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The Kyoto Protocol
Implications for Australia and the world

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1. What happened at Kyoto?

The Kyoto Protocol agreed last December may well represent a watershed in modern history, for it could mark a decisive transition from the fossil-fuel based technologies of the industrial era to the renewable energy and energy efficiency technologies of the next century. It is also of historic significance because the nations of the world, after protracted and difficult negotiations, reached agreement on national actions to cut greenhouse gas emissions in an attempt to stabilise global climate change, the gravest environmental threat to the world.

The outlines of the Protocol are well known. The Annex B countries – that is, the OECD and the Economies in Transition – agreed to limit greenhouse gas emissions to an average of 5.2% below 1990 levels in the commitment period 2008-2012. The European Union agreed to cut emissions by 8%, the USA by 7% and Japan by 6%.

The average was dragged up to 5.2% largely by the fact that Russia and the Ukraine agreed to stabilise emissions at 1990 levels. Australia was granted an 8% increase.

It should be pointed out that developing countries did not, and were never expected to, agree to mandatory targets for their emissions. However, it seems necessary to repeat at every opportunity that the 1992 Framework Convention on Climate Change and the 1995 Berlin Mandate to the Framework Convention explicitly acknowledge that developing countries will need to be brought into the emission cutting process, but only after the rich countries have led the way. This situation is based on a very simple principle of justice. Rich countries have become rich by burning fossil fuels and are responsible for around 80% of the increased concentration of greenhouse gases in the atmosphere. Moreover, poor countries, especially in the tropics, will suffer more severe consequences of climate change than rich countries. Rich countries are not only in a much better position to meet the costs of emission cutting but have a moral obligation to do so under the polluter pays principle.

At the meeting of the Parties in Bonn in June 1998 an interesting discussion took place over the use of the words 'rights' and 'entitlements' in debates over emission trading. The USA opposed the use of these words, arguing that the Protocol does not refer to these concepts but simply to assigned amounts that may be traded. The use of the notion of rights clearly implies an allocation of control over a common property resource, namely, the Earth's atmosphere. We can imagine the uneasiness of a wealthy and powerful nation such as the USA in the face of the assertion of rights over the atmosphere by some very poor people. The next step to flow from the assertion of rights is the principle of equal per capita entitlements for every citizen of the world. This proposal for 'global justice', known as 'contraction and convergence', is already forcing itself onto the international agenda. It has been endorsed in principle by the European Parliament. It would mean that if a rich country wanted to pollute at higher than average levels then it would need to purchase the right to do so from poor countries that own them. We can anticipate some convoluted arguments from some in the west to discredit this proposition.

In addition to the emission targets of the Protocol, various mechanisms were agreed which permit some flexibility in the way in which Annex B nations can meet their commitments. These are:

1. agreement to establish a system of emission trading that will allow Annex B Parties to buy and sell parts of their 'assigned amounts';

2. a mechanism for accumulating 'emission reduction units' through investments by one Annex B country in another, a process sometimes known as baseline shifting or joint implementation;[1] and

3. the Clean Development Mechanism which allows Annex B investors to invest in emission reduction activities (possibly including sinks) in developing countries thereby generating 'certified emission reductions' which will probably be fully exchangeable for allowances in the emission trading system.

[1] Not to be confused with the 'joint implementation' and 'activities implemented jointly' under the Berlin Mandate which applied to investments by Annex 1 (now Annex B) countries in developing countries. The latter are now incorporated into the Clean Development Mechanism.

The first half of this paper is devoted to considering the international ramifications of the Kyoto agreement, while the second half considers the implications for Australia.

2. International business reaction to the Kyoto Protocol

If an effective Kyoto Protocol is to be a vital first step in the process of avoiding potentially catastrophic climate change, then its success or failure depends on the answer to one critical question: Will Kyoto provide the signals to industry to embark on the investment wave that will take us into the next energy revolution, or will the agreement be undermined by filibustering, exploitation of loopholes and refusal to comply? In the absence of serious enforcement mechanisms, that is the big question. The response of industry is crucial to the success of Kyoto, and, for the next few years at least, that response will be driven by commercial judgement rather than by legal compulsion.

The early signs are positive. Before reviewing some of the evidence on the technological response to Kyoto, it is worth dwelling on the politics of industry opposition to the climate change treaty, as there is still a real possibility that the fossil fuel industries and their allies will destroy the Protocol.

One of the most interesting and reassuring developments since Kyoto has been the splintering of business opposition to emission reductions. A growing number of oil company executives are shifting away from their hard-line oppositionist stance and accepting the science on global warming. In the months after Kyoto, officials from British Petroleum, Royal Dutch Shell, Texaco and Sun Oil have made public comments indicating that they take climate change seriously and that oil companies will have to make substantial changes. According to the *Washington Post*:

> One oil industry official recently warned his colleagues not to fall into the trap faced by the tobacco industry, which for years denied that cigarettes were addictive (*Washington Post* 3 March 1998).

The CEO of Sun Oil, the major refiner on the US East Coast, wrote in a letter to President Clinton that the scientific evidence is strong enough to justify 'prudent mitigation measures now'. He added a P.S., "Hang tough, Mr. President – I believe the American people will be with you' (*Washington Post* 3 March 1998).

A Texaco spokesman told financial leaders in Davos, Switzerland early this year that 'the debate isn't about the science anymore. It's about what companies are doing, and what they are doing is to look at the next generation of technologies ...'. Others are talking about a generational shift in the values of their own workforces. A British oil executive has said that some of his company's young geologists belong to Greenpeace (*Washington Post* 3 March 1998).

