ASSESSING THE INTERNATIONAL RESPONSE

8

Key points

Climate change is a global problem that requires a global solution.

Mitigation effort is increasing around the world, but too slowly to avoid high risks of dangerous climate change. The recent and projected growth in emissions means that effective mitigation by all major economies will need to be stronger and earlier than previously considered necessary.

The existing international framework is inadequate, but a better architecture will only come from building on, rather than overturning, established efforts.

Domestic, bilateral and regional efforts can all help to accelerate progress towards an effective international agreement.

The United Nations meeting in Copenhagen in December 2009 is an important focal point in the attempt to find a basis for global agreement. Australia must be prepared to play its full proportionate part as a developed country.

Greenhouse gas emissions are a global public 'bad'. One country's emissions affect all countries. Global warming therefore requires a global solution. Individual countries will not on their own undertake adequate mitigation, since each country is better off—from a narrow, national point of view—the more it can free ride on the efforts of others. As a country that is especially vulnerable to climate change, Australia has a strong interest in an effective international response to climate change.

An effective international response to climate change needs to cover both mitigation and adaptation. The main focus of the Review's discussion of the international response is mitigation, since adaptive responses are largely national and regional. However, an international element is required in the adaptation response.

This chapter assesses the global mitigation effort to date, and concludes that progress on the current trajectory is too slow and limited to constitute an effective global response to the risk of climate change. Chapters 9 and 10 outline a more effective response to international climate change.

8.1 The evolving international framework for addressing climate change

8.1.1 United Nations Framework Convention on Climate Change

The United Nations Framework Convention on Climate Change (UNFCCC) provides the foundation for the international collaborative effort to mitigate and adapt to climate change. The Convention was established in 1992, entered into force on 21 March 1994, and has been ratified by 192 parties to date, including Australia and the United States (both in 1992). It articulates a global goal of 'stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system' (Article 2).

The Convention gives important guidance on the allocation of mitigation effort among countries, dividing parties into different groups according to their commitments. Annex I parties include the industrialised countries that were members of the OECD in 1992, plus countries with economies in transition.[1]

Apart from reporting duties, all countries commit to 'formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change by addressing anthropogenic emissions' (Article 4.1(b)). Annex I countries are called on to do more. In particular, on the 'basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities', developed countries 'should take the lead in combating climate change and the adverse effects thereof' (Article 3.1). Annex I countries are also called on to bear the cost of the financing 'needed by the developing country Parties to meet the agreed full incremental costs of implementing measures' to take actions to mitigate and adapt to climate change (Article 4.3).

8.1.2 Kyoto Protocol

The Kyoto Protocol was adopted by the UNFCCC parties on 11 December 1997, and entered into force on 16 February 2005. The Protocol commits developed and transition economies (essentially the Annex I countries of the UNFCCC) to limit or reduce their greenhouse gas emissions to specified levels during the commitment period from 2008 to 2012, with the aim of reducing their collective emissions by at least 5 per cent from 1990 levels (Article 3.1).[2]

The use of a five-year budget (2008 to 2012) is sometimes referred to as a 'flexibility when' provision, as it allows countries to average their emissions over time (Frankel 2007). 'Flexibility what' is also allowed under the Protocol, which includes fixed conversion factors for different greenhouse gases. Finally, the Protocol includes three 'flexibility where' mechanisms to assist countries to achieve their targets: international emissions permit trading, the Clean Development Mechanism, and Joint Implementation.

In international emissions permit trading, if a country with a target commitment reduces its emissions below its Kyoto target it can sell surplus reductions to another country. The other two flexibility mechanisms enable credits from emissions-reducing projects in one country to be used to meet the Kyoto target of another country. Under Joint Implementation, projects are hosted in countries with target commitments. Under the Clean Development Mechanism (see Box 8.2), projects are hosted in countries without target commitments (developing countries). While the supplementarity principle of the Protocol states that countries should primarily achieve their emissions reduction goals through domestic efforts, the Protocol does not place any quantitative limits on the use of flexibility mechanisms.

The Protocol also sets out specific rules regarding the accounting of emissions and removals from the land use, land-use change and forestry sector, establishes detailed accounting and reporting systems and creates a Compliance Committee.

