as a means to induce others to move towards low-carbon economies.[53]

B *National Climate Change Regulation*

Australia's federal framework, and lack of a specific constitutional power with respect to the environment, makes perennial the question of which level of government should deal with an environmental issue such as climate change.[54] It is now well-established in Australian constitutional law that, pursuant to the external affairs power,[55] a treaty ratified by the federal government provides a sufficient basis for the enactment of federal law, provided this legislation is reasonably appropriate and adapted to implementing the terms of the treaty.[56] Following Australia's ratifications of the *UNFCCC* and *Kyoto Protocol*, the federal government is provided with a broad international palette from which to draw in enacting national implementing legislation.[57] Such legislation supplies the primary (albeit not the only) mechanism for the federal government to undertake the regulation of climate change at the national level.

1 *Howard-Era Regulation: Voluntary Measures and the MRET*

With Australia's ratification of the *Kyoto Protocol* in December 2007, the development of national climate change law has accelerated to a frenetic pace. This contrasts with the relatively low-key status of federal legal development in the climate change area over the decade following the conclusion of the *Kyoto Protocol* in 1997. While it would be incorrect to say that there was *no* climate change law established over that period, no mandatory emissions controls were introduced. This reflected the former Howard government's strongly held belief that

> [t]aking precipitate or costly action to reduce emissions, if not placed within a sensible international and domestic framework, would erode Australian indus-

[52] See John Hontelez, *Time to Tax the Carbon Dodgers* (5 April 2007) BBC News <http://news.bbc.co.uk/1/hi/sci/tech/6524331.stm>.

[53] For an assessment of the international trade compatibility of potential climate change measures, see Andrew Green, 'Climate Change, Regulatory Policy and the WTO: How Constraining Are Trade Rules?' (2005) 8 *Journal of International Economic Law* 143.

[54] See generally James Crawford, 'The *Constitution* and the Environment' (1991) 13 *Sydney Law Review* 11.

[55] *Australian Constitution* s 51(xxix).

[56] *Commonwealth v Tasmania* (1983) 158 CLR 1, 131–2 (Mason J), 172 (Murphy J), 232 (Brennan J), 259 (Deane J) ('*Tasmanian Dam Case*'). See also *Koowarta v Bjelke-Petersen* (1982) 153 CLR 168, 225 (Mason J).

[57] Partial implementation is constitutionally permissible: *Victoria v Commonwealth* (1996) 187 CLR 416, 546 (Brennan CJ, Toohey, Gaudron, McHugh and Gummow JJ).

> try's ability to compete internationally and would impose serious and damaging costs on the Australian economy.[58]

Consequently, the principal climate change measures introduced between 1997 and 2007 were of a voluntary, 'no regrets' nature.[59] The centrepiece of this approach is what was formerly the federal Greenhouse Challenge Programme and what is currently the Greenhouse Challenge Plus Programme, which provides various incentives for companies to inventory their emissions, develop action plans for minimising emissions and report on their performance.[60] However, the voluntary nature of the Greenhouse Challenge Plus Programme is seen as a key limitation of its effectiveness, with assessments condemning it as 'essentially a business as usual approach that does not provide the strong incentives for Australian business to significantly reduce its greenhouse gas emissions.'[61]

The sole mandatory climate change-related measure introduced by the Howard government was the Mandatory Renewable Energy Target ('MRET'). Established by the *Renewable Energy (Electricity) Act 2000* (Cth), the MRET requires wholesale purchasers of electricity ('liable entities') to contribute proportionately towards the generation of an additional 9500 gigawatt hours ('GWh') of renewable energy per year by 2010.[62] Owners of renewable energy generation assets that are accredited under the legislation earn renewable energy certificates,[63] which may be sold to liable entities or third parties.[64] If a liable entity does not present enough certificates to cover its liability, a penalty of $40 per megawatt hour ('MWh') applies.[65] In effect, this is a tax designed to induce liable entities to increase their use of renewable electricity sources and hence decrease their reliance on greenhouse polluting coal-fired power.[66]

The MRET scheme has attracted criticism from environmental groups given its low renewable energy target.[67] Based on 1997 figures, the 9500 GWh annual

58 Nick Minchin, 'Responding to Climate Change: Providing a Policy Framework for a Competitive Australia' (2001) 24 *University of New South Wales Law Journal* 550, 551. For an account of the various reasons offered by the Howard government to support this position, see Trevor M Power, 'Issues and Opportunities for Australia under the *Kyoto Protocol*' (2003) 20 *Environmental and Planning Law Journal* 459.

59 Lyster and Bradbrook, above n 24, 85–7.

60 For details, see Department of the Environment, Water, Heritage and the Arts, Australian Government, *Greenhouse Challenge Plus* (26 August 2008) <http://www.environment.gov.au/settlements/challenge>. On the reporting requirements, see generally the *National Greenhouse and Energy Reporting Act 2007* (Cth) ('*NGERA*'). See also Department of Climate Change, Australian Government, *Greenhouse and Energy Reporting* (9 January 2009) <http://www.climatechange.gov.au/reporting/index.html>.

61 Rory Sullivan, 'Greenhouse Challenge Plus: A New Departure or More of the Same?' (2006) 23 *Environmental and Planning Law Journal* 60, 73.

62 Liable entities are those that acquire electricity on a grid with a capacity of 100 megawatts ('MW') or more: see *Renewable Energy (Electricity) Act 2000* (Cth) ss 31, 35.

63 *Renewable Energy (Electricity) Act 2000* (Cth) s 8.

64 *Renewable Energy (Electricity) Act 2000* (Cth) s 27.

65 *Renewable Energy (Electricity) (Charge) Act 2000* (Cth) s 6.

66 Andrew G Thompson and Rob Campbell-Watt, 'Australia and an Emissions Trading Market — Opportunities, Costs and Legal Frameworks' (2005) 24 *Australian Resources & Energy Law Journal* 151, 163–5.

67 See, eg, Submission to the Review of the Mandatory Renewable Energy Target, Office of the Renewable Energy Regulator, Australian Government, 19 May 2003, Submission No 194

requirement is equivalent to a mere two per cent increase in the proportion of total electricity produced via renewable methods.[68] Even then, assessments of the legislation have suggested that with rising energy consumption in Australia, the MRET will deliver only a 0.3–0.9 per cent increase in renewable energy use.[69] In 2003, a review of the legislation was undertaken that recommended a steady increase in the MRET between 2010 and 2020 towards a target of 20 000 GWh.[70] In response, the Howard government agreed to extend the MRET scheme until 2020 but without increasing the target beyond the existing two per cent.[71] By contrast, the new Rudd government has pledged to increase the share of renewable energy in Australia to 20 per cent by 2020,[72] which will involve lifting the MRET from 9500 GWh to 45 000 GWh in 2020 (augmenting the approximately 15 000 GWh of existing renewable capacity to reach a level of 60 000 GWh).[73] The Rudd government, via the Council of Australian Governments ('COAG') Working Group on Climate Change and Water, is currently canvassing options for the design of an expanded MRET scheme,[74] and has released exposure draft legislation in the form of the Renewable Energy (Electricity) Amendment Bill 2008 (Cth).

2 *National Emissions Trading Scheme*

A key issue for the operation of the revised MRET scheme will be its relationship with the other major plank of federal climate change law presently under development: the national emissions trading scheme. The Rudd government has

(Greenpeace Australia Pacific) <http://www.mretreview.gov.au/pubs/mret-submission194.pdf>; Submission to the Review of the Mandatory Renewable Energy Target, Office of the Renewable Energy Regulator, Australian Government, 19 May 2003, Submission No 210 (Australian Conservation Foundation) <http://www.mretreview.gov.au/pubs/mret-submission210.pdf>.

68 See John Howard, *Statement by the Prime Minister of Australia the Hon John Howard MP — Safeguarding the Future: Australia's Response to Climate Change* (20 November 1997) <http://pandora.nla.gov.au/pan/10052/20040821-0000/www.pm.gov.au/news/media_releases/1997/GREEN.html>:

> The Government will work with the States and Territories to set a mandatory target for electricity retailers to source an additional two per cent of their electricity from renewable energy sources by 2010. This will accelerate the uptake of renewable energy in grid-based electricity and provide a larger base for the development of commercially competitive renewable energy.

69 See Lyster and Bradbrook, above n 24, 98; Submission to Senate Standing Committee on Environment, Communications, Information Technology and the Arts, *Inquiry into Budgetary and Environmental Implications of the Government's Energy White Paper*, 2 August 2004, Submission No 3 (Hydro Tasmania) <http://www.aph.gov.au/senate/committee/ecita_ctte/completed_inquiries/2004-07/energy_white_paper/submissions/sub3.pdf>.

70 MRET Review Panel, *Renewable Opportunities: A Review of the Operation of the Renewable Energy (Electricity) Act 2000* (2003) xxi ('*Tambling Review*') <http://www.mretreview.gov.au/report/index.html>.

71 Australian Greenhouse Office, Australian Government, *Government Response to Tambling Mandatory Renewable Energy Target (MRET) Review Recommendations* (2004) 2 (items 8–9) <http://www.greenhouse.gov.au/renewabletarget/pubs/mret-response.pdf>.

72 Department of Climate Change, Australian Government, *Australia's Renewable Energy Target* (23 December 2008) <http://www.climatechange.gov.au/renewabletarget/index.html>.

73 COAG Working Group on Climate Change and Water, *Design Options for the Expanded National Renewable Energy Target Scheme* (2008) 4 <http://www.climatechange.gov.au/renewabletarget/consultation/pubs/ret-designoptions.pdf>.

74 See ibid.

stated its ambition for Australia to have such a scheme in place by 2010.[75] This will involve the introduction of a market-based mechanism that caps overall levels of GHG emissions for a given period, but allows emissions permits to be traded so that participants can achieve reductions at the lowest possible cost — that is, a cap-and-trade scheme.[76] The primary driver for adoption of an emissions trading scheme in Australia has been a desire for compatibility with similar mechanisms at the international level under the *Kyoto Protocol*, and in other regions such as the EU. While the endorsement of a market-based emissions trading scheme for reducing GHG emissions has not occurred without a detailed consideration of the advantages and drawbacks of such an approach,[77] the question in Australia has really become one of *how* an emissions trading scheme will work rather than *whether* it is necessary.

An important input into federal government policy in this regard has been the review undertaken by Garnaut. The *Garnaut Review* was published on 30 September 2008, recommending medium- to long-term policy options to address climate change.[78] It was preceded by several other reports and discussion papers containing recommendations on such matters as the design of an emissions trading scheme and targets for emissions reductions.[79] In the *Garnaut Review*, Garnaut urged that Australia 'express its willingness to reduce its own entitlements to emissions from 2000 levels by 25 per cent by 2020 and by 90 per cent by 2050',[80] although only in the context of the conclusion of an international agreement with an objective of holding GHG concentrations to 450 parts per million ('ppm') CO_2 equivalent.[81] An important part of facilitating an effective

[75] Department of the Prime Minister and Cabinet, *Climate Change and Water* <http://www.pm.gov.au/topics/climate.cfm#target>.

[76] Market mechanisms of this kind raise a multitude of design issues and have been subjected to stringent critique. For useful overviews, see Peter Christoff, 'Can the Invisible Hand Adjust the Thermostat? Carbon Emissions Trading and Australia' in Tim Bonyhady and Peter Christoff (eds), *Climate Law in Australia* (2007) 82; Rosemary Lyster, 'Chasing Down the Climate Change Footprint of the Public and Private Sectors: Forces Converge' (Pt 2) (2007) 24 *Environmental and Planning Law Journal* 450, 454–69.

[77] See, eg, Australian Greenhouse Office, 'National Emissions Trading: Establishing the Boundaries' (Discussion Paper No 1, 1999); Australian Greenhouse Office, 'National Emissions Trading: Issuing the Permits' (Discussion Paper No 2, 1999); Australian Greenhouse Office, 'National Emissions Trading: Crediting the Carbon' (Discussion Paper No 3, 1999); Australian Greenhouse Office, 'National Emissions Trading: Designing the Market' (Discussion Paper No 4, 1999).

[78] *Garnaut Review*, above n 4, xvi.

[79] These included an interim report (Garnaut Climate Change Review, *Interim Report to the Commonwealth, State and Territory Governments of Australia* (February 2008)); a discussion paper on an emissions trading scheme (Garnaut Climate Change Review, *Emissions Trading Scheme Discussion Paper* (March 2008)); a draft report (Garnaut Climate Change Review, *Draft Report* (June 2008)); and a supplementary draft report on targets and trajectories (Garnaut Climate Change Review, *Targets and Trajectories: Supplementary Draft Report* (September 2008)). All reports are accessible from Garnaut Climate Change Review, *All Reports & Resources* (17 October 2008) <http://www.garnautreview.org.au/CA25734E0016A131/pages/all-reports--resources>.

[80] *Garnaut Review*, above n 4, xxx.

[81] Ibid. In the event of a post-2012 agreement, with coverage of both developed and developing countries, that seeks to hold GHG emissions to 550 ppm CO_2 equivalent, Garnaut recommends a 10 per cent reduction on 2000 levels by 2020 and an 80 per cent reduction by 2050. If no international agreement is achieved, the recommendation is that Australia commit to at least a 5 per cent reduction on 2000 levels by 2020.

global agreement was said to be the development of a domestic mitigation strategy with an emissions trading scheme as its centrepiece.[82]

As regards the design of a national emissions trading scheme, Garnaut reiterated his key recommendations from earlier drafts of the final report for a cap-and-trade system with an initial cap of 108 per cent of 1990 levels to 2012 and subsequent caps of increasing stringency.[83] In addition, Garnaut argued for a broad coverage of sectors in the scheme, including the transport sector.[84] His recommendation was for permits to be regularly auctioned (rather than allocated for free to participants),[85] with the resulting revenue going towards compensation for adversely affected sectors such as trade-exposed, emissions-intensive industries and low income households.[86] By contrast, the *Garnaut Review* was strongly opposed to compensating coal-fired electricity generators for the reduction in profits they may suffer as a result of the introduction of a carbon price.[87]

The federal government's initial response to this advice was released on 16 July 2008 in the form of a green paper — *Carbon Pollution Reduction Scheme: Green Paper* ('*Green Paper*')[88] — on the design of the national emissions trading scheme, rebadged as the Carbon Pollution Reduction Scheme ('CPR Scheme'). Following a period of public submissions, the government recently released a white paper — *Carbon Pollution Reduction Scheme: Australia's Low Pollution Future* ('*White Paper*').[89] The *White Paper* presents its decisions on critical design issues such as emissions reduction targets, the coverage of the CPR Scheme, the method by which GHG emissions permits will be issued and the question of compensation for trade-exposed, emissions-intensive industries (such as coal exporters, aluminium smelters and coal-fired power stations) for the economic impact of introducing a carbon price. The *White Paper* puts flesh on the bones of the Australian Labor Party's campaign pledge to introduce the CPR Scheme by 2010 with a long-term target of 60 per cent below 1990 levels by 2050.[90] In this respect, the key points made are that:

- The CPR Scheme will have a medium-term emissions reduction target of between 5 and 15 per cent below 2000 levels by 2020.[91] The ultimate level of the 2020 target will be determined by the outcome of international negotiations on a post-*Kyoto Protocol* agreement. The 15 per cent target will only apply if a global agreement is reached in which all major economies commit

82 Ibid 307, 321.
83 Ibid 282, 284.
84 Ibid 327–9.
85 Ibid 331–3.
86 See generally ibid chs 14, 16. Included are those industries at a competitive disadvantage so long as there is no global, comprehensive emissions trading scheme.
87 Ibid 314–16, ch 20 (especially 480).
88 Department of Climate Change, Australian Government, *Green Paper* (July 2008) <http://www.climatechange.gov.au/greenpaper/report/index.html>.
89 Department of Climate Change, Australian Government, *White Paper* (December 2008) <http://www.climatechange.gov.au/whitepaper/report/index.html>.
90 Ibid xx.
91 Ibid iv, xix.

to restrain emissions substantially and advanced economies take on similar reduction commitments to Australia;[92]

- The CPR Scheme will be broadly based, covering all six GHGs listed under the *Kyoto Protocol*[93] and extending to a wide range of industry sectors including transport and waste, though agriculture is to be excluded at the outset and forestry is included on an 'opt in' basis only.[94] Broad coverage is intended to facilitate the CPR Scheme's linkage with other schemes abroad and with the international carbon trading market;[95]
- A threshold of 25 000 tonnes of CO_2 equivalent of GHGs per annum will apply so that only entities emitting more than that amount will incur a direct liability under the CPR Scheme (expected to be around 1000 companies);[96]
- Petrol is included in the CPR Scheme but, in recognition of the political sensitivity of petrol pricing, the government will reduce the fuel tax excise on a cent-for-cent basis to offset the price impact of the CPR Scheme (reviewable after one year for heavy vehicle road users, and after three years for other road users);[97]
- Compensation will be provided to industries that are likely to be most affected by the introduction of the CPR Scheme (that is, emissions-intensive, trade-exposed industries) in the form of an allocation of free permits.[98] This equates to the free allocation of around 25 per cent of the permits available in the CPR Scheme.[99] Free permits will initially cover between 60–90 per cent of emissions, depending on emissions intensity, but assistance will be reduced by 1.3 per cent each year;[100]
- Some assistance will also be provided to existing coal-fired electricity generators through the establishment of a new Electricity Sector Adjustment Scheme.[101] Under this scheme, coal-fired electricity generators will receive a one-off allocation of 'pollution permits' to the value of $3.9 billion over five years, based on a $25 carbon price.[102] This assistance is to be reviewed in 2013 to safeguard against the possibility of generators securing windfall gains from their capacity to sell permits allocated for free;[103]
- The remainder of the pollution permits available in the CPR Scheme are to be auctioned on a quarterly basis;[104]

92 Ibid xix.
93 Ibid 6-4. See above n 33 for a list of these six GHGs.
94 *White Paper*, above n 89, xxviii–xxix, 14-17.
95 Ibid xxviii.
96 Ibid xxviii, 6-1. Landfill facilities emitting 10 000 tonnes of CO_2 equivalent will also be covered where operating in the vicinity of other landfill facilities: at 6-35–6-36.
97 Ibid 17-16, 17-18.
98 Ibid 12-14.
99 Ibid 12-49.
100 Ibid 12-55 (Policy Position 12.12).
101 See ibid 13-7.
102 Ibid B-12.
103 Ibid 13-36–13-38.
104 Ibid 9-7.