In April this year Shell Oil, the US unit of Royal Dutch Shell, withdrew from the Global Climate Coalition citing irreconcilable differences over ratification of the Kyoto Protocol (*Dow Jones Newswires* 21 April 1998). The Global Climate Coalition is a very powerful fossil fuel industry lobby group that almost succeeded in derailing the Kyoto Protocol. Exxon, one of the stalwarts of the Global Climate Coalition, is under pressure from its stockholders to take global warming more seriously but is

resisting change (*Washington Post* 30 April 1998). Mobil is another powerful oil company that appears to have decided to resist the trend.

BP has been the leader in defections from the Global Climate Coalition. By accepting the need to cut emissions it has earned the hostility of more conservative oil corporations but has won the plaudits of international environmentalists and enlightened policy makers around the world. John Browne, BP's CEO said: 'We may have left the church in terms of climate change. But it is almost impossible to express the depth of support from within the company for the position we've taken' (*Dow Jones Newswires* 21 May 1998).

To counter the enormous public opinion and lobbying effort still being financed by the fossil fuel lobby, and various right wing organisations including the Moonies, the Pew Charitable Trust, a large US philanthropic organisation, has set up a new policy centre aimed at disseminating more balanced views on climate change. Funded to the tune of US$5 million a year, and headed by Eileen Claussen, who as a senior state department official helped negotiate the Kyoto Protocol, the Pew Center on Climate Change has received some powerful corporate endorsements. It has published newspaper advertisements including the logos of Boeing, Lockheed-Martin, Toyota, Maytag, Whirlpool, 3M, BP, Sun Oil, American Electric Power, Enron and Intercontinental Energy (*New York Times*, 8 May 1998).

A sharp division has emerged between the oil companies in Europe and the USA. Environmental awareness and a willingness to take collective action to tackle environmental dangers are greater in Europe, and oil companies with headquarters there have been much quicker to acknowledge that greenhouse gas emissions must be reduced. A month before withdrawing from the industry grouping, Shell senior executive Mark Moody-Stuart said; 'We have been repeatedly attacked in Europe for Shell Oil's membership of the Global Climate Coalition' (*Washington Post* 3 March 1998).

But one should not be too optimistic. Encouraging as these defections are, tackling climate change essentially means that carbon must be left in the ground. Some people have become enormously wealthy by taking carbon out of the ground, and many of them are not going to agree to put their money elsewhere without a fight. Very powerful forces in the USA are still attempting to white-ant the Kyoto agreement. One of the more duplicitous attempts is the so-called Leipzig declaration in which almost 100 scientists from leading universities have said that they could not subscribe to the view that climate change represents a serious threat. A Danish investigative television program has shown the Leipzig Declaration to be largely fraudulent with most of the signatories either not climate scientists, people with no scientific standing, scientists with standing who say they did not sign it and, at least in one case, a Florida TV weather man in checked pants. At least one Australian commentator has fallen into the trap (something easy to do if you have your eyes closed), adding the leading scientists of the Leipzig Declaration to the short list of 'skeptics' largely bankrolled by the fossil fuel industry.[2]

[2] Geoff Hogbin writing in the Autumn 1998 issue of *Policy*, the journal of the Centre for Independent Studies, a right-wing think tank.

It is reassuring in a way to see industry groups starting to lobby governments to recognise the special circumstances that justify shifting the burden of Kyoto's emission cuts onto others. It means that they have taken seriously the fact that mandatory emission cuts are approaching. Energy-intensive export industries have been honing their arguments for some time. In Australia, the aluminium industry has begun to argue that it should be allowed to increase the emissions for which it is responsible by more than 8%, and other sectors of the economy, including motorists and householders, should be required to cut their emissions by 8% *below* 1990 levels (*Australian Financial Review*, 19 May 1998).

Of course, one sector's exemption is another sector's penalty. In the US, the House of Representatives recently provided legislative exemption to the military for any policies that require emission cuts. Patriotic congressmen argued that the Kyoto agreement represented a threat to US defense capabilities. According to the Committee to Preserve Security and Sovereignty: 'The treaty will hamstring American military operations around the world and would lead to the creation of a 'Climate Change Secretariat' which would usurp the authority of elected local, state and federal governments.' The Committee includes various former secretaries of defence including Alexander ('I'm in charge') Haig who now promotes oil company investments in Turkmenistan (*Inter Press Service* 22 May 1998).

3. Signs of the post-Kyoto technological revolution

Returning to the fundamental question: Will Kyoto spark a huge investment surge in new technology or will the business world obstruct and prevaricate?

The Kyoto agreement appears to have stimulated a significant reorientation of thinking in the board rooms of the world's major energy producing and energy using corporations. Interest is substitutes for fossil fuels has been boosted. It is reported that big corporations including Amoco, Enron and BP are muscling in on the solar energy industry, previously the preserve of small, innovative venture capitalists and ethical investors (*Reuters* 16 January 1998).

It is no longer accurate to think of renewable energy industries as small players suited only for idealistic greenies. While major corporations are being attracted into new technologies, it could well be a Microsoft of the energy sector that takes us into the 21st century. There are hundreds of small firms out there trying to do it. Some coal industry executives believe that in contrast to the dominance of fossil fuels over the last century, energy supply in the 21st century will be highly diversified. Others believe that natural gas will be the big winner (*Reuters* 6 February 1998).