8.1.3 The Bali Roadmap

The United Nations Climate Change Conference held in Bali, Indonesia, in December 2007 resulted in two negotiation tracks—the Convention track and the Protocol track, together known as the Bali Roadmap—aimed at achieving agreement on an arrangement to succeed the first Kyoto commitment period. While the exact shape of a future architecture is still unclear, both tracks are proceeding in parallel and have the same anticipated end date of December 2009, at which point parties will come together in Copenhagen with a view to agreeing on the way forward post-2012.

The Convention track negotiations will work towards a 'shared vision for long-term cooperative action', likely to be framed as a long-term global goal for emissions reductions. Developed countries have agreed to consider 'nationally appropriate mitigation commitments or actions, including quantified emission limitation and reduction objectives', while developing countries have agreed to consider 'measurable, reportable and verifiable' mitigation actions 'supported and enabled by technology, financing and capacity-building' (UNFCCC 2007a: 3). Underlying these undertakings is a commitment to put in place 'positive incentives for developing country parties for the enhanced implementation of national mitigation strategies and adaptation action' (UNFCCC 2007a: 5).

The purpose of the Protocol track is to agree on second commitment period (post-2012) emissions reduction commitments for UNFCCC Annex I parties. This track will need to result in quantified emissions reduction targets and agreement on the time frame of the second commitment period.

8.1.4 Other international initiatives

The UNFCCC is the focus of international climate negotiations, but is no longer the sole home of international discussions on climate change.

Major Economies Meeting on Energy Security and Climate Change

The Major Economies Meeting process on Energy Security and Climate Change was launched by the United States in September 2007 with the purpose of bringing together the largest emitters of greenhouse gases to discuss a global response to climate change.[3] US President George W. Bush nominated agreement in 2008 on a long-term global goal for emissions reduction as a key goal for the process.

Group of Eight (G8)

In 2005, climate change dominated the Gleneagles Leaders' Summit agenda, resulting in the establishment of the Gleneagles Dialogue on Climate Change, Clean Energy and Sustainable Development. Bringing together the G8 nations[4] as well as key developing countries and other major emitters, the Gleneagles Dialogue focused on technology and finance. It reported to the 2008 G8 Summit in Toyako, Japan (7–9 July 2008).

Asia–Pacific Economic Cooperation (APEC)

At the 2007 APEC Leaders Meeting in Sydney, Australia, the leaders of the 21 member economies[5] reaffirmed their commitment to the UNFCCC and agreed on an Action Agenda, which included APEC-wide aspirational goals of reducing energy intensity (the amount of energy used by unit of output) by at least 25 per cent by 2030 from 2005 and increasing forest cover in the region by at least 20 million hectares by 2020. Other agreements were to establish an Asia–Pacific Network for Energy Technology and an Asia–Pacific Network for Sustainable Forest Management and Rehabilitation.

Asia–Pacific Partnership on Clean Development and Climate

The Asia–Pacific Partnership on Clean Development and Climate is based on a model of cooperation and collaboration between partner governments,[6] business and researchers. Joint government–business task forces in eight sectors (cleaner fossil energy, aluminium, coal mining, steel, cement, buildings and appliances, power generation and transmission, and renewable energy and distributed generation) agree on projects that are then financed or provided with in-kind support by both government and industry participants. Progress to date has been limited by funding commitments.

Other international bodies

Work on climate change mitigation and/or adaptation is taking place in many other international bodies. These include UN agencies, the World Bank and regional development banks, the International Monetary Fund, the Organisation for Economic Co-operation and Development, the International Energy Agency, and others. The UN Secretary-General has made climate change a priority issue and the UN General Assembly holds regular thematic debates on the issue. Heads of state and government made declarations on the urgent need to address climate

change at the Commonwealth Heads of Government Meeting and the East Asia Summit (both held in November 2007).

8.2 National commitments and policies to mitigate climate change

8.2.1 Developed countries

Some countries have proposed national emissions reduction goals beyond the end of the first Kyoto Protocol commitment period:

