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CLIMATE CHANGE AND INDONESIA: IN HONOUR OF PANGLAYKIM

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It is an honour and pleasure to give the Panglaykim Memorial Lecture at the Centre for Strategic and International Studies.

Panglaykim—Pang as we knew him at The Australian National University—joined the University's staff in a research position when I was a student. I met Pang from time to time around the Coombs building in Canberra. He was loved for his good humour, fund of stories, shrewd comments on current affairs, and personal kindness. He was highly regarded for his insights into the rapidly changing Indonesian reality. I used his work in my own research as a PhD student, especially that on state trading companies in Indonesia when I was working on the foreign trade of the Southeast Asian countries for my PhD thesis in the late 1960s.

Pang was an important early member of The Australian National University's Indonesia project. He helped to build the Bulletin of Indonesian Economic Studies in its early years, and contributed substantially to several early Surveys of Recent Developments. He was the founder of the productive relationship between the economists at the ANU and at CSIS. The links that he pioneered between ANU and CSIS have played a vital role in building the strong interaction between economists in Indonesia and Australia that have been of such great value to us both. One other lasting legacy of Pang's three years at ANU is the Canberra education of his children, and the ANU graduate degree of his daughter Mari, which led to our close collaboration with one of Southeast Asia's finest economists.

Panglaykim began his professional life as a member of that distinguished group of Indonesians who received graduate education at the University of California at Berkely in the Old Order years. Subsequent time at Singapore and Nanyang Universities as well as ANU were all preparatory to the fourteen years with his main base at CSIS in Jakarta, from 1972 until his death in 1986.

My topic today would have been unfamiliar to Pang, as it was to me and to almost all other economists during his lifetime. I can think of only one substantial exception in the world. The exception, Kenneth Arrow, had worked as a physical scientist specialising in climate before joining our profession, so the rest of us need not feel too bad at the comparison.

Tonight I am going to talk about climate change and Indonesia. But we can't ever sensibly talk about climate change only in one country.

The impacts of climate change know no boundaries. Neither do contributions to the mitigation of climate change. The only solutions are global, with participation from all substantial economies. Any failure to find and to apply effective global solutions will hurt some countries earlier and more than others. But in the end it will affect all countries.

I will not spend much time this evening discussing the science or economics of climate change. I have been immersed in these issues since the middle of 2007, and have distilled the conclusions of immersion in my climate change review.

To summarise: while there are large uncertainties about the detail, the overwhelming weight of relevant global scientific opinion says that human-induced climate change is happening, built around a pace and extent of warming that has no precedent since human civilisation emerged about 10,000 years ago (Chapters 2 and 4 of the Garnaut Climate Change Review); it is caused by rapid growth in the concentrations of carbon dioxide and other greenhouse gases in the atmosphere, principally from the combustion of fossil fuels, but with large contributions also from changes in patterns of land use, especially deforestation; the concentrations are growing particularly rapidly in the early twenty first century because the beneficent processes of modern economic growth have moved powerfully into the world's most populous countries, China and India, and other developing countries (Chapter 3); and without strong measures to reduce global emissions, the costs of climate change will accelerate rapidly from a few decades hence, and continue to increase with large and potentially catastrophic economic as well as environmental effects.

I presented my Australian Climate Change Review to the Prime Minister and all of the State Premiers in Australia on September 30, a couple of weeks ago. That was the day following the largest points fall ever in the Dow Jones index of stocks on the New York Stock Exchange. The financial crisis is a timely reminder of how closely we are joined across the world today, as societies and economies. The problems of some of us quickly become the problems of all of us. That is the way it will be with climate change.

The competing news at the completion of my Review is also a reminder that short term policy issues can deflect attention from long-term structural issues. I will return to this matter at the end of the Lecture.

Climate change is a global policy problem. I describe it as a diabolical policy problem, because of its complexity; because of the mis-match of time frames between the costs of mitigation (which come early) and the benefits (which come much later); and because of the prisoners' dilemma inhibiting international cooperation on mitigation (with each country having an incentive to do as little as possible on mitigation, if it thinks its own actions will not affect the policy decisions of others).

The prisoners' dilemma intrudes in a way that is not present in trade policy, for example. In trade policy, while each country pretends that it is reluctant to reduce import barriers when it is negotiating with others, the economic reality is that each country benefits from its own liberalisation, whatever other countries do. So if the trade negotiations fail, countries may and often do unilaterally reduce their protection.