The wind energy industry is booming internationally with over 20,000 turbines producing electricity world-wide. The European Union expects to increase the contribution of renewable energy sources from 4% to 8% of the total by 2005 with wind energy playing a major part. Installed wind energy capacity has been growing at 40% a year since 1991. In some countries wind energy is already competitive with fossil fuel power even without accounting for the environmental benefits. The unit price of wind energy is expected to fall by another 20-30% over the next several years. The wind industry is a major employer. In Denmark it now employs more people than the fishing industry.

The reaction of the automobile industry is very important to the future of emission cutting. According to one view, there is a 'quiet revolution' under way in the industry, spurred initially by legislation over the last few years requiring improved fuel efficiency and given a major boost by the Kyoto Protocol. California enacted a law requiring 2% of cars sold in the state to have zero emissions in 1998, rising to 10% in 2003. Detroit fought these restrictions every inch of the way. As one commentary put it:

> The [US] auto companies were hiring lawyers to fight higher mileage standards while Japanese firms like Toyota were hiring engineers to design more efficient and environmentally-friendly cars (Robert Manning and Susan Tillou in *The Los Angeles Times* 1 March 1998).

The auto industry – which before Kyoto was seriously claiming that global warming was 'pseudoscience and that the real cause of increased temperatures is a 'hotter sun' – is now said to have accepted that change is inevitable and has turned its attention to designing much more fuel efficient vehicles. We should, of course, treat stories like this with caution as it is a frequently observed sociological fact that Americans are addicted to gasoline, and Detroit is brilliant at public relations.

But vehicle technology is undergoing a boom. Within the next decade or so zero-emissions technologies such as fuel cells will become commercially viable. Already hybrid vehicles, such as Toyota's new Prius models with more than double the fuel efficiency of the current fleet, are being produced in large numbers at close to competitive prices. Honda, Ford, General Motors and Chrysler are all investing heavily in fuel cell, electric and hybrid vehicles. One senior auto company executive has predicted that by 2015 barely half the cars will have internal combustion engines (*The Los Angeles Times* 1 March 1998) and the President of General Motors was widely quoted as saying that the end of the internal combustion engine is now in sight (*Daily Telegraph* 17 January 1998).

If all of this activity is actually going in the direction it appears to be, then technological development will disprove the arguments about how expensive the Kyoto and subsequent protocols will be. In the US, there is continuing debate over the economic costs of meeting the Protocol's targets. The Chair of the President's Council of Economic Advisers, Janet Yellen, referred to estimates that the treaty would cut $7 billion to $12 billion from annual GDP by 2008 and emphasised the role of emissions trading in cutting costs (*Wall Street Journal* March 5 1998). The Global Climate Coalition, which has spearheaded the opposition to Protocol, claims that their economic model estimates that the protocol will cost the typical American family more than $2,700 a year by 2010, or more than ten times more than Ms Yellen's figure.[3]

In fact, even Janet Yellen's figures are almost certain to be serious over-estimates. History shows us repeatedly that once industry sets its mind to a goal it does so much more cheaply than anyone predicted. Previous agreements to eliminate ozone-depleting substances and laws to limit SO_2 emissions in the USA show that the cost of reducing emissions was much lower than initially anticipated, and certainly much

[3] For a detailed examination of the use and mis-use of modelling cost estimates in the Australian debate see Hamilton and Quiggin (1997).

lower than predicted by industry. For example, it was initially estimated that the average cost of reducing SO_2 emissions using scrubbers would be around US$450-500 per ton, but in 1995 the actual price was around US$270. While industry estimated in 1990 that the price of SO_2 allowances would be US$700-1000, the actual price fell from around US$150 in 1994 to US$100 in early 1998 (Joshua 1998).

In contrast to the rumblings of the US Senate, Members of the European Parliament welcomed the Kyoto agreement and urged member states to cut their emissions by more than agreed to at Kyoto. They called for tough new legislation to improve fuel efficiency standards, cutting fuel consumption by nearly 50% by 2005 and 70% by 2010 (*Irish Times* 28 February 1998).

4. The crucial role of emissions trading

The Kyoto Protocol endorsed the development of a system of greenhouse gas emissions trading among Annex B countries that have emission caps. Under this system, nations will be able to trade in surplus emission allowances providing an incentive for some nations (and by extension major polluters within those nations) to cut emissions by more than the amounts agreed at Kyoto. Trading allows emission reductions to occur in the industries where they are cheapest.

While the Kyoto Protocol has been seen as establishing limits on the right to emit greenhouse gases, it also confers rights to emit up to the assigned amounts. These rights are valuable and their allocation was an allocation of wealth among Annex B Parties. From one point of view, Kyoto was a giant exercise in 'grandfathering' since the rights were given away. The wealth transfer implied by capping emissions and allowing trade was the undertone to much of the negotiations leading up to, and at, Kyoto.

The great attraction of emissions trading for environmentalists is that by greatly reducing the costs of greenhouse gas mitigation it should permit more rapid reduction in global emissions. Against this, the details of the trading system may open up a number of loopholes that relieve pressure on countries to reduce their emissions by the agreed amounts.

Before discussing these problems, it is worth noting that the business world is not waiting for the details of the emissions trading system to be finalised over the next 2-3 years, but is already setting up a market based on the assumption that governments will pass on their mandatory emission obligations to major domestic polluters and that an international trading system will sooner or later emerge. If either one of these assumptions proves false then many businesses will be left with assets that are valueless.