- **Australia**—The Australian Government has committed to an emissions reduction target of 60 per cent below 2000 levels by 2050.
- **European Union**—The European Union has put forward dual emissions reduction goals—an 'independent commitment' for a 20 per cent reduction over 1990 levels by 2020, and a conditional offer for a 30 per cent reduction over 1990 levels by 2020. The trigger announced for moving to the conditional offer is 'a satisfactory global agreement to combat climate change post-2012' (European Commission 2008b), which implies as prerequisites that 'other developed countries commit themselves to comparable emission reductions and economically more advanced developing countries commit themselves to contributing adequately according to their responsibilities and capabilities' (European Commission 2008a). The European Parliament and Environment Ministers have also proposed 2050 targets of a 60–80 per cent reduction relative to 1990 levels.
- **Individual European countries (EU member and non-member states)**—Some European countries have made separate national commitments, showing greater ambition than the EU approach. For example, the United Kingdom has committed itself to reducing emissions by 20 per cent on 1990 levels by 2010 and 60 per cent by 2050 (with scope for greater reductions if needed). Germany has committed to a 40 per cent reduction on 1990 levels by 2020. Norway is noteworthy—30 per cent reductions on 1990 levels by 2020 and carbon neutral by 2050.
- **Canada**—In April 2007, the Canadian Government announced new targets to reduce Canada's greenhouse gas emissions to 20 per cent below the 2006 level by 2020, and to 60–70 per cent below the 2006 level by 2050.
- **Japan**—In June 2008, the Japanese Government announced a target of a 60–80 per cent cut in emissions by 2050 from current levels, as well as plans for emissions trading, renewable energy targets, and low-emissions automobile targets.
- **Korea**, which is not bound by quantitative commitments under the Kyoto Protocol, has recently announced that in 2009 it will propose a 2020 emissions target below business-as-usual levels.
- **New Zealand** is in the process of introducing an emissions trading scheme. Its targets will be guided by international negotations.

- **United States**—Under the Bush administration, the United States declined to ratify the Kyoto Protocol or to take a strong stance on domestic emissions reductions. However, the signs from presidential candidates, Congress, various states and even the judiciary indicate that major changes in the US position can be expected (Box 8.1).

Box 8.1 Recent developments in US climate change policy

Active participation by the United States will be a crucial element of an effective global climate change framework.

Under the Bush administration, the United States declined to ratify the Kyoto Protocol and has taken a back seat in international negotiations. In April 2008, President Bush announced a new national goal to stop the growth in US greenhouse gas emissions by 2025.

In contrast, both presidential candidates have committed to reducing emissions to 1990 levels by 2020. The Democrats have promised an 80 per cent reduction and the Republicans 60 per cent, both from 1990 levels by 2050. Both candidates support taking on a more active international role and introducing a nationwide emissions trading scheme. This suggests that, whoever wins the November presidential election, the array of legislative cap and trade proposals introduced during the 110th Congress might be considered with a more open mind by the White House in future. The Lieberman-Warner Climate Security Act is the proposal that has had the most congressional support, though it too has so far been unable to command majority support, with Democrat legislators hesitating tactically in the lead-up to the November elections. Its provisions aim to reduce overall US greenhouse gas emissions from 2005 levels by roughly 63 per cent by 2050 (Pew Center 2007).

Meanwhile, some states have moved ahead. Multistate regional initiatives include the Regional Greenhouse Gas Initiative, involving northeastern states, the Western Climate Initiative, with California at its centre, and the Midwestern Regional Greenhouse Gas Accord. All have a cap and trade scheme at their core, although with different levels of ambition and design. California has passed legislation requiring emissions to fall to 80 per cent of their 1990 level by 2050.

Existing federal legislation, such as the Clean Air Act, is also being used to tackle climate change. The Bush administration is opposed to this course of action, but in 2007 the US Supreme Court decided that the Act gave authority to the US Environmental Protection Agency to regulate greenhouse gases and that the Agency would need to make a strong case if it decided not to exercise that discretion.

While major changes in policy can be expected after the November 2008 election, there is still uncertainty and the prospect of delay. Even with majority support in the Congress and a supportive president, US legislative processes, combined with the delays in establishing any new administration, mean that the timely passage of climate change legislation is far from guaranteed.

Many developed countries have policies in place to reduce emissions. These include emissions trading schemes, renewable energy targets, and fuel efficiency targets. In addition to its emissions trading scheme, the European Union has a goal of sourcing 20 per cent of its energy (specifically electricity, transport, and heating and cooling) from renewables by 2020. It has also legislated a suite of measures on building, appliance and vehicle standards. Japan has various renewable energy and performance standards in place for its industry. Canada aims to meet its targets by establishing a carbon trading scheme, requiring industry to improve its emissions performance, and introducing measures such as new fuel consumption standards for cars and energy efficiency standards for buildings. Many other developed countries are pursuing similar policies and measures, though most are struggling to meet their Kyoto targets (section 8.3).