- Assistance will be provided to pensioners and to low and medium income households to compensate for the increased costs of goods and services resulting from the introduction of the CPR Scheme.[105] The federal government will also establish a Climate Change Action Fund for small businesses and community organisations, including incentives to invest in innovative, energy efficient and low-emissions processes;[106] and
- As a transitional measure to allow businesses to adjust to the new CPR Scheme, the carbon price will be capped at $40 for the period 2010–15.[107]

The Scheme outlined in the *White Paper* is considerably less stringent than that recommended by the *Garnaut Review*, principally in the extent to which the former incorporates the issue of free permits and assistance for coal-fired electricity generators. This is made clear by the strong criticism in the *Garnaut Review* (issued after the release of the *Green Paper*) which warns:

> Exempting some sectors or particular greenhouse gases would distort the burden of reduced emissions and shift it disproportionately onto others.
>
> Freely allocating permits to some emitters but not others safeguards the profits of the fortunate recipients while imposing even greater adjustment costs on other emitters and on the community.[108]

The acceptance of an extensive allocation of free permits in the CPR Scheme may expose it to the kind of environmental and equity problems experienced by other emissions trading schemes, such as that in the EU.[109] During the first phase of the EU scheme, member states gave away 95 per cent of the allocations under the scheme for free,[110] generating a substantial windfall, especially for the electricity sector that could pass the additional carbon cost through to the consumer. Hence, as Garnaut notes, so-called 'free permits' are not free as 'their cost is borne elsewhere in the economy — typically, by those who cannot pass on the cost to others (most notably, households).'[111]

Ultimately, a definitive assessment of the Australian scheme will need to await the introduction and passage of federal legislation for a carbon pollution reduction scheme, expected by February 2009. Lacking a majority in the Senate, the government will need to negotiate, either with the Coalition or with the Austra-

105 Ibid 17-1.
106 See ibid 18-1–18-14.
107 Ibid 8-37.
108 *Garnaut Review*, above n 4, 314.
109 See Susan J Kurkowski, 'Distributing the Right to Pollute in the European Union: Efficiency, Equity, and the Environment' (2006) 14 *New York University Environmental Law Journal* 698; Christian Egenhofer, 'The Making of the EU Emissions Trading Scheme: Status, Prospects and Implications for Business' (2007) 25 *European Management Journal* 453; Felix Matthes et al, Öko-Institut, *The Environmental Effectiveness and Economic Efficiency of the European Union Emissions Trading Scheme: Structural Aspects of Allocation — A Report to the WWF* (2005) 12–13 <www.wwf.de/imperia/md/content/klima/2005_11_08_full_final__koinstitut.pdf>.
110 European Parliament and Council, *Directive 2003/87/EC Establishing a Scheme for Greenhouse Gas Emission Allowance Trading within the Community and Amending Council Directive 96/61/EC* [2003] OJ No L 275/32, art 10.
111 *Garnaut Review*, above n 4, 331.

lian Greens and independent Senators, in order to implement its desired emissions trading scheme.

3 *Other National Climate Change Measures*

The introduction of an emissions trading scheme at the federal level will represent a major step in the development of climate change law in Australia and go a significant way towards ensuring that the nation meets its international emissions reduction commitments. It would be dangerous, however, to view a national emissions trading scheme as the be-all and end-all of domestic climate change regulation.[112] For a start, the establishment of an emissions trading scheme requires decisions on a number of related issues such as the role of renewable energy policies (for example, the MRET canvassed above) and appropriate energy infrastructure (such as whether Australia should embrace nuclear power). In addition, it is broadly accepted in the literature on market mechanisms that their institution generally relies on a firm foundation of other laws and regulations, hence operating less as a free market than as 'legally regulated marketization'.[113] In the federal setting, this means that there is a need for new legislation governing issues of emissions reporting, verification and compliance, as well as for evaluation of the relationship of climate change policy with existing environmental legislation.

(a) Greenhouse and Energy Reporting

Essential to the smooth functioning of a national emissions trading scheme will be sound procedures for the reporting of GHG emissions.[114] Accurate reporting of GHG emissions is necessary in order to establish baseline levels of emissions and verify emissions reductions. It is also critical for the carbon price established in the emissions trading market since concerns over the legitimacy of claimed emissions reductions will tend to decrease the price of emissions permits (and hence the incentive for companies to take action to reduce their emissions).

Legislation to put in place a national scheme for the reporting of information about corporate GHG emissions, energy production and energy consumption was introduced by the Howard government in mid-2007. The *National Greenhouse and Energy Reporting Act 2007* (Cth) ('*NGERA*') requires companies that exceed specified greenhouse emissions or energy thresholds to register and report annually under the regime (the first reports are due by 31 October 2009).[115] These reporting requirements have gained added significance with the announcement in the Rudd government's *Green Paper* on the CPR Scheme that the *NGERA* 'would be the starting framework for monitoring, reporting and

112 Lyster, 'Chasing Down the Climate Change Footprint' (Pt 2), above n 76, 454. For a further discussion of the issue of integration in the context of climate change law, see below Part IV(C).

113 John Braithwaite and Christine Parker, 'Conclusion' in Christine Parker et al (eds), *Regulating Law* (2004) 269, 269. See also Robyn Eckersley, 'Markets, the State and the Environment: An Overview' in Robyn Eckersley (ed), *Markets, the State and the Environment: Towards Integration* (1995) 7, 21.

114 *Green Paper*, above n 88, 193.

115 *NGERA* ss 12(1), 13, 19; *Green Paper*, above n 88, 42 (point 5.9). Staggered thresholds are specified so that companies with lower emissions have a transitional period in which to phase in their compliance: see *NGERA* s 13.

assurance under the scheme, and elements of that system would be strengthened to support the scheme.'[116]

In June 2008, clarifying regulations under the *NGERA* were issued by the new federal Minister for Climate Change and Water, Senator Penny Wong.[117] Importantly, these regulations define the 'emissions' subject to the *NGERA*'s reporting requirements. They include so-called 'scope 1 emissions'[118] (the release of GHGs into the atmosphere as a direct result of the activities of a company) and 'scope 2 emissions'[119] (GHG emissions resulting from the consumption of electricity, heating, cooling or steam imported from sources outside of a company's boundaries). Excluded are indirect or so-called 'scope 3 emissions' such as GHGs released offsite as a result of burning coal harvested by a coal mining company. Effectively, the legislation treats such scope 3 emissions as being the responsibility of the (generally overseas) user who unlocks carbon from the sources in which it is contained, such as in exported coal.

(b) Environmental Impact Assessment and Approval Requirements

The exclusion of indirect GHG emissions from the scope of emissions that companies are required to report and mitigate means that these indirect emissions and their consequences are likely to be regulated by other aspects of the environmental law framework. The issue of indirect emissions and their impact is not an inconsequential one. For instance, given the substantial contribution made by the burning of coal to global GHG production, important questions arise as to the long-term sustainability of coal mining in Australia and for export overseas.[120] Even where locally mined coal is to be used locally in a coal-fired power station, the resulting emissions may have an indirect impact on iconic, yet fragile, environmental resources such as the Great Barrier Reef.[121]

At the federal level, the key piece of environmental legislation since the turn of the century has been the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) ('*EPBC Act*'). This legislation makes no direct mention of GHG emissions or climate change.[122] Nonetheless, climate change resulting from greenhouse pollution may impact other 'matters of national environmental

116 *Green Paper*, above n 88, 194.

117 See generally *National Greenhouse and Energy Reporting Regulations 2008* (Cth).

118 *National Greenhouse and Energy Reporting Regulations 2008* (Cth) reg 2.23(2)(a).

119 *National Greenhouse and Energy Reporting Regulations 2008* (Cth) reg 2.23(2)(b).

120 The emissions from coal exported by Australia far exceed the country's domestic emissions: see Chris McGrath, 'Regulating Greenhouse Gas Emissions from Australian Coal Mines' (2008) 25 *Environmental and Planning Law Journal* 240, 241.

121 Ecologically-rich sites, such as the Great Barrier Reef, are predicted to suffer a significant loss of biodiversity with rising ocean temperatures: see K Hennessy et al, 'Australia and New Zealand' in Working Group II, IPCC, *Climate Change 2007: Impacts, Adaptation and Vulnerability* (2007) 527. For a discussion of the targets considered necessary to avoid severe impacts to the Reef from climate change, see Chris McGrath, 'Setting Climate Change Targets to Protect the Great Barrier Reef' (2007) 24 *Environmental and Planning Law Journal* 182.

122 This is a longstanding source of criticism of the Act: see Lisa Ogle, 'The *Environment Protection and Biodiversity Conservation Act 1999* (Cth): How Workable Is It?' (2000) 17 *Environmental and Planning Law Journal* 468. For an alternative perspective on the desirability of a 'greenhouse trigger' in the *EPBC Act*, see Andrew Macintosh, 'The Greenhouse Trigger: Where Did It Go and What of Its Future?' in Tim Bonyhady and Peter Christoff (eds), *Climate Law in Australia* (2007) 46.

significance' protected by the *EPBC Act*,[123] such as world heritage areas[124] (including the Great Barrier Reef), threatened species and ecological communities,[125] migratory species[126] and the Commonwealth marine environment.[127] Although the environmental damage at issue in such instances would not be directly attributable to activities such as coal mining, the *EPBC Act* also catches 'indirect'[128] impacts of actions.[129] Such impacts are defined by the Act as events or circumstances that are an indirect consequence of an action, provided the action is a substantial cause of those events or circumstances.[130]

Where the impact (direct or indirect) of an action is deemed to have, or be likely to have, a 'significant impact' on a protected matter, then the *EPBC Act*'s environmental assessment and approval requirements are invoked.[131] This necessitates referral of the proposal to the federal Minister for the Environment, Heritage and the Arts for assessment (a process which may then be devolved to state authorities)[132] and a decision on whether the project may proceed.[133] The decision-making process required under the *EPBC Act* is relatively transparent as interested third parties, such as non-government organisations ('NGOs'), can seek judicial review of ministerial decisions or apply for injunctions to restrain threatened breaches of the Act.[134] Indeed, as canvassed further below, NGOs have been active in using the *EPBC Act* in attempts to force the consideration of indirect climate change impacts in the assessment of major, greenhouse-intensive projects such as new coal mines.

(c) (No) Nuclear Power Policy

Australia differs from other developed countries in its high dependence on greenhouse-intensive coal-fired power, and the absence of nuclear power stations. The lack of the latter, together with associated problems of radioactive waste and disposal, have long been viewed as unalloyed good by many in the environmental community.[135] However, with the current prominence of climate

123 *EPBC Act* pt 3 div 1.
124 *EPBC Act* s 12.
125 *EPBC Act* s 18.
126 *EPBC Act* s 20.
127 *EPBC Act* s 23.
128 *EPBC Act* s 527E(1)(b).
129 An 'action' is defined to include such things as developments and undertakings: *EPBC Act* s 523.
130 *EPBC Act* s 527E(1). Subsection (2) clarifies the extent of the provision as regards indirect consequences of an action that are the result of third parties' activities. The definition is largely regarded as embedding the interpretation of 'impact' given by the Full Federal Court of Australia in *Minister for Environment and Heritage v Queensland Conservation Council Inc* (2004) 139 FCR 24, 38 (Black CJ, Ryan and Finn JJ).
131 Such actions are designated 'controlled actions' under s 67 of the *EPBC Act*.
132 This occurs via standing bilateral agreements (*EPBC Act* s 83), or via one-off accreditation of the state or territory process (s 87(4)).
133 *EPBC Act* s 133.
134 Judicial review is pursuant to the *Administrative Decisions (Judicial Review) Act 1977* (Cth). Injunctions may be issued pursuant to s 475 of the *EPBC Act*. Broad standing provisions apply in respect of both kinds of actions: see *EPBC Act* ss 475(6)–(7), 487.
135 Major environmental organisations in Australia have maintained their opposition to nuclear energy on environmental grounds: see Jim Green, Friends of the Earth et al, *Nuclear Power: No*

change issues on the environmental policy agenda, the wisdom of Australia's 'no nuclear' stance is increasingly being questioned. This is not the place for a detailed discussion of the relative merits and drawbacks of nuclear power;[136] suffice it to say that from a climate change perspective, nuclear power represents a low-emissions source.[137] Hence, there are a growing number of commentators who argue that nuclear power should, at the very least, be considered in the mix of energy sources that are to provide Australia's electricity needs into the future.

Nuclear power was put (back) on the regulatory agenda in 2006 with the release of a report on the issue commissioned by the Department of the Prime Minister and Cabinet (the '*Switkowski Report*'). The report, authored by the former chief executive officer of Telstra Corporation Ltd, Ziggy Switkowski, saw nuclear power 'as a practical option for part of Australia's electricity production.'[138] It canvassed a scenario involving the construction of a 'fleet of 25 nuclear reactors'[139] in Australia by 2050 with the first reactor to come online in 2020.[140] The Howard government wholeheartedly supported the recommendations of the *Switkowski Report*. Indeed, the then Prime Minister declared it would be 'crazy in the extreme' for his government to block the development of nuclear energy in Australia and stated that he personally 'wouldn't have any objection, none whatsoever' to having a reactor built next door to his Sydney home.[141]

By contrast, the Rudd government has declared its opposition to the introduction of nuclear power in Australia, preferring to pursue other options such as natural gas, renewables and 'geosequestration'[142] to supply the country's energy needs into the future. For the moment, then, it would seem that the construction of nuclear power plants (and the legislative changes that would be necessary to facilitate this)[143] is off the political and regulatory agenda. Nonetheless, there are reports that some 'pragmatists' within the federal Cabinet foresee the possible return of the nuclear issue in light of the magnitude of the climate change

Solution to Climate Change (2005) <http://www.foe.org.au/anti-nuclear/issues/nfc/nuclear-climate/NukesNoSolutionFull.pdf>.

136 For recent contributions on this issue, see Justin Healey (ed), 'Nuclear Power' (2006) 246 *Issues in Society* 1; Ian Lowe, 'Reaction Time: Climate Change and the Nuclear Option' (2007) 27 *Quarterly Essay* 1.

137 Nuclear power plants do not directly generate GHG emissions. Nevertheless, some emissions are generated through mining and processing of nuclear fuel, construction of the plants, waste management and decommissioning activities: see Uranium Mining, Processing and Nuclear Energy Review Taskforce, Department of the Prime Minister and Cabinet, Australian Government, *Uranium Mining, Processing and Nuclear Energy — Opportunities for Australia?* (2006) 8 ('*Switkowski Report*') <http://pandora.nla.gov.au/tep/66043>.

138 Ibid 1.

139 Ibid 12.

140 Ibid.

141 Katharine Murphy, 'PM Puts His Faith in Ziggy and Nuclear Power', *The Age* (Melbourne), 30 December 2006, 1.

142 Paul Kelly and Geoff Elliott, 'Labor Faces Inside Push on Nuclear', *The Australian* (Sydney), 27 June 2008, 1, 2. For a further discussion of geosequestration or, as it is also known, 'clean coal' or 'carbon capture and storage', see below Part III(C)(3).

143 For instance, current prohibitions in s 140A of the *EPBC Act* and s 10 of the *Australian Radiation Protection and Nuclear Safety Act 1998* (Cth) would need to be repealed.

problem and given the capacity of nuclear energy to supply reliable baseload power.[144]

C *State-Based Climate Change Regulation*

As a constitutional matter, legislative activity by the federal government on the issue of climate change constrains the regulatory field open to states and territories, but by no means excludes them. While the states cannot maintain legislation that directly conflicts with federal climate change laws, they may enact complementary legislation.[145] This has long been the pattern in the environmental field and looks unlikely to change with respect to the issue of climate change.[146] Indeed, during the Howard government era almost all regulatory action on climate change was taken by state governments,[147] and it is their experimentation with tools such as emissions trading that is now providing much of the basis for the development of a national scheme.

A comprehensive review of every climate change initiative in the states and territories is beyond the scope of this article. However, the following sections seek to convey the flavour of regulatory developments in key areas such as carbon trading and sequestration, the promotion of renewable energy or low-emissions sources, geosequestration and the improvement of energy efficiency. The pattern that has emerged is a mosaic of different policies and pieces of legislation which, while not directly contradictory, generally evince no common approach. Instead, regulations have been designed by each jurisdiction in accordance with its own circumstances and policy priorities.[148] Some of the

144 Katharine Murphy, 'Fuel for Thought: The Options Available to Meet Australia's Energy Needs', *The Age* (Melbourne), 5 July 2008, 4.