Already there has been a boom in business activity aimed at capturing the wealth generating opportunities that emissions trading provides. It is now possible to buy emission credits by dialling up the internet. A Canadian firm, Vision Quest Windelectric Inc. in Alberta, offers 'carbon offsets' for around A$35/tonne of CO_2.

Suncor Energy Inc and Niagara Mohawk Power Corporation announced a greenhouse gas emissions trade of a potential value of C$10 million. Suncor agreed to purchase

100,000 tonnes of GHG emission reductions from Niagara Mohawk with an option to buy 10 million more over 10 years. Niagara agreed to invest 70% of the net proceeds of the sale in low-emissions energy sources (*CNW-PRN* 5 March 1998).

In April, Japan and Russia concluded a landmark deal under which Japanese firms will go into around 20 Russian power plants and factories to cut their emissions. In exchange they will receive emission credits that will count towards Japan's target agreed at Kyoto (*Reuters News Service* 19 April 1998). Russia can afford to do this because the target it was given at Kyoto will leave it with a large volume of surplus emission credits in 2008-2012 when the Parties to the Convention have to report back.

The Japanese have recognised that those who get in early to buy up the cheap emission reduction opportunities will be in the box seat when the international system is finally up and running in two or three years time. MITI has been allocated US$20 million to assist Japanese firms investigate the feasibility of similar 'joint implementation' projects in other countries. Mitsui has agreed with two local authorities in Russia to conduct feasibility studies on US$3 billion worth of power plant investments (*Reuters News Service* 19 April 1998).

Oil giant BP has announced that it is using its sprawling empire to operate a pilot emissions trading program in which various company units will buy and sell credits in order to work out the cheapest ways of meeting expected emission caps.

The emergence of a market for emission allowances will have important implications for the political economy of future climate change negotiations. A new business constituency is being created for tighter emission controls, for the more polluters must cut their emissions the higher the demand for and price of emission allowances for those who hold them. These business interests will, however, also press for more opportunities to generate allowances through new plantations and CDM projects in developing countries. The latter carry the danger of allowing action to cut fossil emissions to be deferred.

5. Some problems with emissions trading

There are many t4chnical issues associated with emissions trading that are dealt with elsewhere (eg. Joshua 1998; Hamilton 1998c; Greenpeace International 1998). Here we deal with one of the key issues being negotiated and two other issues that are rarely mentioned but which have significant domestic implications.

5.1 Russian hot air

There is a real possibility that emissions trading will permit a flood of surplus emissions onto the world market that will significantly reduce pressures to find cheaper ways to cut emissions. The principal source of this flood is from so-called Russian hot air. Russia and the Ukraine are required under the Protocol to reach targets of 0% change on 1990 emissions during the commitment period 2008-2012. However, due to the collapse of much of the old Soviet industry since 1990, emissions are currently around a 25% lower than they were in 1990. Most estimates suggest that by 2010, emissions in Russia and the Ukraine will be around 15% below 1990 levels leaving these nations with a large block of emission allowances that could be sold on

world markets, especially to the USA and Japan. Through this form of 'offshore compliance' the USA and Japan can avoid much, if not most, of the domestic emission cuts that their own targets seem to demand. As one observer put it: 'American cadillacs will be fuelled by Russian depression'.[4]

This possibility has led to calls for limits on the ability of Parties to meet their assigned amounts through flexibility mechanisms, including trading.[5] These limits include caps on the share of assigned amounts that can be bought and sold and stringent conditions on the ability to generate new emission allowances from joint implementation projects in Annex B countries and CDM projects in developing countries (see Hamilton 1998c).

It may turn out to be the case that Russian hot air is the price of compliance with the Protocol. In my view, given that the Kyoto Protocol is the first step in the emissions cutting process, it is better to have lenient targets strongly enforced than strict targets that are not met. This view is based on my belief that, just as it has in the case of cutting emissions of CFCs and SO_2, the market will be in front of the regulation. This is because there are such big rewards in being the market leader, and some fossil fuel corporations have already made the decision to pursue the huge profits that the first movers will make in the renewable energy revolution.

5.2 Displacement of non-greenhouse environmental benefits

Another possible problem with emissions trading arises from the fact that emissions reductions have the same effect on climate change no matter where they occur in the world. Emission trading essentially allows polluters to displace the reduction of emissions to other regions or other countries. Cutting pollution from fossil fuels carries major environmental benefits other than reducing the risks of climate change. These other benefits occur in areas around the pollution source. Trading allows pollution reduction to be transferred to other regions where the other benefits may be diminished. The option of growing trees may absorb global carbon, but it will not cut urban air pollution.

Trading in CERs from CDM projects also allows the displacement of pollution reduction activities from Annex B countries to developing countries. In this case the displacement may result in a net benefit with respect to other environmental effects.

5.3 Trading versus *carbon taxes*

One of the most important debates in Australia and elsewhere over policies to reduce greenhouse gas emissions has been over the equity impacts of carbon taxes. Welfare groups, such as the Australian Council on Social Service, have argued that raising the

[4] Farhana Yamin of the Foundation for International Law and Development, quoted by Gordon Hamilton, *Vancouver Sun*, 18 March 1998.