By contrast, with climate change, strong mitigation by one country alone—Australia, Indonesia and any but the two biggest economies—will have negligible effects on the cost of climate change to that country....except to the potentially significant extent that our actions affect the policies of others.

The resolution of the prisoners' dilemma requires close communication and the development of potential agreements that share the benefits of cooperation in ways

that are acceptable to all countries whose participation is essential to a global solution. Chapters 8, 9 and 10 of the Garnaut Climate Change Review explore the contents of a possible global agreement.

But while an effective response to climate change must be global, it must be built from the national contributions of sovereign countries, acting alone, or together with others. Indonesia and Australia individually and together can contribute much to the global effort and to the success of climate change policies of developing countries in the Western Pacific region which we share.

Australia and Indonesia share vulnerability to climate change with all countries on earth. We are both highly vulnerable. Australia is vulnerable first of all because it is already a hot and dry country that stands to lose disproportionately from any additional warming or drying.

Indonesia is vulnerable because the tropical regions are projected by the science to experience greater negative impacts on agriculture than any but a few developed countries. Reefs and fisheries will experience severe effects. People already living in tropical regions, near the upper limits of the range of temperatures in which humans make their lives, will find it harder to adapt to even higher temperatures. The rise in sea levels, which is a signature impact of climate change, will have especially damaging effects on low-lying cities, including this great cities of Jakarta and Surabaya, and is likely to displace large numbers of people from coastal and riverine rural communities all over the archipelago, including from the vast lowlands of Papua.

One of the largest points of vulnerability to unmitigated climate change for Australia and Indonesia is shared with each other. Australia and Indonesia share the Asian and western Pacific regions with other vulnerable countries.

Some of our neighbours in Asia and the western Pacific are populous countries with vast communities inhabiting river deltas that would be damaged disproportionately by rising sea levels. On the mainland of Asia, many of our populous neighbours depend in important ways on the steady flows in the great rivers that have their origins in the Himalayas and Tibetan Plateau—the Yangtze, Yellow, Mekong, Ganges, Brahmaputra and Indus Rivers and others. This steady river flow has nurtured human civilisation since the cradle. It is threatened by climate change.

Developing countries will find adaptation to climate change especially difficult. With unmitigated climate change, Australia and Indonesia will have great problems of our own. In addition, the problems of developing countries in our region would become our problems.

I should mention one other way in which Australia and Indonesia share exceptional vulnerability. Both of us, but especially Australia, have export structures that cause slower growth in the global economy to damage our terms of trade. In this, we are unlike nearly all developed and many high-income developing countries. Unmitigated climate change would cause slower growth in economic activity through the second half of the twenty first century, increasingly with each passing

decade. We would both be hurt more than the average for countries by deterioration of our terms of trade.

AUSTRALIA AND INDONESIA IN THE GLOBAL MITIGATION EFFORT

The Final Report of my Review, presented to the Prime Minister, State Premiers and Territory Chief Ministers of Australia on September 30 and now published by Cambridge University Press, discusses how one country can go about assessing its interest in and proportionate contribution to international cooperation on climate change. It places one country's national effort to reduce emissions of greenhouse gases in a global context. It is focussed on one country, Australia, but seeks to provide a framework for national policy analysis in any country. Its focus on policy decision-making at a national level but in a global context is different from other large studies of the global warming policy choices, such as Nordhaus (1998, 2008), Cline (2004) and Stern (2007), which have analysed the costs and benefits of mitigation from a global perspective.

The first requirement of effective global mitigation is an international agreement on the concentrations of greenhouse gases in the atmosphere that represents the right balance between the costs of mitigation, and the risks of dangerous climate change. Discussion of the right level of global mitigation ambition has so far taken place mainly in the developed countries, although on average developing countries have an even greater interest in how this matter is resolved.

The G8 meeting of heads of government in Toyako, Japan, in July 2008, agreed that global emissions should be reduced by 50 percent by 2050. This can be seen as being broadly consistent with the longstanding European Union objective, to contain the change in global temperature from preindustrial levels to a 2 degree Celsius increase. It is also consistent with the view formed by the Garnaut Review, that it is in Australia's interest to play its full proportionate part in a global effort to stabilise global concentrations of greenhouse gases at or below 450 parts per million of carbon dioxide equivalent.