145 *Australian Constitution* s 109.

146 For an overview of federal–state relations in the environmental field, see Jacqueline Peel and Lee Godden, 'Australian Environmental Management: A "Dams" Story' (2005) 28 *University of New South Wales Law Journal* 668, 670–82.

147 Nevertheless, there has been significant variation in their responses. Some jurisdictions with a fairly minimal GHG contribution, such as the Northern Territory, have moved only slowly to introduce policies to mitigate climate change.

148 The umbrella policy documents in each state and territory are: Australian Capital Territory, *Weathering the Change: The ACT Climate Change Strategy 2007–2025* (2007) <http://www.tams.act.gov.au/__data/assets/pdf_file/0003/63624/Climate_Change_Strategy.pdf>; New South Wales Greenhouse Office, New South Wales Government, *NSW Greenhouse Plan* (2005) <http://www.environment.nsw.gov.au/resources/climatechange/2811FINALNSWGHPlanweb.pdf>; Environment Protection Authority and Department of Natural Resources, Environment and the Arts, Northern Territory Government, *The Northern Territory Strategy for Greenhouse Action* (2006) <http://www.nt.gov.au/nreta/environment/greenhouse/pdf/greenhouse_action.pdf>; Queensland Government, *ClimateSmart 2050 — Queensland Climate Change Strategy 2007: A Low-Carbon Future* (2007) <http://www.thepremier.qld.gov.au/library/pdf/initiatives/climate_change/ClimateSmart_2050.pdf>; Government of South Australia, *Tackling Climate Change: South Australia's Greenhouse Strategy — 2007–2020* (2007) <http://www.climatechange.sa.gov.au/uploads/pdf/TACKLING_CLIMATE_CHANGE_STRATEGY.pdf>; Tasmanian Climate Change Office, Department of Premier and Cabinet, Tasmanian Government, *Tasmanian Framework for Action on Climate Change* (2008) <http://www.dpac.tas.gov.au/divisions/climatechange/framework>; Department of Natural Resources and Environment, Victorian Government, *Victorian Greenhouse Strategy* (2002) <http://www.climatechange.vic.gov.au/CA256F310024B628/0/B5E4EF1DC835D260CA25738400099272/$File/2002Victorian+Greenhouse+Strategy.pdf>; Department of Sustainability and Environment, Victorian Government, *Victorian Greenhouse Strategy Action Plan Update* (2005) <http://www.climatechange.vic.gov.au/CA256F310024B628/0/7681ECF2ED52BF1ECA25738

resulting fragmentation may be overcome with the institution of a national emissions trading scheme and the intergovernmental review process underway to revise renewable energy targets. Nevertheless, important questions remain as to how, against such a backdrop, integrated environmental management might be possible, especially given its likely importance in dealing with the widescale, cumulative impacts predicted as a consequence of climate change.[149]

1 *Carbon Trading and Sequestration*

New South Wales, as the state with the largest contribution to national GHG emissions, was also the first to pioneer mechanisms to mitigate greenhouse pollution.[150] In January 2003, the New South Wales Greenhouse Gas Abatement Scheme ('GGAS') commenced operation.[151] Unlike the CPR Scheme proposed by the federal government, GGAS is a 'baseline and credit' scheme.[152] Under the GGAS, a benchmark of 7.27 tonnes of CO_2 equivalent of GHG emissions per head of state population is set, which must be met by electricity retailers and certain other parties involved in the NSW electricity market. Each year, GGAS participants must surrender a prescribed number of GGAS certificates (or renewable energy certificates under the MRET scheme) for any emissions above their individually assigned targets; if they fail to do so, they are liable to a penalty.[153] GGAS certificates, created through activities that reduce or offset emissions (for example, tree planting) are transferable, thereby creating a market for their purchase.

While the GGAS has now been copied in other jurisdictions such as the Australian Capital Territory,[154] assessments of its effectiveness in lowering GHG emissions in NSW have been mixed.[155] A particular concern has been the extent to which the scheme produces emissions reductions additional to those that

300814F0C/$File/VGS+Action+Plan+Update+2005.pdf>; Western Australian Greenhouse Task Force, Government of Western Australia, *Western Australian Greenhouse Strategy* (2004) <http://portal.environment.wa.gov.au/pls/portal/docs/PAGE/DOE_ADMIN/GREENHOUSE_REPOSITORY/TAB6327544/GREENHOUSE_STRATEGY_001.PDF>.

149 David Jones, 'The *Kyoto Protocol*, Carbon Sinks and Integrated Environmental Regulation: An Australian Perspective' (2002) 19 *Environmental and Planning Law Journal* 109, 127–8.

150 New South Wales contributes about 151 million tonnes or 28 per cent of Australian GHG emissions: see New South Wales Greenhouse Office, *NSW Greenhouse Plan: Executive Summary* (2005) 3 <http://www.environment.nsw.gov.au/resources/climatechange/1111FINALGHOExecSummary.pdf>.

151 For an overview of the scheme, see Tom Kearney, 'Market-Based Policies for Demand Side Energy Efficiency: A Comparison of the New South Wales Greenhouse Gas Abatement Scheme and the United Kingdom's Energy Efficiency Commitment' (2006) 23 *Environmental and Planning Law Journal* 113, 118–22.

152 Such schemes set a baseline level of emissions, improvements upon which generate credits for participating firms: Wilder and Miller, above n 40, 68.

153 Thompson and Campbell-Watt, 'Australia and an Emissions Trading Market', above n 66, 156–7.

154 See *Electricity (Greenhouse Gas Emissions) Act 2004* (ACT). For details, see Independent Competition and Regulatory Commission, ACT Government, *ACT Greenhouse Gas Abatement Scheme* (21 May 2008) <http://www.icrc.act.gov.au/actgreenhousegasabatementscheme>.

155 See, eg, Lyster and Bradbrook, above n 24, 143–4; Kearney, above n 151, 119; Rob Passey, Iain MacGill and Hugh Outhred, 'The NSW Greenhouse Gas Reduction Scheme: An Analysis of the NGAC Registry for the 2003, 2004 and 2005 Compliance Periods' (Discussion Paper No 070822, Centre for Energy and Environmental Markets, The University of New South Wales, 2007) 3 <http://www.ceem.unsw.edu.au/content/userDocs/CEEM_DP_070827_000.pdf>.

would have occurred in any case.[156] Part of the problem would appear to lie in the design of the scheme, which does not set an overall emissions cap but rather per capita targets, raising the potential that 'physical emissions may continue to increase even while the declining NSW per capita target is met'.[157] Hence, Tom Kearney comments that it would seem GGAS 'is at best a scheme that reduces the greenhouse gas emissions associated with the production of electricity'[158] rather than a mechanism that reduces overall emissions.

Interestingly, it was a differently designed scheme — a *Kyoto Protocol*-compatible, cap-and-trade scheme — that was proposed by the National Emissions Trading Taskforce set up by the states and territories in 2004 to investigate the potential for cost-effective achievement of GHG emissions reduction targets.[159] In April 2007, in the face of intransigence regarding national emissions trading on the part of the Howard government, the states and territories committed to introduce a consistent inter-jurisdictional emissions trading scheme by the end of 2010.[160] Consultative discussion papers released by the Taskforce, outlining the possible design of the scheme, proposed initial application to the stationary energy sector with a *Kyoto Protocol*-based cap on total allowable emissions and permits allocated via a mix of administrative allocation and auctioning.[161] It seems that with the Rudd government's pursuit of the CPR Scheme, the trading system envisioned by state governments is not to be developed any further. Nonetheless, the work undertaken by the National Emissions Trading Taskforce is sure to be an important input into the design of the federal emissions trading scheme.

Besides carbon trading, another related area in which Australian state and territory governments have been active is the introduction of schemes for the recognition of carbon rights.[162] In theory, these schemes pave the way towards a regulated national carbon trading market by affording legal recognition to activities that reduce emissions or (more commonly) sequester carbon (for

156 Passey, MacGill and Outhred, above n 155, 19–28.

157 Lyster and Bradbrook, above n 24, 143.

158 Kearney, above n 151, 122.

159 The Taskforce maintains a website: see National Emissions Trading Taskforce: An Initiative of State and Territory Governments of Australia <http://www.emissionstrading.org.au>.

160 Mike Rann, 'Federation Council Agree to Emissions Trading Timeframe' (Press Release, 12 April 2007) <http://www.ministers.sa.gov.au/news.php?id=1470>. Mike Rann was the Chairman of the Council for the Australian Federation at the time.

161 See, eg, Inter-Jurisdictional Emissions Trading Working Group, *A National Emission Trading Scheme: A Report to First Ministers* (2004) 4–6 <http://www.emissionstrading.org.au/__data/assets/pdf_file/0012/417/report.pdf>; National Emissions Trading Taskforce, 'Possible Design for a National Greenhouse Gas Emissions Trading Scheme' (Discussion Paper, August 2006) 16, 37, 121–2 <http://www.emissionstrading.org.au/key_documents/discussion_paper>.

162 See, eg, *Carbon Rights Legislation Amendment Act 1998* (NSW) sch 1, inserting ss 87A and 88AB into the *Conveyancing Act 1919* (NSW); *Forestry and Land Title Amendment Act 2001* (Qld) s 4, inserting pt 6B into the *Forestry Act 1959* (Qld); *Forest Property (Carbon Rights) Amendment Act 2006* (SA), amending the *Forest Property Act 2000* (SA); *Forestry Rights Registration Amendment Act 2002* (Tas), amending the *Forestry Rights Registration Act 1990* (Tas); *Forestry Rights (Amendment) Act 2001* (Vic), amending the *Forestry Rights Act 1996* (Vic); *Carbon Rights Act 2003* (WA). For overviews of these developments, see Andrew Thompson and Rob Campbell-Watt, 'Carbon Rights — Development of the Legal Framework for a Trading Market' [2004] 2 *National Environmental Law Review* 31; Andrew G Thompson and Jolanta Olszewska, 'Australia: Carbon Rights' (2003) 1(1) *Oil, Gas & Energy Law Intelligence* 17.

example, via its capture in carbon sinks such as forests).[163] In practice, however, there are a number of variations between the legislative provisions in each state that will need to be overcome if inter-jurisdictional carbon trading is to become a reality in Australia.[164] For instance, the different jurisdictions have reached different legislative arrangements in relation to key issues such as whether carbon rights exist in arrangements that predate the new legislation,[165] the land to which carbon rights are applicable (for example, whether Crown land is included),[166] the biological entities that are considered to sequester carbon,[167] whether carbon rights create an interest in land,[168] the legal nature of carbon rights,[169] and whether the right to harvest vegetation is separable from the carbon sequestration right.[170]

2 *Renewable and Low-Emissions Energy Sources*

Another area of climate change law that has seen numerous, but diverse, state-based initiatives is the promotion of renewable and low-emissions energy sources. Since some 48 per cent of Australia's greenhouse pollution is attribut-

163 Thompson and Campbell-Watt, 'Carbon Rights', above n 162, 35.

164 Jones, above n 149, 122–3.

165 In Western Australia, there is no recognition of carbon rights accruing to foresters under pre-existing arrangements between landowners and foresters: see *Carbon Rights Act 2003* (WA) ss 5(2)(b), 6(1)(a), 7(1), which require the form that creates a carbon right to state that it is intended to do so under the Act, and prevent carbon rights being created in any other manner. The Victorian legislation deems a forest property right granted under a forest property agreement in force immediately before the commencement of the amendment legislation as including a carbon sequestration right, as long as that agreement does not itself exclude such rights: *Forestry Rights (Amendment) Act 2001* (Vic) s 6, inserting *Forestry Rights Act 1996* (Vic) s 15.

166 In Western Australia, the applicable land includes any freehold or Crown land: *Carbon Rights Act 2003* (WA) ss 4, 5(1). However, in Victoria the relevant legislation does not apply in relation to Crown land: *Forestry Rights Act 1996* (Vic) s 4.

167 In Victoria, these are trees, defined as 'trees, shrubs, bushes, seedlings, saplings and reshoots, whether alive or dead': *Forestry Rights Act 1996* (Vic) s 3(1). In Tasmania, it is trees, where trees include 'not only timber trees, but trees, shrubs and bushes, seedlings, saplings, and re-shoots of every description and the roots of any such trees': *Forestry Rights Registration Act 1990* (Tas) s 3; *Forestry Act 1920* (Tas) s 4(1). In Western Australia, 'land or anything on land' that absorbs CO_2 is included: *Carbon Rights Act 2003* (WA) s 3.

168 In Victoria, 'forest property rights' are 'deemed not to be … interest[s] in land': *Forestry Rights Act 1996* (Vic) s 11(b). In contrast, carbon (sequestration) rights are interests in land in NSW (*Conveyancing Act 1919* (NSW) ss 87A (definition of 'forestry right'), 88AB) and in Western Australia (*Carbon Rights Act 2003* (WA) s 6(1)(a)). Carbon rights in South Australia are 'in the nature of a chose in action', but agreements creating carbon rights can be registered and are enforceable against subsequent registered proprietors of the relevant land: *Forest Property Act 2000* (SA) ss 3A(1), 7(1), 9(1). In Queensland, 'the vesting of [a] natural resource product … does not create an interest in land', but does create a profit à prendre: *Forestry Act 1959* (Qld) ss 61J(4)–(5).

169 In Tasmania and Western Australia, such rights are apparently inseparable (in the sense that there is no distinction made between rights over vegetation — forest property rights — and carbon (sequestration) rights with respect to the vegetation): *Forestry Rights Registration Act 1990* (Tas) ss 3, 5(1), (4); *Carbon Rights Act 2003* (WA) ss 6(1)(a), 7(2), 8(1). However, they are clearly separable in South Australia and Victoria: *Forest Property Act 2000* (SA) ss 5(1)–(3); *Forestry Rights Act 1996* (Vic) ss 3(1), 5–6, 12.

170 In NSW, Queensland and Tasmania, forestry rights, including carbon sequestration rights, are profits à prendre: *Conveyancing Act 1919* (NSW) s 88AB(1); *Forestry Act 1959* (Qld) s 61J(5); *Forestry Rights Registration Act 1990* (Tas) s 5(1). However, this is not the case in South Australia, Western Australia and Victoria: *Forest Property Act 2000* (SA) s 3A(1); *Carbon Rights Act 2003* (WA) s 6(3); *Forestry Rights Act 1996* (Vic) s 11(b).

able to the burning of fossil fuels for electricity production,[171] an obvious policy response to this problem is to encourage the use of alternative means of power generation. Consequently, state schemes to promote renewable and low-emissions energy sources have proliferated since the turn of the century. Most are designed to complement achievement of the overall goal of an emissions trading system by encouraging the abatement of GHG emissions in the energy sector. Nonetheless, some see the potential for such schemes to distort the operation of a carbon trading market by subsidising some energy sources at the expense of others. For instance, a Task Group on Emissions Trading commissioned by the Howard government was heavily critical of the MRET and similar, state-based schemes, recommending that '[a]ll Australian schemes that set mandatory targets for deployment of particular technologies should be wound up over time, and new ones forestalled.'[172] More recently, Garnaut has also signalled a lack of support for the continuation of renewable energy target schemes. In his view, a fully operational national emissions trading scheme will remove the need for a renewable energy target as the latter then 'will not address any additional market failures.'[173]

The intergovernmental MRET review process currently underway, which seeks to absorb existing state-based targets into a single national scheme, has signalled the intention to phase out the federal target 'between 2020 and 2030 as emissions trading matures'.[174] Whether the states will ultimately go along with plans requiring them to abandon their renewable energy targets and associated schemes is more uncertain. During the Howard government years, state initiatives were introduced largely as a response to inaction on the MRET, accompanied by fears that investment in renewable energy technologies within particular states might decline as a result.[175] The result is a variety of renewable energy regulations operating separately in different states and territories.[176] These include the following existing and proposed measures:

- Queensland has a 13 per cent gas scheme — the Queensland Gas Scheme — that commenced in 2005.[177] The Gas Scheme operates as an incentive to use natural gas (a low-emissions source) for the generation of power. Similar to the MRET, it requires wholesale purchasers of electricity to source at least 13

171 Lyster and Bradbrook, above n 24, 140.

172 Prime Ministerial Task Group on Emissions Trading, Australian Government, *Report of the Task Group on Emissions Trading* (2007) 137 <http://pandora.nla.gov.au/pan/79623/20071127-1411/www.dpmc.gov.au/publications/emissions/index.html>.

173 *Garnaut Review*, above n 4, 299.

174 COAG Working Group on Climate Change and Water, above n 73, 4.

175 See Graeme Dennis, 'Climate Change: Australian Legislative Responses' [2002] *Australian Mining and Petroleum Law Association Yearbook* 71, 72–3.

176 The GGASs of NSW and the Australian Capital Territory are partially integrated: see Independent Competition and Regulatory Commission, ACT Government, *Legislative Framework* (24 December 2008) <http://www.icrc.act.gov.au/actgreenhousegasabatementscheme/legislative framework>. Otherwise, states and territories have pursued their own unique paths.