The United States and European countries have introduced mandatory requirements and subsidies for the use of biofuels. These have put strong upward pressure on global food prices, with negligible environmental benefits.

8.2.2 Developing countries

All developing countries continue to reject containment of their emissions growth through the adoption of mandatory targets. Nonetheless, some developing countries have already made important domestic commitments or are on the way to doing so.

- As the largest developing country, and now the world's largest emitter, **China** is particularly important. As part of its 11th Five-Year Plan (2006–10), China has committed to reducing the energy intensity of its economic activity by 20 per cent below 2005 levels by 2010. In June 2007, China released its first National Climate Change Program, which confirmed the energy intensity target and also renewable energy and forest coverage targets. Under the program, the renewables goal is set at 10 per cent of the energy mix by 2020 (this has since been revised by the National Development and Reform Commission to 15 per cent by 2020), and an increase of carbon sinks by 50 million tons over 2005 levels by 2010. China has also announced its intention to halve its energy intensity by 2020 over 2008 (DCC 2005). These are ambitious targets that will not be easy to realise.
- **India** released its National Action Plan on Climate Change in June 2008. The plan identifies a national target area for forest and tree cover of 33 per cent (against a current area of 23 per cent) as well as a number of energy efficiency measures which will complement existing measures already expected to result in a saving of 10 000 MW by the end of 2012. The plan has a strong focus on the development and use of new technologies. It also includes a long-term commitment that India's per capita emissions will not exceed those of the developed countries (Government of India 2008).

- In 2007, **Brazil** released a white paper on its contribution to preventing climate change, focusing on energy and avoided deforestation. Specific initiatives referenced in the paper include the Program for Incentive of Alternative Electric Energy Sources, launched in 2002, which sets an overall goal of 10 per cent of annual energy consumption to come from renewables by 2022; and the National Ethanol Program, implementation of which has led to ethanol accounting for about 40 per cent of vehicle fuel use in Brazil (WRI 2008).
- The prime minister of **Papua New Guinea** has asked his country's newly established Climate Change Office to prepare an analysis of ambitious mitigation targets: a reduction in emissions of 50 per cent by 2020, and carbon neutrality by 2050 (Somare 2008). Papua New Guinea has large opportunities to reduce net emissions in the forestry sector (The National Online 2008).
- **South Africa** has launched a Long-Term Mitigation Scenarios process, designed to lay the foundations for a more comprehensive national climate change policy and eventually to 'inform a legislative, regulatory and fiscal package that will give effect to our policy at a mandatory level' (Department of Environmental Affairs and Tourism, South Africa, 2008). The South African government has not set specific targets, but has indicated that national emissions must peak by 2020–25 at the latest, and then stabilise and decline.

8.3 Assessment of progress under the Kyoto Protocol

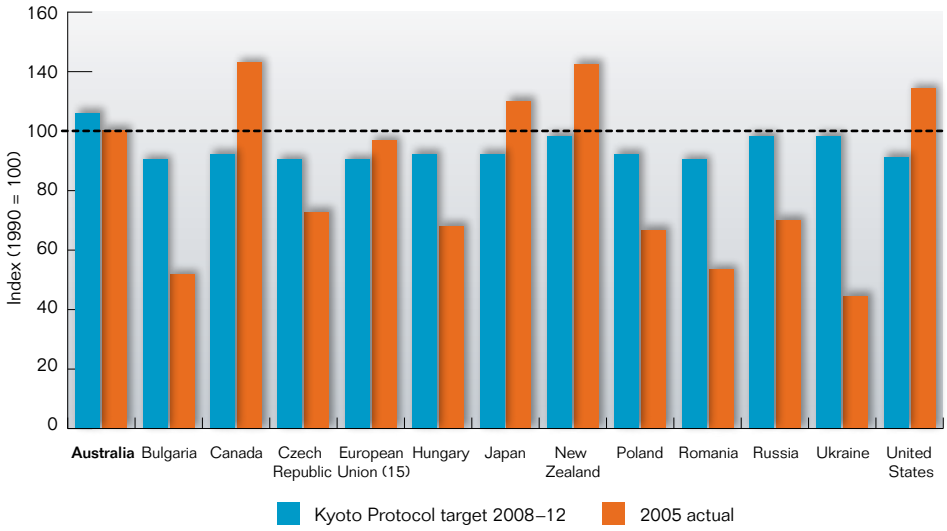
The decisions not to ratify Kyoto by the United States and Australia after the election of the Bush administration seven years ago were of historic importance in disrupting an international approach. Australia's return to the international fold following the election of the Rudd Labor Government is an important corrective measure.