[5] It might be noted that at the Bonn meeting in June 1998, Russia argued that its 'hot air' had come at great cost to the Russian people, the implication being that the opportunity to win something back through selling the surplus allowances should not be restricted.

prices of petrol and electricity will affect poor households disproportionately. This has given rise to various proposals from environmentalists and others for compensation mechanisms.[6]

Governments will soon find it necessary to allocate allowances based on national assigned amounts to domestic polluters. If this is done by grandfathering, that is, giving the allowances to polluters on the basis of historical emissions, then no revenue will be generated with which to compensate poorer households for the price rises that will follow from emission caps. This is a strong argument for auctioning allowances, or at least selling them at a fixed price.

6. Carbon sinks and their problems

The Kyoto Protocol adopted what is known as a gross-net approach to emissions in the base year and target years. Base year emissions in 1990 are estimated from gross emissions excluding land use change and forestry, while emissions in the commitment period can include net sinks created since 1990 through land use change and forestry activities where these activities are 'limited to afforestation, reforestation and deforestation since 1990' (Article 3.3). However, there is considerable confusion about what these provisions mean, not least because of the special clause (in Article 3.7) inserted to meet Australia's demand that it be able to include in base year carbon stocks net emissions from land use change (see Noble 1998).

The problem with inclusion of carbon sinks in national emissions is that they permit higher levels of fossil carbon to be released into the atmosphere. Limiting the risks of climate change requires that fossil carbon be left in the ground, so new sinks through forestry activities only buy time before the necessary cuts in fossil fuel use are undertaken. Essentially, while carbon stored as coal and oil under the ground will stay locked away for ever, carbon fixed in trees and the surrounding soil will be released back into the atmosphere within decades.

These basic facts give rise to the possibility of a 'carbon time bomb'. Climate change itself may lead to increased forest fires and droughts that will release carbon back into the atmosphere, and this may apply both to existing natural forests and to new plantations established under the Kyoto Protocol. In the former case, old forests that were essentially in carbon storage equilibrium could become net sources of emissions providing a positive feedback effect with unknown consequences (GPI 1998).

The Protocol seems to make clear that only net sinks established after 1990 on land that was cleared prior to 1990 can contribute to offsetting fossil emissions. But there remains ambiguity and it is possible that in some countries existing forest may be cleared in order to establish new forests that attract emission credits or contribute to reaching national targets.

The solution to these problems are not entirely clear, but at a minimum there should be tight control over sinks, and their contribution to meeting national targets should be discounted to account for the fact that they only take carbon out of the atmosphere

[6] See for example the proposals for ecological tax reform in Hamilton, Hundloe and Quiggin (1997)

temporarily.

7. Australia and Kyoto

While the rest of the world's negotiators could breath a sigh of satisfied relief that an agreement was reached at Kyoto, celebrations by the Australian Government could not conceal the duplicity and intransigence that marked its negotiating strategy.

The exhausted negotiators simply did not realise the implications of the extraordinary concessions made to Australia in the middle of the night. In addition to an 8% increase over 1990 levels of emissions, Australia's base year emissions were inflated by 30% by the inclusion of net emissions from land clearing. The latter immediately became known as the 'Australian clause'.[7]

7.1 Implications of the inclusion of land clearing

Using the best current estimates of emissions, the effect of the inclusion of emissions from land clearing is to increase Australia's 1990 emissions from 380 million tonnes (Mt) of carbon dioxide equivalent to 496 Mt with the addition of 116 Mt from land clearing emissions (NGGI 1997a). The Protocol sets Australia a target of 8% more than this, that is, 536 Mt a year averaged over the period 2008-2012 (see Table 1).

In the lead up to Kyoto, the Government announced a package of energy measures that it predicted would limit emissions (excluding those from land clearing) to 18% above 1990 by the year 2010. Thus energy and industrial emissions were expected to rise to 448 Mt by 2010, a level even the Government conceded could be improved on.

This leaves room for at least 88 Mt to come from land clearing in 2010 in order to come in at the target of 536 Mt. However, according to the official greenhouse gas inventory, emissions from land clearing had by 1995 already *fallen* to 78 million tonnes from 116 Mt in 1990. Thus Australia could *increase* emissions from land clearing and still meet the Kyoto target. The situation is summarised in Table 1.

Table 1 Australia's emissions task

	Mt CO_2-e
Emissions in 1990	
Energy and other sources	380
Land clearing	116
TOTAL	496
Emissions in 2010	
TOTAL Kyoto emissions target	536
Expected emissions other than land clearing	448
Balance due to land clearing	88
Actual land clearing emissions in 1995	78

[7] The next section draws heavily from Australia Institute (1998).

Sources: NGGI (1997a) and Government statements

If emissions from land clearing continue their natural decline and stabilise at around 48 Mt then Australia will have 40 Mt of surplus emission savings. Under the emissions trading system agreed by the Kyoto Protocol, these emission credits can be sold to other signatory countries. Thus far from easing an unfair emissions reduction burden, the concessions won by Australia represent a substantial wealth transfer from other developed countries.

The Australian Government has been quietly gloating over its 'victory' while trying to keep the true extent of the concessions secret from the rest of the world. At a workshop organised by the Australian Government's Greenhouse Office on 22nd June 1998 in Canberra, Dr David Harrison, the Government's senior adviser on emissions trading, was asked when Australia would begin to sell its surplus assigned amounts to other developed countries. Dr Harrison replied that he did not believe Australia would be able to sell its surplus allowances because doing so would cause resentment as other countries would realise they had been 'dudded' (i.e. defrauded) at Kyoto by Australia's tactics.