177 For the governing legislation, see *Electricity Act 1994* (Qld) ch 5A, originally inserted by s 12 of the *Electricity Amendment Act 2004* (Qld); *Electricity Regulation 2006* (Qld) ch 7 (s 4 of the *Electricity Amendment Regulation (No 3) 2004* (Qld) originally inserted ch 5A into the *Electricity Regulation 1994* (Qld)); *Eligible Electricity Guidelines for Accredited Generators 2008* (Qld), issued under s 135CK of the *Electricity Act 1994* (Qld).

per cent of their electricity from accredited generators, which use gas in electricity generation.[178] Queensland has pledged to increase the scheme to 18 per cent by 2020;[179]

- The Victorian government has established a renewable energy target of 10 per cent — the Victorian Renewable Energy Target ('VRET') — to be achieved by 2016.[180] A key method of achieving the target is to be a MRET-type market mechanism that is endorsed in the *Victorian Renewable Energy Act 2006* (Vic). The VRET commenced operation on 1 January 2007 and is administered by the Victorian Essential Services Commission;[181]
- The South Australian government has recently endorsed a renewable energy target in the *Climate Change and Greenhouse Emissions Reduction Act 2007* (SA). A target under the Act is to increase the proportion of renewable electricity generated and consumed in the state so that it comprises at least 20 per cent by 31 December 2014;[182] and
- Further renewable energy targets have been announced or are under development in NSW (10 per cent by 2010 and 15 per cent by 2020),[183] Queensland (10 per cent by 2020),[184] Western Australia (15 per cent by 2020, increasing to 20 per cent by 2025),[185] and the ACT (10 per cent by 2010 and 15 per cent by 2020).[186]

A number of states have also introduced legislation to facilitate the development of particular renewable energy sources. For instance, both Queensland and Victoria have legislation pertaining to exploration for, and extraction of, geothermal energy resources.[187] In Victoria, the *Electricity Industry (Wind Energy Development) Act 2004* (Vic) amended the *Electricity Industry Act 2000* (Vic) to facilitate the development and construction of wind energy facilities in the state.

178 See further Department of Mines and Energy, Queensland Government, *Queensland Gas Scheme* (23 December 2008) <http://www.dme.qld.gov.au/Energy/gasscheme.cfm>.

179 Department of Mines and Energy, Queensland Government, *Smart Energy Policy* (16 January 2009) <http://www.dme.qld.gov.au/Energy/energy_policy.cfm>.

180 Department of Sustainability and Environment, Victorian Government, *Renewable Energy Action Plan* (2006) 2 <http://www.resourcesmart.vic.gov.au/documents/REAP.pdf>.

181 See further Essential Services Commission, Victorian Government, *Victorian Renewable Energy Target (VRET) Scheme* (15 October 2007) <http://www.esc.vic.gov.au/public/VRET>.

182 *Climate Change and Greenhouse Emissions Reduction Act 2007* (SA) s 5(2). Section 5(1) of the Act states that the principal aim is to reduce GHG emissions by at least 60 per cent, to a level at or below 40 per cent of 1990 levels.

183 New South Wales, *Parliamentary Debates*, Legislative Assembly, 27 June 2007, 1981 (Philip Koperberg, Minister for Climate Change, Environment and Water). The Renewable Energy (New South Wales) Bill 2007 (NSW) is now before the NSW Parliament.

184 Queensland Government, above n 148, 8.

185 Government of Western Australia, *Making Decisions for the Future: Climate Change — The Premier's Climate Change Action Statement* (May 2007) 10 <http://portal.environment.wa.gov.au/pls/portal/url/ITEM/3001844560091406E04010AC6E0528A4>.

186 Jon Stanhope, 'Launch of ACT Climate Change Strategy — Weathering the Change' (Speech delivered at the Launch of the ACT Climate Change Strategy, Canberra, 27 July 2007) <http://chiefminister.act.gov.au/media.php?c=speeches&v=3051&s=3>.

187 *Geothermal Exploration Act 2004* (Qld); *Geothermal Energy Resources Act 2005* (Vic).

Wind farms, along with biomass energy facilities, are also the subject of special planning procedures in NSW and South Australia.[188]

3 *Geosequestration*

In contrast to policies promoting renewable or low-emissions energy sources, regulations supporting geosequestration — also referred to as 'carbon capture and storage' or 'clean coal' — are designed to prolong the life of high emissions sources such as coal by facilitating the development of technological solutions to deal with greenhouse pollution from coal-fired power plants. Geosequestration involves the distillation of the CO_2 produced by a power plant or other industrial processes, its compression into a liquid-like state and the injection of this matter into a stable geological formation deep underground for long-term storage.[189] Given Australia's extensive fossil fuel resources, geosequestration has immense political popularity: it carries the promise of being able to burn coal domestically and export it internationally (in conjunction with clean coal technologies) while minimising accompanying GHG emissions. While geosequestration has received much attention in policy circles and in the media, the technology for large-scale capture and long-term storage of CO_2 is still in an experimental stage and is unlikely to be widely deployed until the second half of the century.[190] Despite this, substantial funds have been set aside by governments to facilitate the development of clean coal technologies and to support geosequestration demonstration projects.[191]

In this respect, the pace of scientific and research development has outstripped the development of a legal framework for geosequestration. The need for a regulatory regime has been recognised by Australian governments who agreed upon a set of regulatory guiding principles in November 2005.[192] Since geosequestration areas may be located either onshore or offshore (and hence within areas of both federal and state jurisdiction), questions immediately arise over jurisdictional responsibility for storage sites. For its part, the federal government has recently enacted the *Offshore Petroleum Amendment (Greenhouse Gas Storage) Act 2008* (Cth) which, through relevant amendments to the *Offshore Petroleum Act 2006* (Cth), is designed to establish a framework for access to offshore geological storage formations and for the creation of property rights for

188 See *Environmental Planning and Assessment Act 1979* (NSW) pt 4; *Plantations and Reafforestation (Code) Regulation 2001* (NSW); *Wind Farms Plan Amendment Report 2003* (SA), inserting objectives and principles into local area development plans — issued under the *Development Act 1993* (SA) pt 3 div 2 — to encourage and guide wind farm development.

189 See House of Representatives Standing Committee on Science and Innovation, Parliament of Australia, *Between a Rock and a Hard Place: The Science of Geosequestration* (2007) 25 <http://www.aph.gov.au/house/committee/scin/geosequestration/report/fullreport.pdf>.

190 Bert Metz et al (eds), Working Group III, IPCC, *IPCC Special Report on Carbon Dioxide Capture and Storage* (2005) 44 <http://www.ipcc.ch/pdf/special-reports/srccs/srccs_wholereport.pdf>.

191 For an outline of the Australian Government's involvement in the area, see Department of the Environment, Water, Heritage and the Arts, Australian Government, *Carbon Dioxide Capture and Storage* (3 December 2008) <http://www.environment.gov.au/settlements/industry/ccs/index.html>.

192 Ministerial Council on Mineral and Petroleum Resources, *Carbon Dioxide Capture and Geological Storage — Australian Regulatory Guiding Principles* (2005) <http://www.ret.gov.au/resources/Documents/ccs/CCS_Aust_Regulatory_Guiding_Principles.pdf>.

GHG injection and storage activities in Commonwealth offshore waters. Mirror legislation has been introduced in Victoria,[193] and that state has also released a discussion paper canvassing a regulatory framework for onshore carbon capture and storage.[194] Other states with regulations covering aspects of geosequestration include South Australia and Queensland. The *Petroleum Act 2000* (SA) and the *Petroleum and Gas (Production and Safety) Act 2004* (Qld) provide for transport of substances including CO_2 by pipeline and their storage in natural reservoirs, regardless of the location of the source or the activity that produced it.

4 *Energy Efficiency Requirements*

While reorientating Australia's energy profile towards one which is less emissions intensive is a key policy priority in the medium- to long-term, many actions can be taken now to improve the efficiency of energy use from existing sources. In this respect, considerable potential exists to enhance energy efficiency in the urban sector through reducing the energy use of buildings (both commercial and residential) and household electrical appliances (refrigerators, washing machines, dryers, air conditioners and so on). Once again, in this area of climate change law the majority of initiatives are contained in state legislation, although the federal government has taken on an important role of coordinating regulatory efforts and facilitating agreement on uniform benchmarks.

With respect to both appliances and buildings, a common approach has been the establishment of minimum energy performance standards. In the case of buildings, minimum energy performance standards for new residential dwellings contained in the *Building Code of Australia*[195] are mandated via legislation in each state and territory.[196] For example, all new homes constructed in Victoria must achieve a five-star energy rating.[197] The *Building Code of Australia* has also been progressively updated to incorporate minimum energy performance standards for other classes of buildings. These standards now apply to classes 2–4 buildings (multi-residential buildings) and classes 5–9 buildings (commercial and public buildings).[198] A major focus of the *Building Code of Australia*

193 *Greenhouse Gas Geological Sequestration Act 2008* (Vic).

194 Department of Primary Industries, Victorian Government, 'A Regulatory Framework for the Long-Term Underground Geological Storage of Carbon Dioxide in Victoria' (Discussion Paper, 2008) <http://www.dpi.vic.gov.au/DPI/dpinenergy.nsf/LinkView/E3451377DF5BCEEDCA2573D0001A7241866B51F390263BA1CA2572B2001634F9>.

195 See generally Australian Building Codes Board, *Building Code of Australia* (2008 ed, first published 1996) vol 1, 437–531; Australian Building Codes Board, *Building Code of Australia* (2008 ed, first published 1996) vol 2, 499–553.

196 For details of the requirements applicable in each state and territory, see House Energy Rating, *The Energy Rating Process* <http://www.houseenergyrating.com/assessor.htm>.

197 Building Commission Victoria, 'Residential Sustainability Measures' (Practice Note No 2008-55, 2008) 1 <http://www.sustainability.vic.gov.au/resources/documents/BC_Practice Notes2008-551.pdf>. Similar provisions have been adopted in the ACT, South Australia and Western Australia.

198 Provisions relating to classes 2–4 buildings were introduced into the *Building Code of Australia* in 2005: Australian Building Codes Board, *Building Code of Australia* (2005 ed, first published 1996) vol 1, 791–3, 795–6. Provisions relating to classes 5–9 buildings followed in 2006: Australian Building Codes Board, *Building Code of Australia* (2006 ed, first published 1996) vol 1, 839; Australian Building Codes Board, 'New Energy Efficiency Measures for Buildings' (Press Release, 25 November 2005) <https://www.abcb.gov.au/index.cfm?objectid=FDB49898-9938-C0FE-60A5BFDF2C296CF5>.

standards is reducing energy consumption from heating and cooling systems through improving building insulation.[199]

In the case of electrical appliances, there have also been moves to introduce regulated minimum energy efficiency standards. Pursuant to a cooperative arrangement between the Commonwealth and the states, uniform standards have been set for ten categories of appliances, including refrigerators and freezers, hot water systems and air conditioners.[200] These standards are made mandatory by legislation and regulations issued in the states and territories.[201] In addition, many electrical appliances are now covered by a mandatory labelling scheme in all states and territories,[202] which is designed to provide information about the energy efficiency of different products and (hopefully) to influence consumers to buy products that use less energy. The label contains a star rating for the product (out of a maximum of six stars) in addition to information on that product's energy consumption (in kilowatt hours per year). Originally introduced in NSW and Victoria in 1986, the use of energy rating labels is now mandatory in all states and territories when offering for sale refrigerators, freezers, dryers, dishwashers and single-phase air conditioners.[203]

D *Climate Change Action at the Local Level*

In contrast to climate change regulatory initiatives implemented regionally, nationally or internationally, which are preoccupied with the issue of emissions mitigation or abatement, the focus of measures undertaken at the local level has tended to be quite different.[204] Whereas mitigation is vitally important in order to reduce ongoing greenhouse pollution, scientific research confirms that some degree of climate change is already inevitable,[205] making adaptation measures 'both urgent and imperative.'[206] Adaptation is a topic naturally suited to consideration at a local level because — while climate change impacts are widely experienced — the benefits of adaptation measures tend to be quite localised (for example, construction of a sea wall at a given beach to reduce coastal erosion due to rising sea levels). In addition, high levels of variability in the manifestation of impacts across different areas, even within the same country or state,

199 See Australian Building Codes Board, *Building Code of Australia*, vol 1, above n 195, 437–48; Australian Building Codes Board, *Building Code of Australia*, vol 2, above n 195, 501–26.

200 See further Department of the Environment, Water, Heritage and the Arts, Australian Government, *Overview of Regulatory Requirements — Labelling and MEPS* (6 January 2009) www.energyrating.gov.au <http://www.energyrating.gov.au/man1.html>.

201 See Lyster and Bradbrook, above n 24, 177–8.

202 See, eg, Department of the Environment, Water, Heritage and the Arts, Australian Government, *Overview of Regulatory Requirements*, above n 200.

203 Lyster and Bradbrook, above n 24, 175–7.

204 This is not to say that adaptation to climate change has been neglected by international, federal or state regulatory authorities. Nevertheless, the allocated funding tends to be modest when compared with that made available for mitigation efforts, and much of the adaptation activity at the national/state level has been focused on vulnerability assessment and research rather than action: Jan McDonald, 'The Adaptation Imperative: Managing the Legal Risks of Climate Change Impacts' in Tim Bonyhady and Peter Christoff (eds), *Climate Law in Australia* (2007) 124, 128.

205 IPCC, above n 9, 19–20.

206 McDonald, 'The Adaptation Imperative', above n 204, 124.

militate in favour of tailored, local responses. Consequently, climate change adaptation is becoming an important element of the planning and decision-making processes of local governments in Australia, as well as of entities affected by these processes such as development agencies, property developers, financiers and insurers.

A particular focus of local government planning with respect to climate change adaptation has been the potential impacts on coastal areas associated with rising sea levels. The IPCC advised in its *IPCC Fourth Assessment Report* that '[s]ea level rise under warming is inevitable … [and] would continue for many centuries after GHG concentrations have stabilised'.[207] For local councils, this raises the need to consider implementing strategies such as sea walls and additional sand pumping to protect beach areas. In the long-term, it also poses a legal liability risk for councils if they approve developments without adequate regard for future climate change impacts such as flooding or land erosion. Indeed, Jan McDonald argues that local governments may be particularly vulnerable to litigation brought by property owners affected by climate change as these bodies will generally be easier to identify and link to the harm suffered than the entities whose pollution contributed to particular impacts.[208]

Perhaps with one eye to their future legal liability, councils around Australia are beginning to introduce planning measures and development conditions designed to ensure adaptation to climate change impacts, ranging from rising sea levels and increased coastal erosion to a greater frequency of cyclones and bushfires.[209] These measures may limit, quite substantially in some cases, the capacity of property owners to develop their land as they wish. Unsurprisingly, the measures have not gone unchallenged, with a number of cases coming before planning and environmental courts. The decisions in these cases contribute to a growing body of climate change law dealing with the permissible scope of adaptation strategies at the local level.

One such recent case, *Charles & Howard Pty Ltd v Redland Shire Council*,[210] which was subsequently appealed to the Supreme Court of Queensland, involved an application to fill land that was approved by the Redland Shire Council subject to a condition requiring works to be undertaken only in an area above the 1-in-100-year flood level. The applicant's original appeal against the condition was rejected by the Queensland Planning and Environment Court ('QPEC') on the basis, inter alia, of its construction of the relevant planning instruments in light of evidence of the potential impacts of climate change on predicted future

207 IPCC, above n 9, 20.

208 McDonald, 'The Adaptation Imperative', above n 204, 134. Actions in tort brought against public authorities raise a number of complex issues which are beyond the scope of this article, but see generally Susan Kneebone, *Tort Liability of Public Authorities* (1998).

209 For a case study of measures introduced by the Byron Shire Council in NSW, see McDonald, 'The Adaptation Imperative', above n 204. McDonald also provides an overview of Queensland policies and measures: Jan McDonald, 'A Risky Climate for Decision-Making: The Liability of Development Authorities for Climate Change Impacts' (2007) 24 *Environmental and Planning Law Journal* 405, 407–10.

210 [2007] QPELR 58.

sea levels.[211] The *Redland Shire Strategic Plan 1998* (Qld) included a provision stating that:

> At the time urban development is proposed in these adjacent areas, [including the land the subject of the application,] it will be necessary to establish the appropriate width of land to be retained in its natural state along the coastline so as to comply with the requirements of the [*Coastal Protection and Management Act 1995* (Qld)] and any associated planning documents, [and] to take into consideration sea level changes which may result from changes in climatic conditions …[212]

The Supreme Court of Queensland found that the judge of the QPEC was

> entitled, as he did, to take into account, by way of para 4.4.3 of the 1998 strategic plan, the impact of climate change on sea levels on the area proposed to be filled by the applicant and on the area proposed by the Council in its disputed condition, and to accept Dr Connor's opinion that the applicant's proposed building site may be vulnerable to rising sea levels because of climate change, thereby supporting the reasonableness of the condition imposed on the development approval by the Council.[213]

The judgment in another recent case, this time before the Land and Environment Court of New South Wales ('NSWLEC'), is even more emphatic as to the importance of factoring future climate change into local development-related decision-making. The case of *Walker v Minister for Planning* ('*Walker*') concerned a concept plan for residential subdivision and a retirement development on coastal plain land north of Wollongong.[214] The Planning Minister's approval of the plan was challenged by the applicant on various grounds including that the Minister failed to take account of mandatory considerations, namely, ecologically sustainable development ('ESD') and the impacts of the proposal on the environment, including whether the flooding impacts of the proposal would be compounded by climate change. In the voluminous documentation presented to the Minister as part of the approval process, there was no mention made of increased flood risk consequent upon climate change, suggesting that the relevance of this consideration was not assessed by decision-makers.[215]

At first instance, following an extensive review of the scientific evidence supporting the occurrence of global warming and the need to adapt to climate change, Biscoe J turned to the question of whether the Minister had failed to take account of ESD through the absence of any consideration of climate change-related flood risks. His Honour remarked that climate change was a 'deadly serious issue' and that '[c]limate change flood risk is, prima facie, a risk that is potentially relevant to a flood constrained, coastal plain development'.[216] Whether climate change flood risk was a relevant consideration in the case at

211 Ibid 60–2 (Brabazon DCJ).

212 *Redland Shire Strategic Plan 1998* (Qld) para 4.4.3 <http://www.redland.qld.gov.au/SiteCollectionDocuments/_RSC/RSC%20Documents/Planning/Strategic%20Plan%20-%20Gazetted%20Feb%201998.pdf>.

