THE POLICY FRAMEWORK FOR TRANSITION TO A LOW CARBON WORLD ECONOMY

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SECURING INTERNATIONAL AGREEMENT ON CLIMATE CHANGE MITIGATION WHILE PRESERVING OPEN TRADE AND GLOBAL GROWTH

I have described the mitigation of human-induced climate change as a diabolical policy problem. It has many demanding dimensions, any one of which might seem to make it unlikely that the human species will be up to the challenge. We are facing moments of truth now, between the G20 meeting in Pittsburgh and the United Nations conference at Copenhagen. It has been clear for some time and obvious since Pittsburgh that we will not get to a satisfactory global treaty in one shot at Copenhagen. What we have to work towards is a broad framework at Copenhagen that allows officials working to heads of government to fill in crucial numbers in the year or so after that.

The most difficult of the challenging dimensions of climate change policy is that there can be no effective mitigation without all countries of substantial size making major contributions to the solution. And yet each country has an interest from a narrow national perspective in doing as little as possible, so long as its own free riding does not undermine the efforts of others. Any lagging by some undermines domestic support in others, partly because of resentment at inequitable sharing of the burden, but also because associated distortion of the terms of competition in emissions-intensive, trade-exposed industries generate visceral political economy reactions.

Nevertheless, there is a common tendency for people in each country to think that they can free ride on others without that affecting the global outcome, or, more commonly, to fail to recognise the extent of action in other countries and therefore to fail to recognise their own free riding.

The apparent national benefits from free riding make climate change mitigation a more difficult subject of international negotiations than trade or arms control.

With trade, unilateral reduction of protection makes a country richer whatever other countries do. And yet it is hard enough to achieve international agreement on mutual reduction of protection.

With arms control, at least unilateral reduction of defence expenditure has a national benefit for the budget and economic growth.

The international dimension also makes climate change policy more difficult than other environmental problems, such as removing pollution from the air of large cities, or cleaning up degraded rivers. These can be resolved through the action of a city or national government, or by cooperation between neighbouring countries. When the people of the city or country or set of neighbouring countries become richer, they are prepared to sacrifice more income for a cleaner environment. Local action emerges, and is effective. The air in Melbourne and the air and water in Tokyo are cleaner than they were a generation ago, although the levels of economic activity in the cities are now incomparably larger.

The climate change problem requires cooperation of the whole world. It is not amenable to a local solution. Therefore a solution will not emerge country by country as

each country becomes rich.

The problem is made even more difficult by one feature of the history of international discussion of climate change. The international community agreed at the beginning of the United Nation Framework Convention on Climate Change in the early 1990s that the developed countries would make commitments to and implement major actions to reduce their emissions before developing countries would be expected to take these steps. Further, developed countries would be expected to meet the incremental costs of mitigation in developing countries.

There was some justice in this approach, since the countries that are now developed had been responsible for the increase in concentrations of greenhouse gases in the atmosphere that had taken the world to the threshold of dangerous climate change.

It also seemed at that time, the nineties, that such an approach was consistent with effective climate change mitigation. In the early nineties, developing countries accounted for only about a quarter of global emissions, and there was still thought to be some headroom in concentrations before the thresholds of danger had been crossed.

In 2009, the constraints are much tighter. In the early twenty first century, emissions have been growing much more rapidly than before and than previously anticipated.

The Great Crash of 2008 and the Great Recession have led for a while to some reduction in global emissions. But the restoration of growth through the second half of 2009 has made that a brief interlude in the growth of global emissions. In any case, in late 2008 and early 2009, in the depths of by far the worst economic downturn since the 1930s, current emissions remained at a level at which concentrations of greenhouse gases in the atmosphere were growing strongly.

We have squandered the time and the headroom that we had in the early 1990s. We need to change the trajectory of global emissions urgently if high risks of dangerous climate change are to be avoided. Developing countries now account for over 40 percent of emissions. The calculations presented in the Garnaut Climate Change Review (Garnaut 2008) indicate that, in the absence of mitigation, developing countries would be likely to account for around 90 percent of the growth in emissions over the crucial two decades ahead.