Since it is universally accepted that developed countries will have to accept much larger proportionate reductions in emissions than developing countries, the achievement of the G8 or European objectives would require reductions to much less than half existing levels for developed countries. It is widely accepted that most developing countries will need to be allowed to increase emissions in absolute terms for some time. To avoid high risks of dangerous climate change, it will nevertheless be essential for developing countries to reduce their growth of emissions below business as usual levels from an early date.

The objectives of holding the temperature increase to two degrees, or the greenhouse gas concentrations to 450ppm, or to reduce emissions by half by 2050, make excellent sense from the points of view of Australia, Indonesia, our neighbours in the western Pacific, and the international community. Analysis, including that presented in my report, shows that this can be reached at significant but manageable cost for each of us.

There are several reasons why costs can be expected to be generally lower for developing than for most developed countries. It is less costly to transform new than established investment. Many developing countries including Indonesia have exceptional opportunities for low-cost bio-sequestration, including through a diminished rate of destruction of established forests.

To realise the G8, European and Australian objectives, it will be necessary for governments of all major economies to agree on the allocation amongst countries of emissions entitlements that add up to totals that are consistent with the agreed environmental objective. This requires the articulation of principles for allocation that are widely seen as being fair and practical. My Review came to the view that to be fair, the allocations must converge sooner or later from current highly differentiated per capita emissions levels, towards equal per capita entitlements. To be practical, they would have to allow some additional headroom for fast-growing developing countries, and to allow time for high-emitting countries –principally Australia, Canada and the United States—to adjust gradually to demanding end points. The Review suggests for international discussion a set of allocations that adds up to a global solution, that is based on convergence to equal emissions entitlements in 2050.

For Australia, playing our full, proportionate part in a global effort to stabilise greenhouse gas concentrations at or below 450ppm would require us to reduce emissions from 2000 levels by 25 percent by 2020, and by 90 percent by 2050. Playing our full proportionate part in a global effort to stabilise concentrations at 550 ppm would require us to reduce emissions by 10 percent by 2020 and by 80 percent by 2050.

The world is a long way from an effective global agreement to reach the more ambitious of these goals—the 450 objective that is supported by the European Union, and the G8, and which my Review says would be in Australia’s national interest. The Review notes that current discussions in many countries about ambitious global mitigation objectives bear no relationship to what is required in emissions reduction efforts in individual countries.

The Review’s work on “business as usual” emissions, reported in Chapter 3, notes that past analysis of the prospects for global warming, in the IPCC and Stern Review, greatly underestimates the future growth of emissions from Asian developing countries. Past analysis underestimates Chinese, Indian, Indonesian and other developing countries’ likely rates of economic growth, the energy intensity of that growth, and the emissions intensity of energy use. It therefore misses the urgency of including China and other developing country in a regime designed to constrain the growth of global emissions below “business as usual” levels.

An immense effort in international cooperation is required over the year ahead, leading up to the United Nations conference scheduled for Copenhagen in December 2009, to bridge the gulf between general objectives and national commitments. In this context, it is crucial that national commitments are backed realistically by policies to implement them, that add up to desired global objectives.

One big gap between the reductions in emissions that are required to reduce emissions to acceptable levels, and the current official international discussion, is the premise that developing countries will not accept binding constraints on emissions for the foreseeable future. Unfortunately, the arithmetic of global mitigation does not add up without substantial reductions in developing country emissions below business as usual.

My Review has placed large effort into the development of proposals that have a chance of being acceptable to developing countries within a global agreement. The proposals cover cooperation on the development of public investment in new, low-emissions technologies and adaptation to climate change, as well as the allocation of entitlements to emit greenhouse gases amongst countries.

On research, development and commercialisation of new technologies, and adaptation, high-income countries, with per capita incomes exceeding \$US11,000 per annum, would take on special global responsibilities. Developing countries which participate in and accept mitigation responsibilities under a global agreement would be beneficiaries of transfers under the international technology and adaptation commitments.

On sharing the entitlements to a limited amount of global emissions, it is proposed that most developing countries, including Indonesia, accept "one-sided agreements" to hold emissions to trajectories defined by the modified contraction and convergence formula. There would be no penalty if the trajectory was breached. But if a developing country held its emissions below the defined trajectory, it would be able to sell surplus entitlements on the international market. This, together with the technology and adaptation commitments which would only be available to developing countries that participated in the global mitigation effort, would provide incentives for developing countries voluntarily to constrain emissions below the defined trajectories.