213 *Charles & Howard Pty Ltd v Redland Shire Council* (2007) 159 LGERA 349, 359 (McMurdo P).

214 (2007) 157 LGERA 124, 132 (Biscoe J).

215 Ibid 191.

216 Ibid.

hand turned on 'the subject matter, scope and purpose'[217] of the relevant NSW planning legislation. Biscoe J held that:

> There may be found in the subject matter, scope and purpose of this legislative scheme, as with nearly every statute conferring power to make an administrative decision, an implication that the decision is to be made on the basis of the most current material available to the decision-maker which has a direct bearing on the justice of the decision. So too, in my opinion, with the deadly serious issue of climate change, which has loomed ever larger in the public and political eye for years.[218]

In the context of the project at issue, the Court found that climate change flood risk could be described as 'an aspect of the public interest that potentially has a direct bearing on the justice of the decision', making it a relevant consideration in decision-making.[219] Consequently, the Minister's failure to assess the potential relevance of climate change flood risk and, if relevant, to take this risk into account when deciding whether to approve the development concept plan rendered the original approval void.

However, the case was appealed to the NSW Court of Appeal, which overturned Biscoe J's decision. The Court of Appeal ruled that whilst the 'public interest' was an implied mandatory consideration in decision-making under Part 3A of the *Environmental Planning and Assessment Act 1979* (NSW), ESD principles were not.[220] Accordingly, the failure to consider ESD principles via the examination of climate change flood risk was only a factor going to the adequacy of the 'public interest' consideration on the merits and not susceptible to judicial review. Nevertheless, the majority of the Court of Appeal also emphasised the importance of ESD principles to such decisions. The Court noted that a very serious failure to consider certain relevant aspects of the public interest might be evidence of a failure to consider the public interest altogether.[221] The majority judgment hinted that the final approval for the development would require consideration of ESD principles as a condition of validity,[222] which suggests that the threshold for such invalidity is high, but not unattainable.

Reliance on ESD concepts to require a consideration of future climate change impacts was also a feature of a decision issued by the Victorian Civil and Administrative Tribunal ('VCAT') in late July 2008. In *Gippsland Coastal Board v South Gippsland Shire Council [No 2]* ('*Gippsland Coastal Board*'), VCAT refused consent for residential developments in a low-lying coastal region.[223] The local council had previously approved permits for six residential developments in the Grip Road area of Toora, an area zoned for agricultural and

217 Ibid.
218 Ibid (citations omitted).
219 Ibid 192 (Biscoe J).
220 *Minister for Planning v Walker* (2008) 161 LGERA 423, 450–4 (Hodgson J). Campbell and Bell JA agreed: at 455.
221 Ibid 454 (Hodgson J). Campbell JA agreed: at 455. Bell JA reserved her opinion on this aspect: at 455.
222 Ibid 454–5 (Hodgson J). Campbell JA agreed: at 455. Bell JA reserved her opinion on this aspect: at 455.
223 [2008] VCAT 1545 (Unreported, Gibson DP and Member Potts, 29 July 2008).

mixed land uses. The Tribunal's refusal was primarily based on inconsistency with zoning and planning controls. Importantly, however, VCAT also applied precautionary ESD principles to find that development consent should not be granted in view of the 'reasonably foreseeable risk of inundation' to the land and proposed dwellings due to sea level rise induced by climate change.[224] This was despite the absence of specific provisions in the Victorian planning legislation requiring consideration of sea level risk. The Tribunal stated:

> We accept that there is growing evidence of sea level rises and risks of coastal inundation. While we acknowledge that there is uncertainty as to the magnitude of the sea level rise, it is evident that the consequences of such rises in level will be complex due to the dynamic nature of the coastal environment. Put plainly, rising sea levels are to be expected. The range of impacts may well be beyond the predictive capability of current assessment techniques. In the face of such evidence, a course of action is warranted to prevent irreversible or severe harm.[225]

Cases such as *Walker* and *Gippsland Coastal Board* are still few and far between, and the imperative for climate change adaptation planning and development has certainly not been accepted by all local governments and planning authorities. Nevertheless, the currency of global warming issues and the consolidation of scientific data on future impacts mean that climate change considerations are increasingly likely to be seen as relevant, if not essential, to local government environmental assessment processes. The emerging trend to consider climate change risks within the broader ambit of ESD is also significant given the overarching role played by ESD in planning and environmental laws. Thus, as McDonald notes:

> Like the tail-effect of greenhouse gas emissions, legal claims may be slow to gestate. But the law has a long memory, so courts of the future will reflect on the state of knowledge currently at hand to determine whether decision-makers of today did enough to avoid or minimise the worst exposures to climate change.[226]

E *Contribution of the Courts to Climate Change Law*

Although litigation over (mal)adaptation to climate change may not reach its peak until many years into the future, cases brought in an effort to abate current greenhouse emissions from activities such as coal mines and coal-fired power stations have already made a significant contribution to the development of climate change law in Australia and abroad.[227] The turn to the courts is largely a

224 Ibid [45].
225 Ibid [42].
226 McDonald, 'A Risky Climate for Decision-Making', above n 209, 406.
227 Climate change litigation has been particularly important in the US, where the federal administration has failed to take mandatory action to address climate change impacts. For reviews of the case law, see Justin R Pidot, Georgetown Environmental Law & Policy Institute, *Global Warming in the Courts: An Overview of Current Litigation and Common Legal Issues* (2006) <http://www.law.georgetown.edu/gelpi/current_research/documents/GlobalWarmingLit_CourtsReport.pdf>; Lyster, 'Chasing Down the Climate Change Footprint' (Pt 1), above n 45, 301–4.

consequence of inaction on climate change at the national level (at least until the end of 2007),[228] which led environmental groups and others to explore non-legislative solutions such as litigation to the problem of global warming. Climate change litigation (seeking redress for damage arising from human activities said to be causing climate change) may take a range of forms. For example, private law actions may be brought in negligence or nuisance against large industrial polluters.[229] In Australia, the more common approach has been to bring public law actions for judicial or merits review, challenging government decision-making on the basis that environmental impact studies for particular developments have inadequately considered potential climate change impacts.[230]

To date, there have been seven principal cases decided by Australian courts across the country addressing the global warming impacts of proposed developments:[231]

- *Australian Conservation Foundation v Latrobe City Council* ('*Hazelwood*')[232] in VCAT;
- *Gray v Minister for Planning* ('*Anvil Hill*')[233] in the NSWLEC;
- *Wildlife Preservation Society of Queensland Proserpine/Whitsunday Branch Inc v Minister for the Environment and Heritage* ('*Wildlife Whitsunday*')[234] in the Federal Court of Australia;
- *Thornton v Adelaide Hills Council* ('*Thornton*')[235] in the Environment, Resources and Development Court of South Australia;

228 Bonyhady and Christoff, above n 5, 3.

229 This has been the route pursued in many of the cases in the US. For a recent, albeit unsuccessful, example involving an action in nuisance brought by the State of California against six leading US and Japanese car manufacturers, see *California v General Motors Corporation*, No C06-05755 MJJ (ND Cal, 17 September 2007).

230 Detailed reviews of the factual backgrounds and findings in these cases have been undertaken elsewhere: see, eg, *Walker* (2007) 157 LGERA 124, 181–5 (Biscoe J); Jacqueline Peel, 'The Role of Climate Change Litigation in Australia's Response to Global Warming' (2007) 24 *Environmental and Planning Law Journal* 90; Joseph Smith and David Shearman, *Climate Change Litigation: Analysing the Law, Scientific Evidence & Impacts on the Environment, Health and Property* (2006); Lyster, 'Chasing Down the Climate Change Footprint' (Pt 1), above n 45, 304–9; Fisher, 'The Statutory Relevance of Greenhouse Gas Emissions', above n 23, 226–35; Charles Berger, 'Hazelwood: A New Lease on Life for a Greenhouse Dinosaur' in Tim Bonyhady and Peter Christoff (eds), *Climate Law in Australia* (2007) 161; David Farrier, 'The Limits of Judicial Review: *Anvil Hill* in the Land and Environment Court' in Tim Bonyhady and Peter Christoff (eds), *Climate Law in Australia* (2007) 189; Judith Jones, 'Global or Local Interests? The Significance of the Taralga Wind Farm Case' in Tim Bonyhady and Peter Christoff (eds), *Climate Law in Australia* (2007) 262; Chris McGrath, 'The Xstrata Case: Pyrrhic Victory or Harbinger?' in Tim Bonyhady and Peter Christoff (eds), *Climate Law in Australia* (2007) 214; Anna Rose, '*Gray v Minister for Planning*: The Rising Tide of Climate Change Litigation in Australia' (2007) 29 *Sydney Law Review* 725; Kirsty Ruddock, 'The Bowen Basin Coal Mines Case: Climate Law in the Federal Court' in Tim Bonyhady and Peter Christoff (eds), *Climate Law in Australia* (2007) 173; McGrath, 'Regulating Greenhouse Gas Emissions from Australian Coal Mines', above n 120, 248–54.

231 The NSWLEC also heard an early case raising issues of GHG emissions in *Greenpeace Australia Ltd v Redbank Power Co Pty Ltd* (1994) 86 LGERA 143.

232 (2004) 140 LGERA 100.

233 (2006) 152 LGERA 258.

234 (2006) 232 ALR 510.

235 (2006) 151 LGERA 1.

- *Taralga Landscape Guardians Inc v Minister for Planning* ('*Taralga*')[236] in the NSWLEC;
- *Drake-Brockman v Minister for Planning* ('*Drake-Brockman*')[237] in the NSWLEC; and
- *Re Xstrata Coal Queensland Pty Ltd* ('*Xstrata* (first instance)')[238] in the Land and Resources Tribunal of Queensland ('QLRT') and *Queensland Conservation Council Inc v Xstrata Coal Queensland Pty Ltd* ('*Xstrata* (appeal)')[239] in the Queensland Court of Appeal.

It is fair to say that the outcomes of the cases have been less than salutary as none has brought about a substantial reduction in greenhouse emissions, for example, by halting development of a new coal mine.[240] Nonetheless, for our purposes, what is important are the principles that these cases have established and their overall contributions to developing a legal culture more aware of the need to factor climate change considerations into environmental decision-making.[241] Therefore, while recognising the different nature of the actions brought and the role of particular legislation and policies in determining outcomes, there is a need to look for 'common features' in the case law, identifying 'issues, principles and approaches that apply across the climate law domain in Australia.'[242]

1 *Establishing a Causal Link*

One of the most critical issues to emerge from the case law is the question of causation. The issue is often framed in the following way: the development at issue (for example, a coal mine) will produce substantial GHG emissions, but in the context of the *global* problem of climate change is this a *significant* environmental impact? The question arises because it is generally only significant (or nontrivial) impacts that must be accounted for and assessed in environmental decision-making processes.[243] Hence, if one takes a global view, a coal mine such as that in issue in *Anvil Hill* — capable of producing up to 10.5 million tonnes of coal annually[244] with greenhouse emissions averaging 12 414 387 tonnes of CO_2 equivalent per annum[245] — may have a substantial local impact, but yet make a relatively minimal contribution to overall warming (the Anvil Hill mine was estimated to contribute per annum the equivalent of 0.04 per cent of

236 (2007) 161 LGERA 1.
237 (2007) 158 LGERA 349.
238 [2007] QLRT 33 (Unreported, Koppenol P, 15 February 2007).
239 (2007) 155 LGERA 322.
240 Tim Bonyhady, 'The New Australian Climate Law' in Tim Bonyhady and Peter Christoff (eds), *Climate Law in Australia* (2007) 8, 20–4.
241 This is so even though such consideration may not import a precise obligation, for example, to consider a quantitative assessment of GHG emissions: see *Drake-Brockman* (2007) 158 LGERA 349, 387–8 (Jagot J).
242 Bonyhady, above n 240, 13.
243 Ian Thomas and Mandy Elliott, *Environmental Impact Assessment in Australia: Theory & Practice* (4th ed, 2005) 140.
244 Farrier, 'The Limits of Judicial Review', above n 230, 189.
245 Ibid 208 fn 4.

the world's greenhouse emissions).[246] On the other hand, an evaluation of the 'significance' of an impact need not be merely quantitative.[247] In the context of an urgent environmental problem with potentially dire impacts for Australia and the globe, any contribution through the production of additional GHGs may be regarded as significant, provided evidence of that contribution can be put before the court.[248]

In two of the Australian cases litigated to date, courts have been prepared to rule in favour of a consideration of potential climate change impacts. In an early case involving an extension of the life of the coal-fired Hazelwood Power Station, VCAT was required to rule as to whether the environmental impacts of GHGs that would be generated by the continuation of the power plant were relevant to making an amendment to a planning scheme necessary to authorise the proposal. In finding that such matters were relevant, Morris J, the President of VCAT, held that approval of the planning scheme amendment would

> make it more probable that the Hazelwood Power Station will continue to operate beyond 2009; which, in turn, may make it more likely that the atmosphere will receive greater greenhouse gas emissions than would otherwise be the case; which may be an environmental effect of significance.[249]

In *Anvil Hill*, Pain J of the NSWLEC more extensively considered the causation issue in the context of a requirement for 'a detailed greenhouse gas assessment'[250] in the environmental impact assessment ('EIA') mandated for a new coal mine — the Anvil Hill Project.[251] Her Honour accepted the applicant's argument that GHG emissions from the burning of coal to be extracted from the new mine should have been considered in the proponent's environmental assessment because of the potential contribution to climate change.[252] Importantly, this finding was partly based on her Honour's view that, notwithstanding the global nature of climate change and the many contributing sources, the contribution from a single large source, such as the Anvil Hill Project in the NSW context, should not be ignored.[253] Consequently, her Honour ruled that

> there is a sufficiently proximate link between the mining of a very substantial reserve of thermal coal in NSW, the only purpose of which is for use as fuel in power stations, and the emission of GHG which contribute to climate change/global warming, which is impacting now and likely to continue to do so on the Australian and consequently NSW environment, to require assessment of that GHG contribution of the coal when burnt in an environmental assessment …[254]

246 Ibid 203.
247 *Booth v Bosworth* (2001) 114 FCR 39, 65 (Branson J).
248 The lack of such evidence was a problem in *Thornton* (2006) 151 LGERA 1, 13 (Trenorden J, Mosel and Agnew CC) in considering the approval given to a coal-fired boiler.
249 *Hazelwood* (2004) 140 LGERA 100, 110.
250 *Anvil Hill* (2006) 152 LGERA 258, 275.
251 Ibid 284–8.
252 Ibid 287.
253 Ibid.
254 Ibid 288.

The approach of the *Hazelwood* and *Anvil Hill* cases to the causation issue seems to be reflective of a broader, global trend in climate change litigation. For instance, in the recent decision of the US Supreme Court in *Massachusetts v Environmental Protection Agency*, a majority of the Court accepted that a sufficient causal link existed between greenhouse emissions from cars in the US and global climate change to warrant regulation of those emissions by the Environmental Protection Agency.[255] In the view of the majority, the US transportation sector's six per cent contribution to CO_2 emissions worldwide was 'a meaningful contribution to greenhouse gas concentrations and hence … to global warming.'[256] Accordingly, while regulating vehicle emissions alone would not reverse global warming, it 'would slow the pace of global emissions increases, no matter what happens elsewhere.'[257]

Despite these developments, some Australian judges continue to be impressed by the argument of a *de minimis* causal link in the context of the worldwide problem of climate change.[258] One such judgment was given by Dowsett J in the *Wildlife Whitsunday* case, which involved a challenge to decision-making of the federal Minister for the Environment, Heritage and the Arts on the basis of his failure to consider adequately the environmental impact of two new coal mines in the Bowen Basin. In a pivotal paragraph of the judgment in that case, his Honour stated:

> I have proceeded upon the basis that greenhouse gas emissions consequent upon the burning of coal mined in one of these projects might arguably cause an impact upon a protected matter, which impact could be said to be an impact of the proposed action. … However I am far from satisfied that the burning of coal at some unidentified place in the world, the production of greenhouse gases from such combustion, its contribution towards global warming and the impact of global warming upon a protected matter, can be so described.[259]

It should be borne in mind that Dowsett J's decision was issued against the backdrop of the *EPBC Act*, which requires the demonstration of a project's likely, significant impact on a matter of national environmental significance protected by the Act (in this case, the World Heritage List's Great Barrier Reef). Given the absence of a 'greenhouse trigger' in the *EPBC Act*, an extra step in the reasoning process is required to establish not just that GHG emissions from a development will have environmental impacts, but also that those environmental impacts will have significant consequences for areas protected under the *EPBC Act*. Arguably, the narrower scope of environmental assessment under the *EPBC Act*, compared with equivalent processes under state legislation,[260] makes the *Wildlife Whitsunday* decision distinguishable. Moreover, the sceptical tone of

255 549 US 497, 523–5 (Stevens J for Stevens, Kennedy, Souter, Ginsburg and Breyer JJ) (2007). Roberts CJ, with whom Scalia, Thomas and Alito JJ joined, dissented: at 542–5.
256 Ibid 525 (Stevens J for Stevens, Kennedy, Souter, Ginsburg and Breyer JJ).
257 Ibid 526.
258 See also *Xstrata* (first instance) [2007] QLRT 33 (Unreported, Koppenol P, 15 February 2007) [12]; *Anvil Hill Project Watch Association Inc v Minister for the Environment and Water Resources* (2007) 243 ALR 784, 794 (Stone J).
259 *Wildlife Whitsunday* (2006) 232 ALR 510, 524 (Dowsett J).
260 See, eg, *Environmental Effects Act 1978* (Vic).