The performance of developed countries against their Kyoto Protocol targets varies (Figure 8.1).

- **Ahead of target**—Countries that were moving out of centrally planned economic systems, including Russia, Poland and Ukraine, were required to make similar reductions in emissions from 1990 levels to those of OECD countries. They currently have emissions at levels far below their targets due to the large fall in economic activity and emissions that occurred in the 1990s with the collapse of central planning. Since these emissions reductions were not the result of any mitigation effort but rather were achieved before the Kyoto Protocol was signed, the gap between emissions and the targets is often referred to as 'hot air'.
- **On target without use of flexibility mechanisms**—Australia is one of the few countries that currently have national emissions at or close to the level required by the Protocol over the period 2008–2012 (in Australia's case due to one-off reductions in land clearing).

- **On target if flexibility mechanisms are used**—The domestic emissions of most countries are above their Kyoto targets. This is true for the European Union as a whole, and for Japan and New Zealand. These countries could be in compliance with Kyoto if they were to purchase sufficient Clean Development Mechanism or Joint Implementation credits, or buy permits from those countries that are ahead of target (that is, the 'hot air' countries).
- **Off target**—In Canada, against a required 6 per cent cut, emissions had increased by 27 per cent as of 2005 compared to the 1990 base. In the United States emissions had grown by 16 per cent over the same period against a required 7 per cent reduction. The United States has not ratified the Kyoto Protocol. While Canada did ratify the Protocol, the current government has declared it will not be able to meet its target.

Figure 8.1 Kyoto targets and 2005 emissions, relative to 1990



Notes: Only parties with emissions of 100 million tonnes of CO_2-e or more are included, except for New Zealand. The United States has signed but not ratified the Kyoto Protocol, and is not a party to it. The 2008–12 target is simply the Kyoto target over the 1990 baseline. Growth in greenhouse gases from 1990 to 2005 for countries other than Australia excludes land-use change and forestry. For countries other than Australia there may be discrepancies between greenhouse gas emissions as reported to the UNFCCC and as calculated in relation to Kyoto Protocol commitments. These are expected to be minor. For countries with base years other than 1990, the following years are used: Bulgaria—1988, Hungary—average of 1985–87, Poland—1988, and Romania—1989.

Sources: UNFCCC (2007b, 2008c); Australian Greenhouse Office (2007).

The Kyoto Protocol is more than a set of targets for Annex I countries. It engages developing countries through the Clean Development Mechanism, which promotes abatement projects. The Clean Development Mechanism has grown rapidly, but is flawed in a number of respects (Box 8.2).

In summary, the fact that most developed countries are in a position to achieve their Kyoto targets is positive. It is desirable for developed countries to be meeting part of their required emissions reductions through financing the mitigation efforts

of developing countries, as this provides international financing for these efforts. However, the virtual repudiation of the Protocol by Canada and the failure of the United States to ratify are serious threats to its credibility. It is only in the last year or so that developed countries have started to pay more attention to, and put targeted financing into, research and development and mitigation financing in developing countries.

Box 8.2 The Clean Development Mechanism: is it flawed?

The Clean Development Mechanism (CDM) is a market-based offset mechanism. Tradable credits are awarded for emissions reductions on a project-by-project basis and the resulting credits are purchased by firms or governments under an obligation to reduce emissions. As of May 2008, there were around 3400 CDM projects under way or in preparation, covering 2.5 billion tonnes of carbon dioxide emissions equivalent until 2012 (UNEP Risoe Centre 2008). During 2007 the CDM had primary transactions worth US$7.4 billion, with demand coming mainly from private sector entities in the European Union, but also from EU governments and Japan. The World Bank (2008) estimates that in 2007, the CDM leveraged US$33 billion in additional investment for clean energy, which exceeded the cumulative amount over the previous five years.

The CDM's geographic coverage is concentrated. UNFCCC figures (2008a, 2008b) show that 65 per cent of CDM projects registered to date are in Asia and the Pacific (mainly India (31 per cent) and China (23 per cent)), 32 per cent in Latin America and the Caribbean, and only 2 per cent in Africa.