In per capita terms, the inclusion of land clearing emissions for Australia means that official emissions per head in 1990 rose from about 22 tonnes per year to about 29 tonnes, making Australia officially by far the highest greenhouse emitter per capita. With an expected population increase of 23% between 1990 and 2010 (ABS 1996), it might be expected, in terms of either total emissions increased by the 8% agreed at Kyoto, or the Government's announced policy of an 18% increase in non-land clearing emissions, that there would be a fall per capita by 2008-12, in either total emissions per capita, or non-land clearing emissions per capita. The impression might be given that we would show a moderate improvement in efficiency with which we use fossil-fuel energy.

However, as we have seen, land clearing emissions have already fallen by 33% from a net of 116 Mt in 1990 to 78 Mt in 1995 and are likely to continue falling without any actions by governments. Calculations by Professor Ian Noble show the impact of the land clearing clause. Making the conservative assumption that by 2008-2012 Australia reduces its rate of land clearing to 50% of the 1990 level (and increased its sink capacity) then

> Australia can achieve its target while increasing fossil fuel emissions by 23%, or more than 15% more than the negotiated 8% increase in total emissions (Noble 1998).

Consequently there is ample scope for per capita emissions from energy related uses to rise within the total target allowed for Australia. If for instance net land clearing emissions were to disappear by 2010 – note that it is stated government policy to achieve this by 2001 (Hill 1997) – emissions per capita from all other sources could rise from 21 tonnes in 1990 to 26 tonnes in 2010 while Australia remains within the Kyoto limit.

There is however even greater scope to increase our energy related emissions per capita because, within the non-land clearing emissions, there are significant elements

which are not energy-related. Emissions from the latter (which are mainly methane emissions from agriculture) fell slightly between 1990 and 1995. If we assume conservatively that this will stabilise at its 1990 level, and assume the same for the other minor emissions, it is possible to see energy-related emissions rising an extraordinary 29% per capita between 1990 and 2010, from 17 to 21 tonnes per capita.

In any case, using almost any basis for comparison, the concessions made at Kyoto will see Australia become the world's outstanding per capita emitter. Previously it vied with the US and Canada for this title, but with the addition of land clearing emissions, and Australia's 8% growth versus their 6 or 7% fall, Australia's pre-eminence as a polluter will be unchallenged.

7.2 Did Australia win the argument?

Australia was granted extraordinary concessions but did Australia win the argument at Kyoto? In fact, Australia lost on almost every point. The deal that the Government agreed to so eagerly in Kyoto accords with only one of its several demands leading into the conference. Australia's advocacy of equal economic costs, the use of indicators to set differentiated targets, and voluntary rather than legally binding targets never looked remotely a possibility. Developing country participation, also demanded by Australia, was not agree and was never going to be.

The idea of differentiation was the foundation stone of the Australian position before Kyoto. But before Kyoto and in the Protocol itself, differentiation was never accepted by the international community as a basic concept or major influence on targets in the way advocated by Australia. Almost every target agreed at Kyoto was within the narrow range of 1% increase to 8% reduction, and 32 out of 38 countries (with widely differing characteristics according to Australia's proposed indicators) accepted cuts between 5% and 8%. Under any feasible differentiation criteria (including those put forward by Australia), Japan and the USA would have been given markedly different targets, whereas in practice they differed by only 1%. The Kyoto outcome was therefore very close to uniform reductions for almost all countries, with a few deviations of a few percentage points.

The only Australian position adopted was emissions trading, but this was the least emphasised Australian aim, with senior bureaucrats suggesting that emissions trading would take 20 years to implement. It is worth noting here that the Australian Bureau of Agricultural and Resource Economics (ABARE) had been an early advocate of emissions trading, but ran dead on the issue for the two years prior to Kyoto. The reason was that while the Government argued vociferously that Australia would suffer huge economic costs as a result of uniform emission targets, ABARE's own economic modelling showed that emission trading would reduce the estimated costs of emission reductions by around 75%. After Kyoto, ABARE is now attempting to take control of the emissions trading debate in Australia.

7.3 Australia's attack on Europe

The Kyoto outcome finally puts to rest the Australian Government's contention that the European Union arrangement of varying targets within the EU was equivalent to Australia's differentiation position, and that the Europeans were being hypocritical in

pressing for uniform reductions for other countries. This was an argument taken up the fossil fuel lobby and its political advocates (such as Aynsley Kellow at Griffith University) who all expressed indignation at the 'hypocrisy' of the Europeans.

The Protocol records an 8% decrease for all EU countries but permits them to form a bubble arrangement under which they can negotiate varying targets within the EU as long as there is an 8% cut overall. This was always the European position. In fact it is just a form of emissions trading. Parties may emit more if they provide the wherewithal in a bargaining process with other parties to allow them to do so.

The Protocol permits other groupings of countries to form their own bubbles, but as in Europe if one country wants a more lenient target then it will need to induce other Parties to transfer assigned amounts. In other words, a Party can emit more than its assigned amount only if it buys the right from another Party which must emit less than its assigned amount.

This is not the free-ride for higher emitters that was the essence of the Australian proposal. No country negotiating an emission limit in the future can base a claim for a more lenient target on the EU position because any EU country increase is strictly within a trading 'bubble'. On the other hand, the 8% increase for Australia is a pure free ride and will undoubtedly be used by other countries in pursuit of lenient targets. Indeed, there is evidence that this is already the case.