Dowsett J's judgment hints that other factors may have been at work. For instance, Rosemary Lyster questions whether the difference in approach between the *Wildlife Whitsunday* decision and other climate change cases such as the *Anvil Hill* decision may 'be accredited to the fact that the NSW Land and Environment Court is a specialist court which has a history of advancing the goals of ecologically sustainable development, unlike the Federal Court'.[261]

2 *Indirect and Cumulative Impacts*

Related to the question of causation in climate change litigation is the issue of the extent of likely global warming impacts that must be assessed when considering a particular development proposal. For instance, in the case of a proposed new coal mine greenhouse emissions will be produced during construction and operation of the mine itself. However, the majority of a coal mine's climate change impacts will arise from downstream, offsite processes when the coal is burned to generate power.[262] As highlighted earlier, under existing reporting requirements and the proposed national emissions trading scheme, such *indirect* impacts of coal mines are not caught.[263] Nevertheless, the question arises as to whether, when assessing a coal mine proposal at the planning stage, these impacts ought to be a factor in the decision-making process.

In broader environmental law in Australia, there has been a movement to extend EIA requirements to encompass the indirect (or downstream) impacts of a proposal, provided such impacts are not 'in the realm of speculation'.[264] In some of the climate change cases, courts have taken up this line of reasoning to find that the impacts of a proposed development extend to its downstream effects, including any impact on global warming. For instance, in the *Hazelwood* case, in the context of review of amendments to a planning scheme, Morris J reasoned that a submission raising possible climate change impacts would still be relevant to consider 'even if it relates to an *indirect* effect of the [planning scheme] amendment'.[265] The test his Honour proposed in respect of the necessary nexus between the amendment and the environmental effect asked

> whether the effect may flow from the approval of the amendment; and, if so, whether, having regard to the probability of the effect and the consequences of the effect (if it occurs), the effect is significant in the context of the amendment.[266]

In some cases, the indirect impacts of a proposal may only be judged to be significant if considered in light of other existing and proposed developments that may also contribute to an environmental problem. General environmental

261 Lyster, 'Chasing Down the Climate Change Footprint' (Pt 1), above n 45, 306 (citations omitted).

262 McGrath, 'Regulating Greenhouse Gas Emissions from Australian Coal Mines', above n 120, 241.

263 See above Part III(B)(3)(a).

264 *Minister for Environment and Heritage v Queensland Conservation Council Inc* (2004) 139 FCR 24, 40 (Black CJ, Ryan and Finn JJ). On the issue of indirect impacts, see generally Peel and Godden, 'Australian Environmental Management', above n 146, 682–9.

265 (2004) 140 LGERA 100, 109 (emphasis added).

266 Ibid. See also *Anvil Hill* (2006) 152 LGERA 258, 285–6 (Pain J).

law is unclear on the question of whether environmental assessment processes encompass a consideration of *cumulative* impacts of this kind.[267] Arguably, since climate change results from the accumulated impact of many activities, each resulting in the production of GHGs, a holistic approach to environmental assessment is vital to appropriate management of the problem. By the same token, however, legal approval processes operate on a project-by-project basis, with a reluctance to make one entity bear the cost of the environmental impact caused by another.

These conflicting arguments on the issue of the relevance of cumulative climate change impacts to environmental assessment have manifested themselves in the case law, resulting in different decisions in different disputes. The *Anvil Hill* case strongly supports the need to assess the cumulative environmental impacts of a proposal on the basis that

> failure to consider cumulative impact will not adequately address the environmental impact of a particular development where often no single event can be said to have such a significant impact that it will irretrievably harm a particular environment but cumulatively activities will harm the environment.[268]

By contrast, the Federal Court was more wary when the issue was raised in the context of judicial review of the decision of the federal Minister for the Environment, Heritage and the Arts not to require an environmental assessment for the Anvil Hill Project under the *EPBC Act*. In the case of *Anvil Hill Project Watch Association Inc v Minister for the Environment and Water Resources*, the applicant sought to argue that a contribution of 0.04 per cent to global greenhouse emissions could still be significant if assessed in the context of the impact of other potential actions.[269] However, Stone J questioned the viability of an approach that requires 'assessing a proposed action in the context of hypothetical/potential actions.'[270] Consequently, her Honour ruled that the *EPBC Act*

> does not prescribe the frame of reference by which the minister is to assess the significance or substantiality of an impact upon a protected matter. It contains no requirement that such assessment be confined to a comparison with other, hypothetical, proposed actions. … As such, the delegate was entitled to assess the significance and substantiality of the impact of the proposal as a whole rather than merely in comparison with other potential actions.[271]

267 See Lee Godden and Jacqueline Peel, 'The *Environment Protection and Biodiversity Conservation Act 1999* (Cth): Dark Sides of Virtue' (2007) 31 *Melbourne University Law Review* 106, 128–31.

268 (2006) 152 LGERA 258, 293 (Pain J).

269 (2007) 243 ALR 784. An appeal against this decision on unrelated grounds was dismissed by the Full Federal Court in *Anvil Hill Project Watch Association Inc v Minister for the Environment and Water Resources* (2008) 166 FCR 54.

270 *Anvil Hill Project Watch Association Inc v Minister for the Environment and Water Resources* (2007) 243 ALR 784, 795.

271 Ibid.

3 *Role of Environmental Principles*

One of the most important contributions made by the climate change case law has been to give new life and meaning to the principles of ESD.[272] Since the early 1990s, these principles have animated much of environmental law in Australia, forming the objectives of many statutes in the field.[273] They include foundational concepts such as the need for integration of environmental considerations into development-related decision-making (the 'integration principle'), a requirement to consider the interests of future generations in making decisions that affect environmental resources (the 'principle of intergenerational equity') and the directive not to postpone measures to prevent harm where threats of serious or irreversible environmental damage exist simply on the basis of scientific uncertainty (the 'precautionary principle').[274] While these principles are widely adopted in environmental law, only the precautionary principle has been subject to sustained judicial consideration, and, even in respect of this principle, the case law has not yielded a clear answer to the question of what is required for its implementation.[275] Climate change cases, however, are providing the courts in Australia with an opportunity to put flesh on the bones of key ESD principles such as the intergenerational equity and precautionary principles.[276] This practice stands to make a contribution not only to the ongoing development of climate change law, but also to the broader fields of environmental and planning law.

(a) The Anvil Hill *Case*

The case that has done the most to elaborate ESD principles in a climate change context is the *Anvil Hill* decision.[277] Pain J's judgment contains a detailed consideration of the intergenerational equity and precautionary principles, elaborating the role they play in structuring processes of EIA undertaken for developments with potential global warming effects. The case, brought by a local environmental activist, challenged the EIA produced for a proposed mine — the Anvil Hill Project — on the basis that the documentation exhibited publicly did not contain an assessment of indirect GHG emissions associated with burning of the coal that would be harvested from the mine. Pain J found that ESD principles were relevant to her Honour's review by way of considering the objects of the state planning legislation, which included a direction to encourage ESD.[278]

272 Bonyhady, above n 240, 19–20.

273 For a list of statutes with ESD objectives, see Jacqueline Peel, 'Ecologically Sustainable Development: More than Mere Lip Service?' (2008) 12 *Australasian Journal of Natural Resources Law and Policy* 1, 27–34.

274 *Intergovernmental Agreement on the Environment* (1992) s 3.5. See also the guiding principles of the Ecologically Sustainable Development Steering Committee, *National Strategy for Ecologically Sustainable Development* (1992) 8.

275 See generally Jacqueline Peel, *The Precautionary Principle in Practice: Environmental Decision-Making and Scientific Uncertainty* (2005).

276 In addition to *Anvil Hill* (2006) 152 LGERA 258 and *Taralga* (2007) 161 LGERA 1, discussed below in Parts III(E)(3)(a)–(b), see also *Hazelwood* (2004) 140 LGERA 100, 109 (Morris J); *Thornton* (2006) 151 LGERA 1, 12–13 (Trenorden J, Mosel and Agnew CC).

277 (2006) 152 LGERA 258.

278 Ibid 291.

Pain J's starting point in considering the adequacy of the environmental assessment of the mine in ESD terms was the informative function of an EIA process. As is widely accepted in the case law and literature concerning EIA, environmental assessment of development projects is not intended to introduce an environmental 'veto' power into the decision-making process.[279] Rather, the 'key purpose' of an EIA

> is to provide information about the impact of a particular activity on the environment to a decision maker to enable him or her to make an informed decision based on adequate information about the environmental consequences of a particular development.[280]

According to Pain J, when this function was considered in the context of the core ESD requirements of intergenerational equity and precaution, it dictated the provision of certain types of information in the EIA process.[281] For instance, her Honour held that one important factor in an EIA which takes into account the intergenerational equity principle 'must be the assessment of cumulative impacts of proposed activities on the environment.'[282] Her Honour went on to find that there had been a failure to take account of the principle of intergenerational equity in the EIA for the mine, given the omission of a requirement to assess the major component of GHG resulting from use of the coal, namely, indirect emissions.[283]

Likewise, in considering the impact of the precautionary principle, Pain J linked this to the process of EIA by highlighting that an environmental assessment appropriate for precautionary decision-making purposes requires the provision of information to enable consideration of the scientific uncertainties over any serious or irreversible environmental threat that has been identified.[284] As with the intergenerational equity principle, the kind of knowledge of impacts that would be required to make a decision in relation to a proposed project involving the release of GHGs included information about impacts that are 'cumulative, on going and long term.'[285] Provided with this information, the Minister is then able to determine whether there are measures they should consider to prevent environmental degradation flowing from a particular project. However, in the absence of such information being provided in the Anvil Hill Project EIA, Pain J found that there was a failure to take into account the precautionary principle when it was determined that the proponent's environmental assessment was adequate for public release.[286]

The 'key message' that emerges from the *Anvil Hill* decision is an insistence, on the basis of ESD requirements, that the climate change impacts of proposals — albeit long-term, cumulative and subject to some level of uncertainty —

279 Thomas and Elliott, above n 243, 10.
280 *Anvil Hill* (2006) 152 LGERA 258, 293 (Pain J).
281 Ibid.
282 Ibid.
283 Ibid 294.
284 Ibid 295–6.
285 Ibid 296.
286 Ibid 296–7.

'should be properly considered and assessed, rather than overlooked.'[287] In that vein, Pain J emphasised that

> [s]imply raising an issue such as climate change/global warming is unlikely to satisfy a requirement that intergenerational equity or the precautionary principle has been considered in the absence of any analysis of the impact of activities which potentially contribute in the NSW context in a substantial way to climate change/global warming.[288]

Her Honour did not go on to elaborate on the required depth of analysis or the mitigation measures that might be deemed acceptable.[289] Nevertheless, the link drawn between the process of EIA and legislative ESD objectives offers new avenues for questioning the adequacy of environmental assessments of projects with potential global warming impacts where assessments do not include information on long-term and cumulative impacts, or the scientific uncertainties surrounding such impacts.[290]

(b) The Taralga *Case*

Whereas the *Anvil Hill* decision focused on the intergenerational equity implications of a project increasing GHG emissions, the *Taralga* case extends this reasoning to a consideration of the positive intergenerational impacts of renewable energy projects that will reduce GHG emissions.[291] At issue in the *Taralga* case was a proposed wind farm comprising 62 turbines. The proposal was opposed by local residents and landowners who objected to its potential impacts on amenity and environment, such as blighting of the landscape, aesthetic impacts, noise emissions and impact on flora and fauna.[292] The objectors brought a merits appeal against approval of the wind farm before the NSWLEC, which reconsidered the original decision, including the relevance of ESD principles to the decision-making process.

Preston CJ conceived of the dispute as requiring a weighing of the geographically narrower concerns raised by the objectors, versus the global effects of climate change, which the establishment of renewable energy facilities would help to ameliorate.[293] In this respect, his Honour came down on the side of the 'broader public good'[294] represented by attempts to address the global problem, citing the principle of intergenerational equity as a key consideration.[295] In particular, the attainment of intergenerational equity in the production of energy was said to involve a requirement,

287 Annette Hughes and Julie-Anne Pearce, Allens Arthur Robinson, *Climate Change Litigation — Environmental Impact Assessment Must Properly Address Greenhouse Gas Emissions* (December 2006) Focus: Corporate Responsibility <http://www.aar.com.au/pubs/ldr/focrdec06.htm>.

288 *Anvil Hill* (2006) 152 LGERA 258, 297.

289 Hughes and Pearce, above n 287.

290 Indeed, Pain J stressed that even where uncertainties make it difficult to quantify an impact with precision, this does not relieve the obligation to make a credible attempt at assessment: *Anvil Hill* (2006) 152 LGERA 258, 297.

291 Rose, above n 230, 733.

292 *Taralga* (2007) 161 LGERA 1, 15–17 (Preston CJ).

293 Ibid 3.

294 Ibid.

295 Ibid 12.

> as far as is practicable, to increasingly substitute energy sources that result in less greenhouse gas emissions for energy sources that result in more greenhouse gas emissions, thereby reducing the cumulative and long-term effects caused by anthropogenic climate change. In this way, the present generation reduces the adverse consequences for future generations.[296]

The result was that the full project as originally planned was permitted to proceed. The case provides an important signal that the long-term, broader scale thinking inherent in the intergenerational equity principle is likely to be a critical factor in future wind farm cases, tipping the balance in favour of the global interest in reducing greenhouse pollution. Nonetheless, the Court noted that opposition to the proposal by those representing local interests had resulted in a better development with greater environmental protection.[297] This included a condition providing a 'public "right to know"' as the development unfolded,[298] together with a range of measures founded on the precautionary principle.[299] The latter extended to adaptive strategies designed to respond to any occurrences of threats to flora or grasslands if subsequently discovered during construction of the wind farm.[300]

4 *A Lingering Issue: Scientific Proof of Climate Change*

The majority of climate change cases in Australia have proceeded on the basis that climate change is a real and serious problem, often citing international documents such as the reports of the IPCC and the *Stern Review*. However, climate change scepticism remains a lingering issue, in some cases resulting in a judicial reluctance to acknowledge that projects may have global warming effects and/or that their environmental impacts are sufficiently and substantially linked to climate change phenomena such as coral bleaching, rising sea levels and increased temperatures.

Some degree of climate change scepticism would seem to have been a factor in the case of *Wildlife Whitsunday* discussed above.[301] Commenting that there had been no 'attempt to identify the extent (if any) to which emissions from [the proposed] mining, transportation and burning [of coal] might aggravate the greenhouse gas problem',[302] Dowsett J disparaged the applicant's case as 'really based upon the assertion that greenhouse gas emission is bad, and that the Australian government should do whatever it can to stop it including, one assumes, banning new coal mines in Australia.'[303] The suggestion is that, in the judge's mind, global climate change was not a sufficiently weighty or well-established problem to warrant major alterations to economic development practices in the resources sector.

296 Ibid.
297 Ibid 3.
298 Ibid.
299 Ibid 3–4.
300 See the conditions of consent set out in Annexure A to the judgment: *Taralga Landscape Guardians Inc v Minister for Planning* [2007] NSWLEC 59 (12 February 2007) <http://www.austlii.edu.au/au/cases/nsw/NSWLEC/2007/59.html>.
301 See above Part III(E)(1).
302 *Wildlife Whitsunday* (2006) 232 ALR 510, 524.
303 Ibid.