To many, the CDM is a 'win–win' solution for all countries—it provides developed countries with low-cost abatement opportunities and a way of engaging developing countries in mitigation efforts, and it provides developing countries with a source of funding for lower-emissions technologies and practices. However, it is becoming increasingly clear that the CDM is a flawed device, from both an environmental and a market perspective.

First, under CDM rules, a project must be proved to be additional, that is, it would not have been undertaken had it not been for the CDM. However, additionality is difficult to prove or disprove (Wara & Victor 2008).

Second, the project basis of CDM is problematic. It leads to high transaction costs and a patchy price signal for emissions reductions. There are moves under way to expand the CDM to cover programs of activities, but this may heighten concerns about additionality.

Third, an offset mechanism does not in itself lead to any global reduction in emissions. Rather, CDM credits are used by developed country parties wishing to emit more domestically. A CDM credit simply offsets domestic reductions in countries with targets.

Fourth, large-scale sales of CDM credits may stand in the way of developing countries taking on more comprehensive commitments. Recent signs that the European Union intends to restrict acceptance of CDM credits can be seen in this light (European Commission 2008b).

8.4 Projections given the current trajectory of mitigation effort

With emissions growing rapidly in recent years and projected to continue to grow, the current trajectory of mitigation effort is inadequate for achieving the UNFCCC goal of holding the risk of dangerous climate change to moderate levels.

The first challenge facing the world is for developed countries to commit to and implement deep reductions in emissions. The Review's modelling, reported in Chapter 11, suggests that reductions by 2020 in the order of 15 to 30 per cent of emissions over a 2000 base will be required. Given the limited progress to date, this in itself will be a major challenge.

For developing countries, the current direction of negotiations cannot be expected to deliver any reduction in global emissions beyond that credited to developed countries. If the Clean Development Mechanism continues to be the main vehicle for engaging developing countries in the international mitigation effort, then, even if it is expanded, all abatement in developing countries will continue to be on an offset basis financed by developed country payments in lieu of their own reductions in emissions. Developing country reductions could then be modelled as zero, since any actual emissions reduction in developing countries would simply lead to a correspondingly smaller reduction in emissions in developed countries (see Box 8.2).

Developing country emissions under business as usual will exceed by 2027 the global emissions limit modelled for eventual stabilisation of the concentration of greenhouse gases at 550 ppm CO_2-e, and by 2030 will exceed the global limit by 20 per cent. If the goal is eventual stabilisation at 450 ppm, then developing country emissions without any mitigation will on their own exceed the modelled global limit by 2024, and by 2030 will exceed that limit by 60 per cent.

Exceeding emissions stabilisation paths over the next decade and beyond would increase climate change risk. Offsetting the earlier overshooting would require deeper cuts in emissions in later years, possibly greatly increasing overall mitigation costs.

Clearly the current trajectory of effort traced out from the Kyoto Protocol to the Bali Roadmap and beyond will not enable the world to hold the risks posed by climate change to moderate levels. One of the reasons the current trajectory of mitigation effort is inadequate is that it has not responded to the acceleration in the growth of emissions seen so far this century, and projected to continue. Earlier scenarios forecast much slower emissions growth even in the absence of concern about climate change. This earlier outlook is captured by the 'SRES median scenario', which is representative of the various long-term scenarios developed by the IPCC in the 1990s (see Figure 3.8). Annual global emissions levels reached by the SRES median scenario in 2030 are realised by the Review's no-mitigation, or business-as-usual, scenario 10 years earlier, in 2020. As Chapter 3 showed, the SRES median scenario can no longer be regarded as a reasonable guide to future

emissions growth. Other emissions trajectories that show much more rapid growth, once considered extreme, now appear moderate or even cautious. The world has changed, but climate change negotiations have not yet adjusted.

8.5 Accelerating progress

Without strong action by developed countries and firm commitments from major developing countries between now and 2020, it will be impossible to avoid high risks of dangerous climate change. Climate change negotiations have long been on a path that unhelpfully divides the world into two large groups.

Any multilateral negotiations concerning global public goods will face difficulties. The incentives facing individual delegations in a single, large multilateral negotiation are not conducive to reaching sound agreement. Each country will try to secure a better deal than others, with individual countries' perceptions of equity concerns figuring large, and with incentives for free-riding working against cooperative outcomes. Countries' circumstances and interests in the negotiations will differ widely, and geopolitical considerations will interfere. The dominant outcome is a low common denominator. This is evident from the experience with the Kyoto Protocol.