THE FRAMEWORK OF INTERNATIONAL AGREEMENT

No effective mitigation will emerge from unilateral action in single countries. Indeed, taking a step too far on a unilateral basis may set back the global mitigation effort. It is much more costly for one country to achieve a specified degree of mitigation alone, than it would be to achieve the same level of mitigation within a global agreement. The high costs of some countries achieving high mitigation targets unilaterally may demonstrate to others the difficulty rather than the feasibility of action.

It seems unfair that developing countries have to accept major commitments to

mitigation when the countries that grew rich before them were not so constrained. Unfair or not, there will be no effective global mitigation without all substantial countries reducing emissions significantly below business usual from a time not far from now.

If the differentiated treatment in favour of developing countries of which the UNFCCC agreements speak takes the form of long delays in developing countries being required to reduce emissions to well below business as usual, there will be no effective mitigation. Obligations to reduce emissions, however, can be set in different ways from those of developed countries.

There is no chance at all of any country, least of all a developing country, committing itself to mitigation at the cost of seriously damaging opportunities for continued growth in output and living standards. The world's challenge is to break the nexus between growth in living standards and the growth in greenhouse gas emissions. Fortunately, the economics says that it is possible to reconcile reduction in emissions with continued economic growth in the world as a whole and in each of its parts. There is a cost to economic growth, but with good policy it can be small compared with on-going increases in labour productivity and living standards. The Garnaut Climate Change Review (Garnaut 2008) estimates the costs of Australia playing its full proportionate part as a developed country in an ambitious global agreement to bring emissions back to 450 parts per million (ppm), at less than 0.2 percentage points of incomes growth per annum to the middle of this century. That cost to annual output is clawed back over the rest of the century, even if only those benefits of mitigation that are amenable to standard economic modelling are taken into account. Other considerations magnify the gains, more powerfully further into the future.

There will be no effective global agreement that reduces to acceptable levels the risks of dangerous climate change unless all substantial countries think that it is fair. To develop principles that are widely understood to be fair requires leaders and representatives of all countries to listen to what others are saying. It requires leaders and representatives of all countries to help their communities to listen to what others are saying.

It then requires hard work in formulating an international agreement that meets the requirements of fairness and adds up to effective action.

The resolution of this problem would be impossible as well as diabolical if it were not for one saving grace. The saving grace is the exceptional public interest and concern in many countries over this issue.

An international agreement would need to have the following interlocking elements:

1. Agreement on the level of greenhouse gas concentrations that would strike the best balance between economic costs of emissions reduction and risk of climate change. There would be risks and costs of dangerous climate change even if we were to hold concentrations of gases in the atmosphere at present levels. To hold concentrations in the atmosphere at current levels would require drastic and almost immediate reductions from current rates of emissions. There

is increasing international focus—an emerging agreement—on the objective of holding concentrations at or below 450ppm, or to a rough equivalent, holding the probable increase in temperature to about 2 degrees Celsius above pre-industrial levels. Parts of the scientific and environmental communities advocate lower goals for stabilising concentrations. Realistically, the path to any more ambitious mitigation outcome is through an initial agreement to 450ppm, which can be extended as confidence grows in the feasibility of reconciling emissions reductions with rising material standards of living.

2. The global emissions concentrations objective defines a global budget for emissions over a specified period. There needs to be an agreement on allocation of that budget amongst countries. Agreement has to be based on principles that are widely seen as being fair. Seen to be fair in rich and poor countries. Seen to be fair in rich countries which start with extremely high emissions per person, like Australia Canada and the United States, and in rich countries in which each person has far lower levels of emissions, like Europe, Japan and New Zealand. Seen to be fair in developing countries with rapidly growing economies like China, India and Indonesia, and in poor countries with stagnant or slowly growing economies as in many parts of Africa and the South Pacific. No agreement will seem fair through most of the developing world, and in my judgement in the world as a whole, unless it is based on the idea that each country's entitlements to emit will converge towards eventual equal per capita levels at some time in the future. There will be widely different views of the time over which convergence should occur.

3. The agreement needs to be based on entitlements and not on actual emissions. It greatly improves the chances of effective climate change mitigation if there is freedom to trade entitlements. Countries in which mitigation is relatively cheap and easy can then reduce emissions below their entitlements, and sell the "surplus" entitlements to countries in which reduction in emissions is expensive and difficult. For example, there are good prospects of Indonesia and Papua New Guinea accepting strong mitigation targets within a global agreement, but only if there are opportunities to sell what turn out to be surplus entitlements.