An even more explicit rejection of conventional thinking on the science and impacts of climate change is contained in a recent judgment issued by the QLRT. The *Xstrata* (first instance) case once again involved an environmental group — the Queensland Conservation Council Inc ('QCC') — objecting to the grant of governmental authorisations for new coal mines. Koppenol P of the QLRT rejected the QCC's claims and proposed greenhouse offset conditions, ruling that his Honour was not satisfied

> that that assumption (relevantly, a demonstrated causal link between this mine's GHG emissions and any discernable [sic] harm — let alone any 'serious environmental degradation' — caused by global warming and climate change) has been shown by QCC to be valid.[304]

In his Honour's reasoning, Koppenol P strongly criticised the findings of the *Stern Review* and the *IPCC Fourth Assessment Report*,[305] even going so far as to undertake a reanalysis of scientific conclusions on temperature increases over the last half century.[306] This was all the more extraordinary because the coal mining company concerned had not disputed the scientific evidence that anthropogenic GHG emissions contribute to global warming and climate change.[307]

The QLRT's decision was subsequently appealed to the Queensland Court of Appeal largely on grounds of a failure to ensure procedural fairness. The Court of Appeal agreed that the Tribunal's processes had denied natural justice to the applicant and ordered a rehearing.[308] However, that rehearing never took place as the Queensland government intervened to pass special legislation authorising the mines, thereby bypassing the normal approval processes.[309]

While cases such as *Xstrata* (first instance) indicate that the spectre of judicial climate change scepticism remains alive in Australia, a disinclination on the part of large resources companies to litigate the scientific basis of climate change suggests that the issue is unlikely to be raised in future disputes. Moreover, advocates of action on climate change can take heart that even one of the world's most conservative courts, the US Supreme Court, has dismissed residual scientific uncertainty as a basis for postponing regulatory action to address global warming.[310] In addition, that Court's adoption of a 'meaningful contribution'[311] test for analysing GHG emissions, rather than insisting on a large, measurable effect on climate change, suggests that the climate change jurispru-

304 *Xstrata* (first instance) [2007] QLRT 33 (Unreported, Koppenol P, 15 February 2007) [21] (citations omitted).

305 Ibid [16]–[18].

306 Ibid [17]. For a critique of Koppenol P's methodology, see *Xstrata* (appeal) (2007) 155 LGERA 322, 341–2 (Mackenzie J).

307 Xstrata's arguments were limited to the extent of contribution made by its proposed mines to global warming, arguing that this contribution was relatively small: see *Xstrata* (first instance) [2007] QLRT 33 (Unreported, Koppenol P, 15 February 2007) [12], [14].

308 *Xstrata* (appeal) (2007) 155 LGERA 322, 338 (McMurdo P), 342 (Mackenzie J).

309 See *Mining and Other Legislation Amendment Act 2007* (Qld).

310 See above nn 255–7 and accompanying text.

311 *Massachusetts v Environmental Protection Agency*, 549 US 497, 525 (Stevens J for Stevens, Kennedy, Souter, Ginsburg and Breyer JJ) (2007).

dence is moving, overall, to a position that requires broad accountability for the environmental effects of greenhouse polluting activities.

5 *A Continuing Role for the Courts*

The piecemeal nature of the law emerging out of climate change cases means that it is best viewed as a gap filler rather than as the basis of a comprehensive regulatory regime for addressing climate change.[312] Much of the attention that the jurisprudence has attracted reflects the previous dearth of mandatory climate change action at the national level and thus may wane with the establishment of an Australian emissions trading scheme. However, there are at least two reasons why, in my view, we should expect to see a continuing role for the courts in the development of climate change law.

The first, as has already been highlighted, is that the proposed CPR Scheme and associated reporting obligations do not apply to indirect climate change impacts. This is a critically important issue for coal mines in a resource-rich country such as Australia. However, the federal government seems likely to sidestep the issue of the sustainability of continuing to harvest and export large quantities of coal that contribute substantial quantities of GHG to the atmosphere. Its present strategy, like that of its predecessor, is to place its hopes in the successful development and speedy commercialisation of clean coal technologies. In the meantime, actions in the courts raising the question of the offsite greenhouse impacts of new coal mines will at the very least serve to prick the environmental conscience of governmental authorities on this issue.

The second area where climate change litigation is likely to remain of importance is with respect to small-scale projects with potential global warming impacts. The national emissions trading scheme will initially apply only to large facilities, a justifiable distinction in the context of a new regulatory regime introducing complex requirements for the monitoring and reporting of emissions. However, the logic of climate change as a problem of cumulative environmental impacts would seem to dictate that all entities with measurable GHG emissions should eventually be held accountable for these impacts. The case law can begin to impose such accountability, not necessarily by halting projects, but rather by requiring them to take account of their GHG emissions and to mitigate them as far as possible.

F *Participation by the Non-Governmental Sector in Climate Change Law*

The climate change case law demonstrates the substantial role actors in the non-governmental sector have played in developing the law in this area. In contrast to the US, where a number of cases have been brought by individual states against greenhouse polluters, in Australia all climate change actions have been undertaken by environmental NGOs or individual activists, often at considerable cost.[313] In the absence of new provisions creating rights to litigate climate change issues, these cases have drawn on existing environmental laws

312 See Bonyhady, above n 240, 26–7.

313 Bonyhady notes that a critical factor has been the involvement of the national network of Environmental Defenders Offices working with counsel, who often act pro bono: ibid 11.

(including the *EPBC Act*) together with aspects of the broader legal framework, such as administrative law requirements to give reasons for decisions and actions for judicial review.[314] As a consequence, environmental groups encounter many of the same barriers to participation that exist in general environmental law. These include narrow standing provisions under the common law and some statutes, requirements to provide undertakings as to damages or to fulfil security for costs orders, and difficulties in securing government funding if organisations are regularly involved in opposing governmental decision-making.[315] Accordingly, reforms in these areas — for instance, the inclusion of broad standing provisions in the *EPBC Act*[316] — can facilitate environmental groups' capacity to participate in, and extend, climate change law.

Beyond the area of litigation, non-governmental actors of all kinds (not-for-profit as well as business organisations) have been seen as vital participants in the development of climate change policy and the implementation of regulatory measures. This is consistent with a broader trend in environmental law whereby non-governmental actors are increasingly viewed as 'surrogate regulators'[317] who can make operational the legislative objectives set by governments. In some cases, this is achieved through a partnership arrangement between governments and non-governmental actors with (limited) autonomy and decision-making power delegated to the latter.[318] In other cases, governments seek to induce business self-regulation by requiring the disclosure of environmental information[319] or by providing incentives for 'beyond compliance' environmental performance.[320] The latter approach builds upon a growing culture of corporate social responsibility ('CSR'), which extends to a commitment by companies (and the financiers or insurers who underwrite their activities) to conduct business in an environmentally sustainable fashion.[321]

In the business sector, there are a number of ways in which CSR may intersect with legal requirements in the interests of addressing climate change.[322] For instance, duties may be placed upon the directors of companies to consider climate change impacts and report on the company's performance in this regard

314 See, eg, *Administrative Decisions (Judicial Review) Act 1977* (Cth) ss 5–7, 13.

315 Godden and Peel, 'The *Environment Protection and Biodiversity Conservation Act 1999* (Cth)', above n 267, 138–9.

316 *EPBC Act* ss 475(6)–(7), 487.

317 Neil Gunningham and Darren Sinclair, 'New Generation Environmental Policy: Environmental Management Systems and Regulatory Reform' (1998) 22 *Melbourne University Law Review* 592, 607.

318 For a discussion of community–government partnerships of this kind, see Rosemary Lyster, '(De)regulating the Rural Environment' (2002) 19 *Environmental and Planning Law Journal* 34, 41–8.

319 See generally Neil Gunningham and Amanda Cornwall, 'Legislating the Right to Know' (1994) 11 *Environmental and Planning Law Journal* 274.

320 These forms of regulation are extensively discussed in Neil Gunningham, Peter Grabosky and Darren Sinclair, *Smart Regulation: Designing Environmental Policy* (1998).

321 See generally Karen Bubna-Litic, 'Climate Change and Corporate Social Responsibility: The Intersection of Corporate and Environmental Law' (2007) 24 *Environmental and Planning Law Journal* 253.

322 Lyster, 'Chasing Down the Climate Change Footprint' (Pt 1), above n 45, 309–20.

in their annual directors' reports.[323] Many companies may also have implemented an environmental management system, voluntarily or as a requirement of their operating environmental licences. Such systems increasingly require reporting on, and verification of, GHG emissions.[324] In the future, information on corporate greenhouse emissions, released pursuant to the new GHG reporting requirements established by the federal government, is likely to provide another important tool for environmental groups and the broader public to pressure companies to reduce climate change impacts. Currently, the only GHG reporting obligations that apply are those under the Greenhouse Challenge Plus Programme discussed above.[325] Participation in this program is voluntary other than for entities that claim in excess of $3 million in fuel tax credits annually.[326]

Drawing on the non-governmental sector in order to achieve regulatory outcomes is a strategy often enthusiastically embraced as the new direction for environmental regulation.[327] Certainly, it offers many advantages for the development and implementation of climate change law, including the capacity to hold governments accountable for their actions on climate change and the ability to effect large-scale reductions in GHG emissions through transforming corporate environmental practices. However, it would be best to see activities in the non-governmental sector as a supplement to, rather than the centrepiece of, climate change law. The obstacles in the way of non-governmental actors becoming the primary source of climate change regulation remain substantial. For not-for-profit environmental groups, the main hurdle is that of resources. In the case of the business sector, self-regulation is often welcomed but tends to be ineffectual unless underpinned by a legislative framework ensuring appropriate monitoring and a credible enforcement effort.[328] In these circumstances, governments remain pivotal actors for driving the development and implementation of climate change law.

IV KEY CHALLENGES FOR CLIMATE CHANGE LAW

Analysts of the evolution of environmental law note that there has been a transition in the field from its early focus on 'first generation' problems to

323 For instance, the requirements for annual directors' reports extend to reporting on environmental matters: *Corporations Act 2001* (Cth) s 299(1)(f).

324 See, eg, the recently launched International Organization for Standardization ('ISO') standards for GHG accounting and verification, which is part of the ISO 14 000 series adopted by many companies as the basis for their environmental management systems: ISO, 'Greenhouse Gases — Part 1: Specification with Guidance at the Organization Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals' (ISO 14064-1:2006); ISO, 'Greenhouse Gases — Part 2: Specification with Guidance at the Project Level for Quantification, Monitoring and Reporting of Greenhouse Gas Emission Reductions or Removal Enhancements' (ISO 14064-2:2006); ISO, 'Greenhouse Gases — Part 3: Specifications with Guidance for the Validation and Verification of Greenhouse Gas Assertions' (ISO 14064-3:2006).

325 See above n 60 and accompanying text.

326 *Fuel Tax Act 2006* (Cth) s 45-5.

327 See, eg, Daniel J Fiorino, *The New Environmental Regulation* (2006) 19–21.

328 For a discussion, see Neil Gunningham, Robert A Kagan and Dorothy Thornton, *Shades of Green: Business, Regulation, and Environment* (2003) 146–53.

so-called 'new generation' issues.[329] In broad terms, first generation environmental problems reflect concerns about human pollution of the environment or the over-exploitation of natural resources. The first generation of environmental laws designed to address such problems tackled pollution or over-exploitation via systems of licensing of individual entities, with the overall aim of limiting pollution or resource use to sustainable levels. By contrast, new generation environmental issues are said to be characterised by diffuse sources and widespread effects, making them difficult to control by way of traditional point source licensing.[330] Climate change represents the quintessential new generation environmental problem. As such, it presents similar challenges to conventional governance and regulatory systems as do other new generation problems. In the context of climate change, these challenges are magnified by the breadth of the scale of the problem (and hence the expansion of the class of those who will be affected), the level to which environmental effects are integrated with socioeconomic impacts, and issues of scientific uncertainty over the full extent and timing of resulting climate change.

The following sections of the article posit four categories of challenges that must be faced in the future development of a legal framework to address the new generation issue of climate change.[331] The goal here is to point the way towards the challenging scholarly and policy debates that lie on the horizon for climate change law. The first challenges are those of internationalisation associated with the global extent of the climate change problem and the difficulties facing agreement on future international climate change controls. The second challenge focuses on issues of participation and how the wide range of interests involved in the climate change field can be accommodated (and reconciled where such interests are in conflict). The third set of challenges arises from the imperative of integrated environmental management that is inherent in the climate change problem. This encompasses not only the integration of governance systems (for example, federal and state) but also of disciplines (for example, law and science) and different environmental components (for example, water, biodiversity and greenhouse pollution). Indeed, in this respect there is significant tension between the overall goal of integrated environmental management and decision-making in environmental law, and the recognition of a separate field of climate change law. The question of integration is related to the last challenge that involves the issue of regulatory coordination. Overcoming this challenge — which concerns how the disparate elements of climate change law discussed in Part III might be

329 Fiorino, above n 327, 11; Gunningham and Sinclair, 'New Generation Environmental Policy', above n 317.

330 See, eg, a series of articles on non-point source pollution: Neil Gunningham and Darren Sinclair, 'Curbing Non-Point Pollution: Lessons for the Swan-Canning' (2004) 21 *Environmental and Planning Law Journal* 181; Neil Gunningham and Darren Sinclair, 'Policy Instrument Choice and Diffuse Source Pollution' (2005) 17 *Journal of Environmental Law* 51; Neil Gunningham and Darren Sinclair, 'Regulating Water Pollution from Light Industry: Lessons from the Swan-Canning' (2005) 22 *Environmental and Planning Law Journal* 328.

331 These challenges must also be faced in the broader field of environmental law as I elaborate in a forthcoming book on the subject co-authored with Professor Lee Godden: see Lee Godden and Jacqueline Peel, *Environmental Law: Scientific, Policy and Regulatory Dimensions* (2009, forthcoming).

integrated to achieve the common goals of climate change mitigation and adaptation — is likely to be critical to the cohesiveness and ultimate effectiveness of climate change law.

A *The Challenge of Internationalisation*

Ever since climate change emerged as an issue of scientific concern, global or at least broadscale conceptions of the problem have been prevalent. It is generally accepted, for example, that CO_2 emitted in any one location may eventually give rise to climate change in another part of the world.[332] The global nature of the climate change problem makes international cooperation vital to securing sustainable, long-term solutions. No one country or region, acting alone, will be able to achieve the *UNFCCC* objective of ensuring that atmospheric GHG concentrations are stabilised 'at a level that would prevent dangerous anthropogenic interference with the climate system.'[333]

While the imperative of international cooperation is well-recognised, securing an agreement on actions to mitigate GHG emissions among more than 190 participating states is a difficult task. Countries generally organise themselves into negotiating blocs with common (or similar) positions, helping to ease the extent of dissonance,[334] but international negotiations on climate change remain a slow, cumbersome process subject to many compromises. In previous rounds of negotiation for the *UNFCCC* and *Kyoto Protocol*, compromises necessary to accommodate the interests of different states resulted in the lack of emissions reduction targets in the *UNFCCC* and the inclusion of differentiated targets (rather than a single, common emissions reduction goal) in the *Kyoto Protocol*.[335] In the current round of negotiations for a post-2012 agreement, it seems that the process is also likely to be painfully slow and is unlikely to result in the articulation of emissions reduction targets approaching those called for by scientific bodies such as the IPCC.[336] Emerging as the greatest sticking points are the level of emissions reductions required by 2020 (and beyond), and the issue of whether developing countries (particularly large emitters such as China and India) should be required to accept targets of some kind under the new regime.

The likelihood of continuing differentiation between developed and developing countries regarding obligations to reduce GHG emissions adds further complexities to international climate change regulation. One particular concern is with the responsibility for the emission of carbon associated with the production of goods. I have alluded above to this concern in the context of the GHG emissions from burning Australian coal: Australian legislation effectively shifts

332 This is due to the global mixing of CO_2 in the upper atmosphere: see Kazuyuki Miyazaki et al, 'Global-Scale Transport of Carbon Dioxide in the Troposphere' (2008) 113 *Journal of Geophysical Research* D15301.

333 Opened for signature 9 May 1992, 1771 UNTS 107, art 2 (entered into force 21 March 1994).

334 Sands, above n 2, 71–2, 360–1.

335 See generally Farhana Yamin, 'The *Kyoto Protocol*: Origins, Assessment and Future Challenges' (1998) 7 *Review of European Community & International Environmental Law* 113.

336 The IPCC has indicated that cuts of between 50–85 per cent below 2000 levels by 2050 will be necessary to stabilise GHG concentrations at safe levels: IPCC, above n 9, 20.

responsibility for emissions in such circumstances to importing countries. Where coal-fired, GHG-intensive power is used in developing countries such as China to produce consumer goods, further questions arise as to the equity between Chinese producers (whose country is not subject to international GHG controls) and producers in the developed world.[337] For instance, the argument that compensation should be provided to 'trade-exposed' Australian industries when the national CPR Scheme comes into effect is essentially based on the desire to maintain equity between Australian producers and their overseas competitors in developing countries.

For Australia, then, the international dimension of climate change law is immensely important but at the same time introduces a significant element of uncertainty into the future direction of legal development in the area. If there is no international agreement on post-2012 targets or if the new treaty continues to exempt developing countries from emissions reduction commitments, this is likely to affect the design and operation of the national emissions trading scheme, for example, by perpetuating the issue of free permits to trade-exposed industries.[338] At the same time, the international character of climate change regulation presents Australia with an opportunity to impart a much broader influence on our own domestic measures. As one of the first movers on a national emissions trading scheme, the targets adopted within the Australian scheme and the design elements endorsed could well provide a model for international negotiations, as well as the development of similar schemes in other countries.[339]

B *The Challenge of Participation*

In international climate change law, states remain, by and large, the principal actors engaged in the process of rule-making, compliance and enforcement.[340] However, in the domestic sphere a more diverse array of actors is involved, some of which may have a transnational dimension (for example, global NGOs or multinational corporations). The general transparency and broad rights of participation found in environmental law[341] have flowed over into the area of climate change law, meaning that there is general acceptance of the need for wide public and stakeholder consultation and participation in the development of climate change regulation. In addition, as discussed above, many initiatives in the climate change field actively seek to engage the non-governmental sector in

337 Christopher L Weber, *China's Export Trade Impacts Climate* (30 July 2008) ScienceDaily <http://www.sciencedaily.com/releases/2008/07/080729142524.htm>.