The world is dealing with a genuine international 'prisoner's dilemma', in which the cooperative outcome is the superior one, but in which countries have an incentive not to cooperate.[7] In the case of global warming, all countries are better off if they all reduce greenhouse gas emissions—but each country has an incentive to benefit from other countries' reductions in emissions without incurring any mitigation costs itself. A prisoner's dilemma can be reduced through communication and undertakings on side payments. But effective communications, and the development of understandings on the sharing of the gains from cooperation, take time.

There are four possible saving graces in international cooperation on climate change. One is the exceptional level of community interest and support for action in many countries, including Australia. The second is the issue's high international profile: the attention the issue is receiving across global forums and the growing number of countries, developed and developing, announcing emissions reduction targets and policies. The third is that a start has been made on international cooperation, with some countries taking steps towards emissions reduction. The fourth is that international climate change policy is not played out just once, but rather through interactions over time, allowing individual countries' policies to influence those of other countries (Axelrod 1984), and allowing agreements to evolve that are individually and collectively rational—and considered fair (Barrett 2003). The global success at combating ozone depletion (Esty 2007)—albeit at a much smaller scale and for a less challenging problem—shows that effective international action on environmental issues is possible.

How can the world build greater ambition into current international efforts to mitigate climate change? The two chapters following are based on four key principles for accelerating progress.

8.5.1 Building on existing architecture

While the Kyoto Protocol is inadequate and has been only partially implemented, it is a starting point. It would be counterproductive to attempt to start again with a new international architecture, based on a different set of principles, such as price rather than quantity targets. The chances of international agreement are better if existing frameworks are used to broaden participation and deepen ambition. The basic principles embodied in the Protocol are sound: the abatement burden should be distributed explicitly and equitably; and developed countries should support mitigation efforts in developing countries. Proposals to move forward should build on these principles.

8.5.2 Developed country leadership

No significant progress in the multilateral sphere will be possible until the United States shows that it is serious about addressing climate change by, among other things, adopting a credible long-term target. Legislative initiatives under way in the United States are encouraging in this regard, and a new administration is widely expected to take a positive role in international climate policy.

All developed countries need to be subject to, and meet, emissions reduction goals. It is important that developed countries show credible domestic abatement effort to demonstrate to developing countries their seriousness, and that it is possible to reduce emissions without sacrificing prosperity.[8]

A dual approach is needed. First, accelerating progress requires that developed countries show leadership and good faith by accepting binding reductions immediately and unconditionally. A number of developed countries, including Australia, have now indicated long-term reduction goals. Others need to follow suit. Second, steeper cuts can be offered if developing countries also agree to restrict emissions.

Emissions reduction goals need to be complemented by more generous offers of assistance and collaboration by developed countries through both trading and public funding.

Developed countries can exercise leadership by encouraging developing countries to come on board with regional initiatives.

Countries committed to effective international action on climate change will also need to provide negative as well as positive incentives for other countries to participate (section 10.6).

8.5.3 Developing country participation

Waiting until 2020 for any developing countries to commit to significant emissions containment policies (potentially the starting time for an agreement to follow the one currently being negotiated) would be to risk the prospect of achieving climate stabilisation at moderate levels. Reductions in developing countries' emissions below business-as-usual levels are needed in addition to developed country reductions, and not only as cheaper substitutes for them, as has been the case so far.

The differentiation between developing and developed countries, more recently reiterated in the Bali Roadmap, will continue to be important. However, interpretation of the phrase 'common but differentiated responsibilities'[9] as meaning that only one group of countries is responsible for containing emissions is no longer viable. All countries need to be jointly responsible, although poorer countries should have more flexible targets, reasonable room for growth in emissions entitlements, and the financial and technical support required to help them live within their emissions budgets.

For progress to be made, developing countries should not be seen as comprising a single category. Relevant differences in circumstances will need to be acknowledged. In particular, more can and should be expected of major emitters and of fast-growing, middle-income developing countries than of low-income countries. China, as the main source of global economic dynamism, a superpower, and already the world's largest emitter, is critical to the outcome.