4. The developed countries need to agree to take the lead in public support for research, development and commercialisation of new technologies. The Garnaut Climate Change Review suggested that high-income countries (with per capita income above $11,000 per annum) should share responsibility for providing public support for innovation in the low-emissions technologies to the extent of $100 billion per annum (Garnaut 2008). Other numbers around this level have become part of the international discussion. A proportion of expenditure within an International Low Emissions Commitment would be deployed in developing countries.

5. We are too late to avoid considerable costs of climate change. That will be a problem in all countries. Poor developing countries do not have the institutions, financial capacity or human skills to respond alone in an economically effective

way to the problem. Developed countries will need to make major additional commitments to development assistance to support developing countries' adaptation to climate change.

There is a deal to be done, within what is politically feasible in the major countries. China, for example, has already committed itself domestically to do considerably more than the Garnaut Review suggested would be required of it by 2020, within an agreement directed at concentrations of 450ppm. The Review anticipated a Chinese commitment to reduce emissions by 10 percent from business as usual by 2020. The measures announced as matters of domestic policy by China to September 2009 have been estimated by my colleagues from the Garnaut Climate Change Review, Stephen Howes and Frank Jotzo, to reduce Chinese emissions in 2020 to 37 percent below business as usual (pers. comm., see also Howes 2009). The superior performance in China comes from the commencement of strong action in 2007 and early 2008, when the Review envisaged business as usual until the commencement of post-Kyoto arrangements in 2013.

But China is yet a long way from committing internationally to deliver that outcome. That distance must be travelled soon by China if there is to be a satisfactory climate treaty in the aftermath of Copenhagen.

The Garnaut Climate Change Review suggested an allocation of the global mitigation burden that was based on convergence towards equal per capita entitlements in 2050. Australia's proportionate contribution to an effective global agreement to achieve an ambitious (450ppm) international agreement would be to reduce emissions entitlements by 25% from 2000 levels by 2020, and by 90% by 2050. The Australian Government accepted this target, conditional on corresponding commitments from other developed countries and commitments to hold emissions below business as usual in major developing countries.

The new Japanese Government has offered to reduce emissions by 25% in the context of an effective global agreement. The European Union has made a larger unconditional offer.

The Japanese and European offers were not taken from an explicit framework of convergence on equal per capita entitlements by mid-century. It would seem that there is now too little time before Copenhagen for the detailed discussion of such a systematic basis for assessing entitlements that would be necessary for comprehensive agreement along these lines at that time. The Review put forward a view on the 2020 mitigation contributions that would be required of each major country within movement to a 450ppm concentrations objective over the longer term. Larger contributions than anticipated by the Review in some countries (notably China) may balance shortfalls in others. This, combined with the temporary pause in emissions growth and the spur to investment in low-emissions technologies, may generate a set of commitments for 2020 that keep ambitious mitigation possibilities alive. However, the deeper and wider cuts in emissions that are required beyond that date could only be secured through a formal structure for agreement on allocations, rather than the

crude political discourse that has prevailed to date.

There has been much international discussion of the Garnaut Review's proposed basis for allocating entitlements since the Review's release on September 30 last year. Some commentators in developing countries, including China, have said that 2050 is too long to wait for convergence (Project Team of the Development Research Centre of the State Council 2009).

This is the discussion that the world has to have: discussion of alternative ways of dividing up a global emissions budget that add up to avoidance of high risks of dangerous climate change.

RISKS TO THE GLOBAL TRADING SYSTEM

The standard studies of the costs and benefits of climate change mitigation, either for the world as a whole (Stern 2007) or for a single country (Garnaut 2008) presume the presence of an efficient system of policy to support the transition to a low-emissions economy. Such a system would have two essential elements. It would include an appropriate price on emissions to correct the externality associated with the emissions themselves. It would also include public support for research, development and commercialisation of new, low-emissions technology to correct the externality associated with innovation. The first requirement would allow trade in emissions entitlements across countries to allow reductions in emissions to occur where they can be achieved at lowest cost to welfare.