8. Australia's negotiating strategy

8.1 The threat to withdraw

There is not the slightest evidence that other countries accepted the key contention of the Australian Government that the cost of uniform targets would be unfairly high for Australia. How then did Australia win concessions if its arguments carried no weight internationally? It has been confirmed by comments from the Conference Chair, the Convention Secretary, and many delegates and observers from other countries, that Australia won concessions by threatening to withdraw from the Convention if its demands were not met.

While all countries negotiated with the national interest in mind, none was quite so irresponsible in both threatening to withdraw, thus destroying consensus, and in seeking an increase in emissions. The Secretary of the Convention, Michael Zammit Cutajar, for instance, referred to every country except Australia being committed to its success (*Sydney Morning Herald*, 1 December 1997, p. 1). The Chair of the Conference, Raoul Estrada, stated that Australia had been allowed to have its way only in the interests of obtaining unanimous agreement (*Australian Financial Review*, 13 December 1997, p. 31).

The Australian negotiating strategy was no surprise: the Howard Government had been threatening to withdraw for some months. If any larger power, or a small number of countries, had behaved in the same way as Australia, agreement would never have been reached. Australia therefore took advantage of the more responsible approach adopted by other countries and exploited the fact that agreement on mandatory targets by all Annex 1 countries was essential to obtaining a protocol.

Australia may pay dearly for its negotiating strategy, for it generated worldwide resentment. The chief European negotiator, Ritt Bjerregard, said that the outcome for Australia was a mistake, that Australia had made a misleading case and 'got away with it', and that this would not be forgotten (*Sydney Morning Herald*, 12 December 1997, p. 1). The EU's spokesman on environmental policy, Peter Jorgensen, said that the Australian increase was 'wrong and immoral. It's a disgrace and it will have to change' (*Sydney Morning Herald*, 19 December 1997, p. 10). Some US and Canadian commentators asked why their countries had not won such concessions (*Sydney Morning Herald*, 18 December 1997, p. 13), and their question is now jeopardising continued international support for the Convention. Leading developing countries were reported to be preparing to use the Australian precedent as the basis for a refusal to cut their emissions (*Sydney Morning Herald*, 19 December 1997, p. 10).

8.2 Concealing vital information

The Australian Government based its argument for concessions on the claim that cutting emissions would be especially damaging to the Australian economy. Economic modelling by ABARE was used to argue that large losses in income would follow attempts to cut emissions and that huge carbon taxes would be needed – $245 per tonne of carbon dioxide to cut emissions from fossil fuels to the expected levels. But whatever the merits of that argument (and there were none – see Hamilton and Quiggin 1997), the inclusion of land clearing emissions causes the argument to collapse. It was therefore essential for the Australian negotiators to keep the

implications of land clearing secret from the rest of the world until a deal had been struck.

Land clearing emissions have never been included in the official MEGABARE modelling of the costs of reducing emissions in Australia or in the Government's arguments about Australia's position. The Government and its economic modellers said that emissions from land clearing were excluded because of scientific uncertainty about their size. But in the last days before Kyoto the Government changed tack. Suddenly, after months of denials, the issue of land clearing became the most important one for the Australian negotiators.[8]

However, Senator Hill continued to argue that Australia faced very high costs saying that the Australian economy would be 'devastated' by a 5% cut. He would have been embarrassed if another ABARE document had been in the hands of the other Parties to the negotiations. In 1995, an ABARE analysis of land clearing in Queensland (the state where the bulk of land clearing occurs) concluded that the economic costs of ending land clearing would be very low. Instead of the crippling carbon tax of $245 predicted by MEGABARE, the high-profile ABARE model promoted around the world, the unpublished ABARE report indicates that a carbon tax of less than $2 per tonne of carbon dioxide applied to emissions from land clearing is all that would be needed to reach Australia's expected target (ABARE 1995; see also WWF 1997).

We can now see why the Government refused to consider land clearing as an issue until the last minute. If other Parties had had time to examine the issue, then the Government's argument that Australia faced disproportionately high costs, insubstantial as it was, would have been quickly shot to pieces.

In simultaneously arguing for an 8% increase to total emissions on the basis of high costs of emission cuts, and an expansion of base year emissions to include land clearing, Australia was guilty of a sleight of hand. The novelty and complexity of land clearing emissions, and the fact that for most developed countries land clearing is an irrelevant issue, explains why Australia achieved a 'victory' in the feverish final hours of negotiation at the Kyoto conference.

Had they been aware of the facts, the land clearing concession to Australia would have provided the Kyoto negotiators with the evidence to demand that Australia cut its emissions by considerably *more* than Europe, Japan and the USA. Land clearing emissions have thus become Australia's equivalent to Russian 'hot air'. Whereas Russia found itself with emissions in 1997 much lower than in 1990 because a heavily emitting activity had declined for economic reasons, so did Australia. Whereas Germany used the shut down of East German industry to increase the emission cutting possibilities and thereby to help lower global emissions, Australia will now use the inclusion of land clearing emissions to provide a cover to increase energy-related emissions.