The formula developed for discussion in the Review, based on what has become known in the literature as Contraction and Convergence but with modification to allow additional headroom for rapidly growing developing countries. They would allow growth in total (including deforestation) Indonesian emissions from current (2005) levels by 16 percent by 2020 and would require reduction by 28 percent by 2050 under proposals to stabilise global greenhouse gas concentrations at 450ppm. They would allow increases from current levels levels by 17 percent by 2020 and 25 percent by 2050 under proposals to stabilise global greenhouse gas concentrations at 550ppm.

OPPORTUNITIES FOR SPECIAL AUSTRALIAN AND INDONESIAN COOPERATION

Australia and Indonesia each has special contributions to make to a global mitigation effort. The Indonesian Government's focussed and effective hosting of the Bali conference in December 2007, and the Australian Government's signing of the Kyoto Protocol at Bali, demonstrated that each of us now has a government that

is committed to the containment of global warming. This is the necessary starting point for effective contributions to global solutions.

Indonesia occupies a large place in the world's greenhouse gas emissions story. While there is uncertainty about precise levels of emissions from forestry, the best estimates suggest that these are large on a global scale, and that Indonesia may be the world's third largest emitter of greenhouse gases in absolute terms. Indonesia has taken important steps to measure and to monitor emissions, as a first step towards constraining emissions from forestry. There are opportunities for large reductions in emissions from forestry at relatively low cost. The global community and Indonesia both have strong interests in introducing incentives for greenhouse gas abatement to take place at low cost in Indonesia rather than at higher cost elsewhere. The opportunities for low-cost abatement cover afforestation and reforestation as well as avoided deforestation. Working with developed countries to introduce these incentives could be a special Indonesian contribution to the global mitigation effort.

At the same time, Indonesia has rich opportunities for generating low-emissions power at relatively low cost.

Indonesia contains a significant proportion of unutilised capacity for hydro-electric and conventional geo-thermal power generation. The development of appropriate incentive structures for making good use of this capacity, making use of gains from international sales of carbon credits, would be highly beneficial for Indonesian development and helpful to the development of an effective global emissions regime covering developing as well as developed countries.

Palm oil is a relatively efficient means of producing feedstock for bio-fuels, and Indonesia is at once a relatively low-cost producer and the largest and fastest growing producer of palm oil. The use of agricultural land for bio-fuels has rightly become controversial, since distorted incentive policies in the United States and Europe encouraged reduction of food plantings and contributed to high global food prices in 2007 and early 2008. The clearing of land for palm oil is controversial, as there are costs as well as benefits to greenhouse gas abatement in the conversion of land use. There are also other environmental issues to take into account. Indonesia could make a major contribution to the development of global policy in this important area by developing rigorous approaches to analysing optimal land use, and also effective policies to secure optimal patterns of land use taking environmental as well as economic values into account.

Australia, relative to population, is the world's leading economy for innovation in the resources industries and in the biological sciences, and especially in applied science related to innovative land use. It can be expected that Australia and Australian enterprises will play a disproportionately large role in research, development and commercialisation of innovative technologies related to geosequestration and biosequestration, and more generally in the low-emissions energy industries.

Both Australia and Indonesia have large, cooperative and productive relations with developing countries in the western pacific region. This gives us both special capacities in the development of mechanisms for encouraging developing country participation in an effective global mitigation effort, and also in the shaping of mechanisms for assistance to developing countries in adaptation to climate change.

AUSTRALIA-INDONESIA COOPERATION

The shared interests and special capacities in relation to climate change of Australia and Indonesia, and our demonstrated ability to work productively together--bilaterally, within the Asia Pacific region, and globally--create some special opportunities for cooperation.

First of all, there is an opportunity to cooperate with each other and with other countries in our region in defining an effective global mitigation regime. This would have three elements. First, we could work together in developing a set of principles for allocating the global mitigation effort across countries, that had good prospects of being seen as fair and practical. The fact that one of us is a developed and one a developing country, both with relatively high per capita emissions, is an advantage in defining a regime that needs to have wide appeal.