Optimal policies cannot be taken for granted. Shortfalls from optimality could have great costs for the economy. The Garnaut Climate Change Review put the issue in the following terms:

> *The Review did not model the transactions costs associated with various compliance arrangements for the emissions trading scheme. This could turn out to be a substantial deadweight loss for the economy, particularly in relation to the treatment of trade-exposed, emissions-intensive industries in an ad hoc policy world. If this issue is not handled well, uncertainty will affect the supply price of investment. It will lead to a diversion of management effort into rent-seeking behaviour rather than the pursuit of low-emissions production processes. It could potentially lead to a wide corrosion of good economic governance. In the worst of circumstances it could turn out to be as expensive as the costs of mitigation itself.* (Garnaut, 2008 p. 297)

The price on emissions could be achieved through an emissions trading scheme (ETS) or a carbon tax. Trade in entitlements—essential to securing participation of many developing countries and important to lowering costs of mitigation and levelling the playing field for trade in emissions-intensive products—is facilitated by many countries having an ETS. Trade in entitlements would be possible with a carbon tax, although

with greater difficulty, by channelling trade through Government windows.

Economists have debated extensively the relative merits of an ETS and a carbon tax. In practice, the efficiency of both depends on comprehensive collection for the public revenues of the rent value created by relative scarcity of entitlements. In practice, both are vulnerable to rent-seeking pressures. Distortions associated with successful pressures for the issue of free permits or carbon tax exemption to preferred sectors have the potential seriously to raise the costs of mitigation. Both instruments are subject to such pressures.

Pressures for special treatment from industries and firms are most effective when they are connected to an argument that the preferential treatment is in the national interest, and if that argument contains some element of truth. Such an argument is made with greatest confidence in relation to free emissions permits or carbon tax exemption when there is differential pricing of emissions across countries affecting the costs of producing tradeable goods and services.

The argument with an element of truth has three parts: the price of emissions is higher at home than in the countries from which competing suppliers are drawing their product; this leads to lower production at home and higher elsewhere; and the higher production elsewhere is from more emissions-intensive processes than those used at home. The argument points to loss of economic value, and also to the undermining of the environmental objective through “carbon leakage”.

The “carbon leakage” argument for exemption from a carbon tax or for issue of free permits to trade-exposed industries is used much more widely, and to justify much larger subsidy for special interests, than is justified by analysis of the actual effects of differential emissions pricing. Invariably the extent to which the home Government is doing more than competitors to tax emissions is exaggerated. Invariably there is a tendency to call all pressures for relocation of industry as a result of emissions pricing “carbon leakage”, when some such pressure is environmentally and economically desirable and would occur with universal emissions pricing at comparable rates.

The extent of subsidy warranted by “carbon leakage” is usually considerably less than the full cost of permits to trade-exposed industry, and sometimes a small fraction of it. Over-compensation for carbon leakage in one country invariably stimulates claims for over-compensation in others, in ways that are familiar from the political economy of protection. New Zealand’s decisions to raise assistance to trade-exposed industries in response to perceptions that Australia was offering more than New Zealand, announced in the last week of September 2009, is simply the latest in a long line of such developments.

The arbitrary extension of tax exemptions, free permits and subsidies to trade-exposed, emissions-intensive industries is potentially a major source of distortion in international trade, with the capacity to corrode the liberal multilateral trading system. We can envisage differences in Governments’ approaches to assistance to trade-exposed industries being more important to a firm’s competitiveness in the international market

for an emissions-intensive product than typical inter-firm differences in the efficiency with which resources are used.

This potentially immense distortion comes on top of the recent corrosion of commitment to multilateral trade analysed powerfully by Jagdish Bhagwati in his *Termites in the System* (2008). It comes on top of the interventions in response to the global financial crisis and subsequent recession, which have made differential patterns of government subsidy more important than underlying comparative advantage in determination of the location of production for such major industries as financial services and automotive products.

The absence of principles in providing assistance to trade-exposed industries within emissions reduction policies is potentially the largest of the several recent challenges to the liberal multilateral trading system.

There are long term and transitional solutions to the dreadful international trade problems deriving from apparently differential treatment of trade-exposed industries.

The long term and general solution is to move towards all substantial (including developing) economies having caps on emissions, alongside trade in emissions entitlements. Remember that these caps can be set in different ways for economies at different levels of development: the important thing is that there are hard caps. Hard caps on emissions plus trade in entitlements will move the world towards similar emissions pricing across countries.