In getting land clearing emissions included in the Kyoto Protocol, Australia missed an opportunity to present itself as a global environmental leader at the Conference. If it

[8] The Government changed its mind after a delegation of businessmen close to the Liberal Party, along with some experts in land-use change, met personally with the Prime Minister and persuaded him that to ignore emissions from land-use change and forestry would be folly. The businessmen in question were closer to the plantation industry than the fossil fuel industry.

had agreed to eliminate all land clearing emissions by 2008-12 (an objective to which the Government is committed already), and to stabilise non-land clearing emissions at 1990 levels, Australia could have claimed a 24% reduction target by 2008-12, far and away the greatest reduction agreed at the Conference. An 8% increase in fossil emissions, with elimination of land clearing emissions, by 2008-12 could have been presented as an overall reduction of 18%, still the biggest reduction of all Annex B Parties. Even more to the point, an 18% increase of fossil emissions, the Government's announced target before Kyoto, with the elimination of land clearing emissions, also Government policy, would still have resulted in a 10% reduction, bigger than any other nation at Kyoto but requiring no change in Government policies announced before Kyoto.

9. Australia and emissions trading

As we have seen, Australia will be able to increase its fossil emissions by at least 25% over 1990 levels during the 2008-2012 commitment period. As a percentage of baseline emissions, the extent of Australia's 'hot air' is substantially higher than that of Russia. The Kyoto Protocol therefore represents a substantial wealth transfer to Australia.

The Protocol opens up the possibility of generating tradable emission allowances through establishment of new plantations. The key point, however, is that they must be plantations established after 1990 on land cleared before 1990. There is now considerable commercial activity in the plantation sector in Australia as investors recognise the added value that carbon storage gives to plantations that meet the criteria. This will have significant implications for the timber market and will increase the rate at which plantation timber substitutes for timber from Australia's native forests (see Hamilton 1998b).

The NSW Government has shown considerable initiative in brokering a deal in which Pacific Power will buy the carbon rights to 1000 hectares of NSW State Forests. Pacific Power believes that the trees in question will lock up 2400 tonnes of carbon, equivalent to the GHG emissions from electricity supplied to 2500 suburban homes (*The Australian* 5 June 1998). The forests in question are eucalypt plantations established after 1990 on land cleared before 1990. State Forests of NSW has recently sent a delegation to Japan to sell rights to carbon stored in NSW plantation forests, and there is a real possibility that slow-moving Australian industrial emitters will find that by the time they realise that they must get into the market for emission allowances all of the cheap options have been sold overseas.

Development of emission trading gives rise to some interesting potential alliances. As a net exporter of allowances, Australia will benefit from a higher price of allowances. From a commercial point of view, the following factors will increase the price of allowances and increase the value of Australia's net wealth.

1. The size and saleability of allowances arising from East European 'hot air'. It would be strongly in Australia's interests to attempt to limit the opportunities for Japan and the USA to buy their way out of emission cuts using surplus allowances arising from the Russian and Ukrainian industrial shut-down since the early 1990s (as long as these efforts did not jeopardise the saleability of Australia's surpluses).

2. Tight limits on the rules governing allowances generated by projects under the Protocol's Clean Development Mechanism, especially with respect to definition and enforcement of the 'additionality' requirement.

3. A strong compliance regime.

4. Signals to the markets that more stringent emission reduction targets should be factored in for the period after the first commitment period.

Ironically, in all of these respects the interests of the Australian Government overlap with those of environmentalists calling for stringent interpretation and application of the various mechanisms of the Protocol and the closing of loopholes. However, the Australian Government appears to be lagging in its understanding of the issues, and is so locked into its pre-Kyoto strategy of protecting the fossil-fuel intensive segments of the economy, that it has yet to grapple with these issues.

10. Longer-term implications of the Australian deal

After some prevarication, Environment Minister Senator Hill signed the Kyoto Protocol in New York, but there is little evidence that the Federal Government has grasped the significance of global developments since Kyoto. It seems to believe it deserves praise for its greenhouse program amounting to $180 million over five years. This amounts to the cost of one bus ticket per person per year, a paltry amount for the gravest threat to Australia's natural systems.

The precedents established to keep Australia in the Kyoto negotiations will bedevil future negotiations. An 8% increase for a country that is wealthy and the world's highest per capita polluter will make it difficult to gain the agreement of developing countries to begin cutting their emissions, one of the Australian demands at Kyoto.

The land clearing clause may be even more damaging, especially as developing countries are brought into the target-setting process. Since land clearing in developing countries, as in Australia, will probably be declining for other reasons, the inclusion of land clearing allows emission cuts that would occur in the energy sectors to be 'transferred' to land clearing thereby delaying cuts in emissions from industrial processes in exchange for reductions that would happen anyway.

The Australian clause opens up a large loop-hole in the Protocol because, unlike energy emissions which can be reduced only gradually, land clearing emissions can change sharply from year to year. It may be feasible to stop land clearing only for the target period 2008-2012, and then to resume it after the target is met.

In the longer term, the shape of global climate change controls beyond 2012 has become clearer. The Kyoto conference foreshadowed a move towards equal per capita emission rights and the institutionalisation of the polluter pays principle. These bode ill for Australia, the country with the highest per capita emissions, and one now not obliged to begin purposeful action on emission reductions. The effect of using the Kyoto concessions will be to undermine investments in greater energy efficiency and renewable alternatives, the only long-term solutions.

The Australian deal at Kyoto was 'a poisoned chalice' both for those seeking a global response to climate change, and for Australia's economic future. For the former, pursuit of consensus has come with the destructive precedents established for future negotiations. For Australia, the pursuit of a lenient target will come at the long-term cost of being unprepared for much tougher targets after 2012. The best course of action for the Australian Government would be to renounce Australia's Kyoto outcome and adopt more stringent emission targets.

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