338 *Green Paper*, above n 88, 336–8.

339 *Garnaut Review*, above n 4, 285.

340 Philippe Sands and Jacqueline Peel, 'Environmental Protection in the Twenty-First Century: Sustainable Development and International Law' in Regina S Axelrod, David Leonard Downie and Norman J Vig (eds), *The Global Environment: Institutions, Law, and Policy* (2nd ed, 2005) 43, 48–50.

341 See generally John Taberner, Nicholas Brunton and Lisa Mather, 'The Development of Public Participation in Environmental Protection and Planning Law in Australia' (1996) 13 *Environmental and Planning Law Journal* 260.

the regulatory process or at least enable the participation of NGOs in the interests of improving government accountability.

The breadth of the potential impacts of climate change (for example, on water, agriculture, the Great Barrier Reef and so on), coupled with their predicted severity, mean that there is virtually no sector in the Australian community without some interest in the management of climate change. This invites a diversity of perspectives on climate change issues, all of which are plausible in the sense that it is hard to prove any one of them wrong in simple terms.[342] For climate change law, the participation challenge is thus largely one of managing the range of interests seeking involvement and, where conflicts arise, mediating among them. This will often involve difficult judgements about the 'community' (for example, local, regional and/or global) whose views should count. In some cases, the views and interests of a particular community may be sacrificed in favour of others that are perceived to be more compelling. Arguably, this is what occurred in the *Taralga* case when Preston CJ weighted the global interest in promoting renewable energy generation over locally-based amenity concerns. The law supplies principles that can assist in structuring this balancing exercise, such as the principle of intergenerational equity (militating in favour of actions that maintain environmental quality over the long-term) and the precautionary principle (dismissing reliance on scientific uncertainty alone as a basis for inaction on a serious environmental threat), as well as general legal standards such as those of procedural fairness.[343]

The law is also uniquely placed to devise compromises that can seek to advance a range of interests with regard to a particular environmental problem. In the regulatory context, we see this in the design of the proposed CPR Scheme, which makes significant concessions (perhaps to too great an extent) in favour of business interests likely to be heavily affected by the introduction of a carbon price. In the decision-making context, the capacity of climate change law to effect mediation among the conflicting interests of different participants is also evident. In such cases, existing environmental legal tools, such as licence conditions or environmental management plans, as well as developing mechanisms such as adaptive management, can be employed in crafting the overall decision-making outcome. The *Taralga* case provides an apt illustration in this regard. There, the result of merits review was the issue of an amended development permit incorporating conditions requiring the developer to make information publicly available and to undertake monitoring to detect any adverse environmental impacts.

342 John S Dryzek, *The Politics of the Earth: Environmental Discourses* (2nd ed, 2005) 9. However, certain principles of ESD, such as the intergenerational equity principle, the polluter pays principle and the precautionary principle, provide important objectives against which to evaluate these perspectives.

343 See, eg, the discussion of natural justice in *Xstrata* (appeal) (2007) 155 LGERA 322, 335–8 (McMurdo P), 342 (Mackenzie J).

C *The Challenge of Integration*

The breadth of the potential impacts of global warming invites not only a range of participants in climate change law, but also the establishment of an integrated management approach. Indeed, the logic of integrated management in the climate change context is unquestioned given the borderless nature of the problem and the close interdependence between legal and regulatory initiatives and developments in scientific thinking and economic analysis. Integrated environmental management generally requires integration across a number of dimensions, including across disciplines and information sources, ecological components over time and space, and governance and institutional structures.[344] Experience suggests that, rather than the recognition of the need for integration, it will be achieving integrated climate change management in practice that will be the more complex task, albeit one which is not new to the broader field of environmental law.[345] For instance, many experts on integrated environmental management cite institutional inertia and resistance to change as a significant barrier in the way of implementing integrated approaches.[346]

At the level of disciplinary integration, particularly between the diverse fields of law and science, a frequent stumbling point is the issue of appropriate emissions reduction targets. For an increasing number of scientists, it is axiomatic that deep cuts in GHG emissions are required in the next decade to avert the threat of catastrophic climate change.[347] The slow pace of international and domestic regulatory development is thus extremely frustrating, especially when the outcome is modest targets coupled with major concessions for affected industries. Some of this scientific frustration might be eased by a better understanding of the workings of the law that place an emphasis on processes to ensure constitutionality, transparency and accountability, as much as on the outcomes of rule-making. Climate change regulation may also stimulate the further elaboration of principles designed to ease interdisciplinary tensions such

344 See generally Helle Tegner Anker, 'Integrated Resource Management — Lessons for Europe?' (2002) 11 *European Environmental Law Review* 199; Jeffrey A Sayer and Bruce M Campbell, 'Research to Integrate Productivity Enhancement, Environmental Protection, and Human Development' in B M Campbell and J A Sayer (eds), *Integrated Natural Resource Management: Linking Productivity, the Environment and Development* (2003) 1; Resource Assessment Commission, 'Coastal Zone Inquiry: Integrated Resource Management in Australia' (Information Paper No 6, 1993); D Scott Slocombe and Kevin S Hanna, 'Integration in Resource and Environmental Management' in Kevin S Hanna and D Scott Slocombe (eds), *Integrated Resource and Environmental Management: Concepts and Practice* (2007) 1.

345 Pleas for integrated management have been made in many areas of environmental law: see, eg, David Farrier, 'Fragmented Law in Fragmented Landscapes: The Slow Evolution of Integrated Natural Resource Management Legislation in NSW' (2002) 19 *Environmental and Planning Law Journal* 89.

346 See, eg, John Cairns Jr, 'The Need for Integrated Environmental Systems Management' in John Cairns Jr and Todd V Crawford (eds), *Integrated Environmental Management* (1991) 5, 6; Richard Grant and Elim Papadakis, 'Transforming Environmental Governance in a "Laggard" State' (2004) 21 *Environmental and Planning Law Journal* 144.

347 For example, in the US the Union of Concerned Scientists, representing more than 200 000 scientists and citizens, recommends cuts of at least 70–80 per cent below 2000 levels by 2050 in order to avoid dangerous climate change: Union of Concerned Scientists, *A Target for US Emissions Reductions* (2008) Union of Concerned Scientists: Citizens and Scientists for Environmental Solutions — Global Warming <http://www.ucsusa.org/global_warming/science/emissionstarget.html>.

as the precautionary principle. This principle, coupled with that of intergenerational equity, allows a strong case to be put for the enactment of stringent, long-term, adaptive laws despite scientific uncertainties over the exact impacts and timing of climate change.

When it comes to law-making, integrated management presents another set of challenges in terms of coordinating the regulatory activities of different levels of government across different environmental sectors.[348] Developments in constitutional law provide a basic framework for integrated environmental management in the sense that they authorise the involvement of both Commonwealth and state governments.[349] Yet the question of which issues should be dealt with federally, and which by the states, has only been worked out in general terms.[350] The key delimiters seem to be scale and the potential for inter-jurisdictional effects. Hence, problems that are national (or international) in scale or that involve resources crossing state boundaries are to be dealt with by the federal government. Arguably, all aspects of climate change are of a higher order scale, positing a dominant, if not pre-eminent, role for the federal government. The introduction of a federal emissions trading scheme and revised MRET scheme may thus be looked to as the first step towards a comprehensive national climate change regime.

There are, however, wise voices who caution against entrusting the integrated management of climate change entirely to the federal government (or for that matter to the states). For instance, Bonyhady notes that in Australia 'the Commonwealth has never delivered anything approaching strong, coherent, consistent environmental protection.'[351] In a context 'where there is little basis for having faith in any level of government',[352] he advises an approach that uses federal regulation to set a floor for climate change protection, which states or local governments are free to exceed in their own laws.[353] Such an approach has the advantage of introducing a degree of uniformity by way of Commonwealth minimum standards, but prevents those standards becoming the lowest common denominator for environmental regulation in the area.[354]

348 The issue of integration across different environmental sectors is a vexed one given the traditional approach of the law to divide the environment into segments such as water, forests, endangered species, and so on.

349 The relevant case law is discussed in Peel and Godden, 'Australian Environmental Management', above n 146, 670–5.

350 See *Intergovernmental Agreement on the Environment* (1992) ss 2.2–2.3.

351 Bonyhady, above n 240, 24. Bonyhady is no more sanguine about the performance of state governments: at 25.

352 Ibid 26.

353 Ibid.

354 On the problem of lowest common denominator/race to the bottom standards in a federal system, see Kirsten H Engel, 'State Environmental Standard-Setting: Is There a "Race" and Is It "To the Bottom"?' (1997) 48 *Hastings Law Journal* 271; Joshua D Sarnoff, 'The Continuing Imperative (but Only from a National Perspective) for Federal Environmental Protection' (1997) 7 *Duke Environmental Law & Policy Forum* 225. Cf Richard L Revesz, 'Rehabilitating Interstate Competition: Rethinking the "Race-to-the-Bottom" Rationale for Federal Environmental Regulation' (1992) 67 *New York University Law Review* 1210.

D *The Challenge of Regulatory Coordination*

Perhaps the most complex challenge that faces climate change law in the immediate future concerns how the various parts of the regulatory system can be coordinated so as to form a cohesive and effective whole. In part, this can be viewed as another aspect of the integration challenge mentioned above. The recognition of the desirability of integrated management counsels against treating climate change law as a self-contained disciplinary and regulatory area. Hence, while it is clear that a significant new body of climate change-oriented legal principles have developed, it is critical for effective management of climate change that these laws integrate with one another, with general environmental law and management, and with the broader regulatory framework. Once again, the challenge is one of implementation, heightened by the 'bottom-up' mode of development of climate change law both in Australia and internationally. Rather than one, centralised regulatory scheme, what we have is a series of different approaches taken by different countries and, within Australia, a variety of state and local laws shaped on the basis of local policy priorities. In the domestic context, the prospects of regulatory coordination have been improved (though by no means assured) by the election of the Rudd government which may deal more effectively with its Australian Labor Party counterparts in most states and territories. Agreements have already been achieved on issues such as management of the Murray-Darling Basin,[355] and there are intergovernmental processes underway to examine a coordinated approach to questions such as renewable energy promotion.[356]

While intergovernmental processes may produce agreement on measures coordinated across different levels of government, this still leaves the question of how different elements of the regulatory scheme (for example, an emissions trading scheme and a renewable energy target) will be coordinated and integrated within the broader legal framework. The general matter of legal coordination has been one of the most neglected areas of regulatory analysis despite its importance for the management of integrated environmental problems such as climate change.[357] To date, climate change regulations have tended to be adopted in an ad hoc fashion, rather than as part of a coordinated system or strategic plan oriented towards the achievement of particular goals. Even where a strong theoretical basis exists for particular regulatory innovations, as in the case of market mechanisms such as emissions trading schemes, to date very little thought has been given to the role of these tools as part of the overall climate change regulatory system. When it comes to wider integration of climate change law into other environmental and regulatory frameworks, this topic is also a neglected one, although the climate change litigation discussed in Part III

355 COAG, *Agreement on Murray-Darling Basin Reform* (2008) <http://www.coag.gov.au/coag_meeting_outcomes/2008-07-03/docs/Murray_Darling_IGA.pdf>. See also the *Water Amendment Act 2008* (Cth), which amends the *Water Act 2007* (Cth) to give effect to the Agreement.

356 For instance, the COAG Working Group on Climate Change and Water has released a consultation paper on the design of a revised renewable energy target: see COAG Working Group on Climate Change and Water, above n 73.

357 Peter N Grabosky, 'Governing at a Distance: Self-Regulating Green Markets' in Robyn Eckersley (ed), *Markets, the State and the Environment: Towards Integration* (1995) 197, 202.

highlights the need to consider, on a more systematic basis, how climate change considerations might be incorporated into environmental- and sustainability-based decision-making.

The solution to the problem of regulatory coordination is unlikely to lie (as some advocates of economic instruments might contend)[358] in the gradual removal of other forms of climate change regulation as the carbon trading market matures. Rather, there will most probably be 'an enduring need for many different forms of regulation, not only in relation to the approval of new power sources but also new processes such as geosequestration.'[359] Given that optimising the regulatory mix may take time and experimentation, it will be crucial for climate change laws to have inbuilt flexibility and capacity for feedback and review. In terms of integrating climate change laws within the broader environmental legal field, there are a number of promising approaches, albeit ones that still need refinement. They include the deployment of adaptive management strategies (which allow management adjustments where new risks are detected in monitoring),[360] the adoption of integrated planning mechanisms (that coordinate a variety of environmentally related decision-making processes),[361] and the use of ESD as a guiding policy framework for environmental management.[362] In addition, a commitment to integrated management in the climate change field may necessitate the creation or refashioning of government institutions to provide functions such as strategic assessment and sustainability planning, with the results articulated in overarching policies that guide the coordination of different regulatory frameworks.[363]

V CONCLUSION

The diversity of legal developments with respect to climate change reviewed in this article amply makes the case that the last few years have witnessed the emergence of a new legal discipline, that of climate change law. This is a new legal discipline organised around responding to the 'diabolical'[364] challenge of mitigating and adapting to future climate change. As such, much of its substance is derived from the raft of new legislation introduced since the turn of the century that directly aims to reduce levels of GHG emissions, whether by

358 For a strong argument in favour of market-based mechanisms in environmental regulation, see Bruce A Ackerman and Richard B Stewart, 'Reforming Environmental Law' (1985) 37 *Stanford Law Review* 1333.

359 Bonyhady, above n 240, 26.

360 See, eg, Stephen Dovers, 'Adaptive Policy, Institutions and Management: Challenges for Lawyers and Others' (1999) 8 *Griffith Law Review* 374.

361 See, eg, *Integrated Planning Act 1997* (Qld). See further Philippa England, *Integrated Planning in Queensland* (2nd ed, 2004).

362 See, eg, Stephen Dovers and Robin Connor, 'Institutional and Policy Change for Sustainability' in Benjamin J Richardson and Stepan Wood (eds), *Environmental Law for Sustainability: A Reader* (2006) 21.

363 This might be modelled along the lines of the former Resource Assessment Commission that advised the Commonwealth government on various matters pertaining to the implementation of sustainable development: see generally *Resource Assessment Commission Act 1989* (Cth) (repealed).

364 *Garnaut Review*, above n 4, xviii.

emissions controls or through promoting less emissions-intensive forms of energy generation. However, climate change law also fills the lacunae between the major regulatory initiatives directed at emissions trading and renewable energy generation. In areas such as climate change litigation, adaptation planning and corporate responsibility for GHG emissions, other aspects of the legal framework have been employed and adjusted to meet the challenge of providing a broad legal response to the effects of climate change. The innovativeness of the case law in particular — decided as it was in the absence of a national regulatory system for climate change — provides an encouraging indication of the law's capacity to evolve and adapt to deal with this new environmental problem.[365]

The article's stocktake of the existing law underlines that climate change is a multi-level, multidisciplinary issue. Although climate change thus shares many features in common with other 'new generation' environmental problems, the challenges it presents to existing governance and regulatory systems surpass those previously experienced. Not only does climate change have an integral international dimension, but it is also a problem that requires the integrated efforts of governments from the local to the national levels, ideally working across environmental sectors such as pollution control, water management and biodiversity conservation. Moreover, in a governance system that aspires to be democratic and participatory, recognising a diverse range of interests in, and responses to, climate change is essential, even though this is likely to give rise to conflicting perspectives on the appropriate content of regulatory measures. Finally, environmental regulatory analysis increasingly reveals that complex environmental problems such as climate change necessitate complex regulatory systems embracing more than one type of legal mechanism. For lawyers, the issue of regulatory coordination is one of the most important issues to emerge out of the new climate change law.

Indeed, it may eventually transpire that regulatory coordination is not only critical to the internal cohesive operation of climate change law and to its interaction with broader environmental legal frameworks, but also relevant in its interrelationship with other regulatory fields. At the international level, coordination between the climate change regime and bodies dealing with issues of human rights and global trade looms as an issue of future significance. Domestically, we are increasingly seeing the penetration of climate change considerations into a variety of legal areas such as insurance law, corporate law, planning law, taxation law and energy law. While it is imperative, given the grave risks of global warming, that we do not lose sight of the core goals of climate change law in an overly expansive view of its content,[366] the broad scope of the discipline is nonetheless encouraging from the perspective of embedding climate change considerations in the wider legal/regulatory framework. Climate change law is thus more than just 'an organising principle whose time has arrived';[367] its emergence also signals a genuine commitment on the part of international authorities, domestic governments and the broader community to make the

365 Bonyhady, above n 240, 27.
366 Lyster, 'Chasing Down the Climate Change Footprint' (Pt 1), above n 45, 285.
367 Keim, above n 3, 149.

difficult behavioural changes that will be necessary to avert dangerous global warming.