Why would developing countries participate more actively in the international abatement effort? First, as they focus on the realities of prospective emissions growth and the risks associated with it, they will increasingly come to see an effective global agreement as being in their interest. China, South Africa and Brazil have already advanced a considerable way down that path. Second, major developing countries need to be offered financial incentives. The combination of transfer of public funds and technology, and the availability of funds from trading, would provide powerful incentives.

8.5.4 Action by individual countries and groups of countries

Given the limitations inherent in any multilateral process of negotiations, countries will also need to act unilaterally and in regional groupings to move from the status quo and increase the chance of a successful multilateral outcome. Early unilateral and regional efforts will help secure a more ambitious post-Kyoto framework.

Agreement on difficult political and economic issues can be much easier to achieve among small groups of countries than in large multilateral negotiations. In negotiations among small groups of countries it is easier to establish trust and take account of individual countries' circumstances and preferences. Furthermore, self-selected groups are much less subject to being held hostage by the least willing.

Formations of groups of countries that are prepared to agree on emissions reduction and technology transfer goals can accelerate global action by demonstrating that ambitious cooperative action is possible. In particular, groupings that bring developed and developing countries together into regional trading and technology transfer systems have the potential to show that developing countries can live within, and indeed benefit from, national emissions budgets. Agreements reached between major developed and developing emitters have the potential to break multilateral deadlocks and give negotiations fresh impetus. They allow for direct high-level political input, without which negotiations will languish, if not stall.

The hurdle for developing countries to take on emissions reduction commitments could be much lower in such a situation, as any commitments could be fashioned around the capabilities, needs and aspirations of each individual country. Similarly, it would make it easier for developed countries to enter into arrangements that include large-scale resource transfers to developing countries for climate change mitigation.

Unilateral, regional and multilateral efforts occurring in parallel might make for a messy process, but it is one that increases the chance of success in the short time available. The more individual countries and groups of countries undertake unilateral and regional efforts to mitigate climate change, and the sooner they do so, the greater the prospects for a comprehensive and ambitious future global framework.

To ensure compatibility, unilateral and regional schemes would need to be based around common guiding principles. Early movers on regional agreements would need to base their actions on explicit principles for allocating a global emissions budget that they consider to have good prospects for wider international acceptability. Early action on the basis of such principles would then play a role in the encouragement of international discussion of principles and in movement towards international agreement.

Notes

1 Countries with economies in transition under the UNFCCC are Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russian Federation, Slovak Republic, Slovenia and Ukraine.

2 Countries with target commitments are listed in Annex B to the Protocol, which largely coincides with Annex I to the UNFCCC.

3 Participants are the United States plus Australia, Brazil, Canada, China, the European Union (current President and European Commission representative), France, Germany, Indonesia, India, Italy, Japan, Mexico, Russia, South Africa, South Korea, the United Kingdom, and the United Nations.

4 The G8 nations are Canada, France, Germany, Italy, Japan, Russia, the United Kingdom and the United States. The European Commission is also represented at all meetings.

5 APEC's 21 member economies are Australia; Brunei Darussalam; Canada; Chile; People's Republic of China; Hong Kong, China; Indonesia; Japan; Republic of Korea; Malaysia; Mexico; New Zealand; Papua New Guinea; Peru; Philippines; Russia; Singapore; Chinese Taipei; Thailand; United States; and Vietnam.

6 Asia–Pacific Partnership on Clean Development and Climate partner governments are Australia, Canada, China, India, Japan, Republic of Korea and the United States.

7 The prisoner's dilemma is named after the situation in which two suspects would receive short sentences if neither informs on the other, and long sentences if both inform on the other. If only one suspect informs on the other, the informant will go free. The best solution for the suspects is the cooperative one (neither informs on the other), but each has an incentive not to cooperate (to inform). The prisoner's dilemma can be resolved through communication, and an agreement to shore the benefits of cooperation.

8 As Morgenstern (2007: 218) comments: 'The prospects for international progress would certainly be enhanced if one could point to genuine success in the United States or other large nation… Even though international negotiations on climate change have been under way for almost two decades, to date no major nation has yet demonstrated a viable domestic architecture suitable for achieving large-scale emission reductions and none, except for special cases like the United Kingdom, which experienced large changes in its resource base, or Germany, which benefited from economic restructuring, has made substantial progress in actually reducing emissions.'

9 The phrase 'common but differentiated responsibilities' appears in both the Rio Declaration and the UNFCCC.

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