The inclusion of all developed and the world's major developing countries—say, the developing country members of the G20—would remove all material and legitimate concerns for carbon leakage. They would remove even the political case for support in all but a few industries. In those few industries, the residual problem could be managed by sectoral agreements, in which substantial producers on a global scale agreed to place a comparable carbon tax on the relevant industries, collecting the proceeds for their own public revenue.

If there were understanding of the fundamental importance of this issue for climate change mitigation, the global trading system and global fiscal stability, and if its importance were discussed by heads of government in the G20, it would be possible to move relatively quickly to satisfactory general arrangements. To facilitate early movement, the Review suggested one-sided targets for developing countries: targets with no penalties for non-compliance, but with the benefits of opportunities for sale of surplus permits for complying countries. It suggested that participation in technology transfer arrangements and adaptation assistance should be confined to complying countries. Exceptions could be made for the lowest-income developing countries. China's early compliance would be essential for systemic success.

But "relatively quickly" is not soon enough for the post Kyoto world from 2013, especially since we have not yet broken free from the intellectual and political entanglements from Rio de Janeiro, Kyoto and Bali, which inhibit acceptance of hard caps by developing countries. There is high risk of great economic damage during the

period before moving towards broadly comparable emissions pricing across major countries, and transitional arrangements are required to reduce that risk.

It is no solution for countries with ambitious emissions reduction schemes to adopt punitive trade measures. The risks of capture of countervailing tariffs by protectionist interests are high to the point of certainty.

Nor is there a solution through the established processes of the WTO. It is probably illegal under the WTO subsidies code to provide free permits in the form favoured in many countries' established or emerging emissions trading schemes. Action through the established WTO processes requires the crystallisation of a dispute, with dangers of descent into endless litigation, surrounded by rising international tensions over trade measures. Most developed countries in any case would prefer to let sleeping dogs lie in relation to others' arrangements: criticism of others' arrangements would invite interest in one's own.

The optimal transitional arrangement is defined and explained in Chapter 14 section 5 of the Garnaut Climate Change Review (Garnaut 2008). The central idea is that each country should limit assistance to trade-exposed industries to what is warranted by the real, carbon leakage issue. This requires a calculation of what the global price of an emissions-intensive product would have been if all economies had applied similar emissions pricing. Assistance would be provided to cover the gap between actual prices, and levels that would rule with comprehensive emissions pricing.

The optimal assistance regime would be best administered internationally. The WTO is the best placed of the international organisations to take the lead. Some members would need to request the WTO organisation to work towards establishing modalities for assistance to trade-exposed, emissions-intensive industries. The objective would be to establish modalities for voluntary action rather than mandatory arrangements in the first instance.

It is an advantage of the proposed arrangements that they would be effective if applied by a single country or several countries, in the absence of universal application.

For the door to be left open for optimal transitional arrangements and for early application of a general solution to the trade distortion problem, it is essential that each country leaves open the possibility of early abandonment of current distorting arrangements immediately upon the establishment of the long term or the optimal transitional arrangements described in this paper.

RISKS TO GLOBAL FISCAL AND ECONOMIC STABILITY

Sub-optimal approaches to the carbon leakage problem are set to inhibit strong mitigation and also to distort the international trading system. The costs do not end there. There is potential for sub-optimal mitigation policies to stand in the way of correction of the fiscal imbalances that have emerged in most economies since the global financial crisis.

A carbon tax or ETS uses part of a country's revenue-raising capacity, whether the rent value of the emissions pricing is collected for the public revenues, or dissipated as free permits and tax exemptions. This was recognised in the first draft fiscal programme of the Obama administration in the United States, in which the proceeds of auctioning emissions permits was to play a major role in long-term fiscal consolidation. In Australia, full participation in an ambitious global mitigation regime would generate initial rent value of permits of perhaps one and a half percent of GDP, rising over time with the emissions price.

The dissipation of this potential support for fiscal consolidation—justified in each country by the distorted approach to supporting trade-exposed industries adopted by others—is a major threat to sustained recovery from the Great Crash of 2008. One country alone could limit the unnecessary drain on fiscal capacity by adopting optimal approaches to transitional assistance for trade-exposed industries. All major countries together could remove completely this drag on recovery from crisis, through early movement towards comprehensive emissions pricing, accompanied by trade in emissions entitlements.

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