Second, our respective interests in applying technological innovation create an opportunity for us to contribute together to development of a model for cooperation between developed and developing countries in new, low-emissions technologies, applicable to the biological as well as to the engineering sciences. Chapter 10 of my Review suggests that there should be a global Low-Emissions Technology Commitment, directed at lifting levels of public support in developed countries for research, development and commercialisation of low-emissions technologies. Here the opportunities would be greater if we were both working within a wider western Pacific group of countries including Japan. We could lead the way in the international community by each establishing at an early date the domestic policies and institutions for meeting the commitments ourselves.

Third, we have a large bilateral development assistance relationship. This provides opportunities for us to play leading roles in the integration of climate change adaptation objectives into development cooperation regimes in our region.

There are considerable opportunities for cooperation on mitigation, based on large but different opportunities for abatement. On a global scale, Indonesia seems to have exceptionally large, low-cost opportunities for reducing emissions, starting with but not confined to the land use sector. Indonesia would tend naturally towards sales of entitlements within a global emissions trading regime, in which emissions entitlements were allocated equitably amongst countries.

Australia tends naturally to relatively high per capita emissions. It has comparative advantage in a range of emissions-intensive industries, and would probably continue to do so in a global regime in which emissions entitlements were allocated equitably and traded between countries.

Australia and Indonesia are therefore highly complementary in emissions profiles. If each were committed to constraining emissions—Australia to absolute reductions and Indonesia to reductions below business as usual, as would be required within a global regime—with opportunities to trade emissions entitlements, Australia would tend to be a large net buyer of permits and Indonesia a large net seller. Trade would occur most efficiently on a global scale, but would add considerable value on a bilateral or regional basis, so long as the trade was based on principles that had good prospects for generalisation into a global regime. Reductions in emissions could become a major export industry for Indonesia. The purchase of permits could reduce the costs of Australia living within specified emissions constraints.

These opportunities lead into the possibility that Australia and Indonesia together could work with other countries in our region, to provide an exemplary model for cooperation on climate change mitigation between developed and developing countries. The agreement could be fully consistent with carefully defined proposals for the shape of a global mitigation regime, but move faster than the international community was yet prepared to go on a global basis. The regional arrangement could encompass national emissions reductions trajectories that were consistent with global mitigation objectives and, together with technology and adaptation commitments, would be calibrated to be attractive to developing countries in the region. It would provide for technical assistance to developing countries in measuring emissions and in developing policies and institutions to reduce emissions. The technical assistance would therefore help Indonesia and other developing countries in our region to utilise opportunities to benefit from sale of permits when they were able to reduce actual emissions below entitlements. Trade in permits would allow Australia and also Japan and New Zealand to reduce the cost of meeting demanding trajectories for reduction of emissions entitlements by drawing on lower-cost mitigation opportunities in developing countries. The sale of permits could become a major economic opportunity for some developing countries, including those, like Indonesia and Papua New Guinea, that currently have high emissions from deforestation.

The logical first partners in such a regional mitigation agreement would include New Zealand, itself in an advanced stage of developing an emissions trading scheme. They would include Indonesia's ASEAN partners. Papua New Guinea and other member countries of the South Pacific Forum would be natural candidates for early membership. There would be no need to place arbitrary limits on membership if others saw advantages in joining, because all of the rules would be designed to be fully consistent with an emerging global mitigation regime. (See Box 14.4, Chapter 14 of my Report).

A western Pacific regional climate change agreement would be a good testing ground for prototypes of a global Low Emissions Technology Commitment and policies for adaptation assistance for developing countries.

WHAT DIFFERENCE DOES THE FINANCIAL CRISIS MAKE?

In October 2008, one question is on everyone's mind when we think about the implementation of global warming mitigation policies. What difference does the unprecedented financial crisis of September and October 2008 make?

Will the financial crisis make mitigation genuinely less urgent, by slowing global growth in economic activity and therefore energy use and emissions? Will it reduce commitment or capacity to sustain economic costs to reduce emissions? In particular, will it reduce the chances of strong mitigation in major countries, first of all the United States?

It is a theme of my report that a decision to reduce emissions in the interests of reducing the risks of dangerous climate change is not a decision to favour the environment over the economy. Certainly unmitigated climate change is likely to have large environmental costs. But it would also have large economic costs. The policy challenges of mitigation derive partly from the reality that the costs come early and the gains, including the gains from reduced costs of climate change, come later.

So the economic policy choice is not between economic costs and environmental benefits. It is between short-term economic costs and long-term economic benefits, the latter potentially of much larger dimension (see the framework for policy decision-making in Chapter 1 and applied in Chapters 11 and 12). In this context it is worth keeping in mind that the financial crisis itself can be understood as a consequence of favouring the short term over the long term in private and public decisions affecting the economy.

The acceleration of economic growth in China and other major developing countries that has made early and strong mitigation more urgent has deep foundations. It is unlikely to be permanently knocked off course by the financial crisis. Of course, it is still possible that the recessionary effects of financial crisis could interact with weaknesses in social and economic institutions to generate much more severe consequences for growth. Failing those still avoidable outcomes, the "business as usual" trajectory of emissions growth beyond this year and next is likely to be much the same as anticipated in my Review. A pause for a year or two in rapid emissions growth as a result of widespread recession in developed countries and temporarily lower growth in others would provide no more than a little breathing space—which may turn out to have been necessary for attainment of anything like announced mitigation objectives given the points from which we are starting in late 2008.

Financial crises, however severe, are short term phenomena. The current crisis, whatever costs it comes to impose on the growth in living standards in many countries, will have run its course before leaders meet in Copenhagen late in 2009 to seek agreement on successor arrangements to those agreed for 2008-2012 in Kyoto in 1997. The crisis will have left a legacy of reduced wealth, incomes and possibly growth prospects, the extent of which will depend on the effectiveness of policy decisions that are still under consideration. But the financial crisis itself will have passed into history.

By contrast, climate change is a long term structural issue. It is bad policy to allow the approach to important long term structural issues to be determined by short term cyclical considerations. Moreover, if the financial crisis leaves a legacy of recession, it is to be expected that normal patterns of growth will have been re-established by 2013, at the time at which arrangements agreed at Copenhagen are being applied. The period of accelerated growth out of recession, would turn out to be a favourable time to implement policies involving major investment in new technologies, involving considerable structural change.

So the financial crisis does not materially reduce the magnitude or urgency of the mitigation task. Nor does it create a sound reason for delaying mitigation.

There is, however, another question from the financial crisis. Whatever the economic realities, will the post-crisis political environment cause the priority of the mitigation challenge to be downgraded, and therefore delay progress in national policies and international agreement?

It may. That will depend on the quality of leadership in many countries. The quality of leadership in Australia and Indonesia will not be irrelevant to the global outcome.

There is no doubt that the period ahead in Australia will be difficult for incomes, and that this will affect willingness to forego some current income for long-term gain, as is required for climate change mitigation. In Australia, the fall in global economic activity associated with the financial crisis will be responsible for a sharp fall in the terms of trade—as it will in Indonesia although in lesser degree. The boom in commodity prices associated with exceptional global economic growth in the early twenty first century up to the third quarter of this year lifted Australia's terms of trade by two thirds. This raised average Australian incomes by an eighth, and greatly increased revenues of Australian Federal and State Governments.

The Garnaut-Treasury modelling for my Review anticipated that a major part of this improvement in the terms of trade would unwind over a number of years, as global supplies of resource-intensive products rose in response to high prices and profitability. This would cause average annual growth in GDP to 2020 to be substantially above growth in GNP (Chapters 11, 12 and 23). The cost to Australian incomes of the fall in the terms of trade from the high levels of mid-2008, to above the average historical levels in a decade's time, was projected to be substantially above the costs of the most ambitious greenhouse gas mitigation trajectories analysed by the Review.

It now looks likely that the return of Australia's terms of trade to levels that, while historically high, are much lower than mid-2008 levels, will now be compressed into a relatively short period. Much of the fall in the terms of trade from the giddy heights of the third quarter of 2008 will now occur over the next year or so.

During this period, Australian incomes and government budgets will be under great pressure even if, as is possible and with good management likely, Australia avoids the recession that will probably engulf most of the developed world.

This will make effective Australian participation in the global mitigation effort more dependent than ever on the selection of the most efficient—the lowest cost—mitigation policies and institutions. My Review gives close attention to identification of these policies and institutions, around an efficient emissions trading system (Chapter 14).

So climate change mitigation is likely to be more difficult politically in the immediate aftermath of this financial crisis. But it will be neither less important nor less urgent. Without effective global mitigation, climate change will still be here tomorrow. The possibility of effective action to remove great risks to economic as well as environmental values may not.