

IS INTERNATIONAL EMISSIONS TRADING THE BEST POLICY RESPONSE FOR AUSTRALIA IN MEETING ITS COMMITMENTS UNDER THE KYOTO PROTOCOL?

1. INTRODUCTION

The past decade has seen growing concern over the increasing greenhouse gas (GHG) concentrations in the atmosphere as a result of anthropogenic activities. The vast majority of scientific consensus believes that this build-up of GHGs is leading to global warming, and if unchecked will result in various catastrophic phenomena including rising sea levels, droughts, floods and desertification.¹ Carbon dioxide is the main contributor to climate change, and is released into the atmosphere whenever fossil fuels are burned and is sequestered in the growth of trees.

Global warming is a global problem, as its effects will be felt independently of where GHGs are emitted. This was recognised in 1992, at the Earth Summit in Rio de Janeiro, when nations of the world agreed to the United Nations Framework Convention on Climate Change (UNFCCC) at what became the First Conference of the Parties to the UNFCCC (COP-1). The ultimate objective of the UNFCCC, as stated in Article 2, is to achieve “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system”. However, while the Convention required countries to reduce their GHG emissions, it failed to commit Parties to legally binding targets.

In an attempt to remedy this, the second session of the Conference of the Parties (COP-2), held in Berlin in 1995, initiated negotiation of a protocol or other legal instrument requiring Annex 1 Parties (developed countries) to adopt legally

binding targets and timetables to reduce GHG emissions.² This agreement became known as the Berlin Mandate. It is this mandate that led to the breakthrough acceptance of binding targets and time frames by Annex 1 Parties by way of the Kyoto Protocol.

2. THE KYOTO PROTOCOL

2.1 Targets

On 11 December 1997 signatory nations to the UNFCCC adopted the Kyoto Protocol at the Third Conference of the Parties (COP-3) held in Kyoto, Japan. Under the Protocol, Annex 1 Parties agreed to reduce their anthropogenic GHG emissions by 5.2 per cent from 1990 levels over the period 2008-12.³ The Protocol recognises that Annex 1 countries have differing capacities to reduce their greenhouse gas emissions. As a result, individual countries were given different targets. Countries were dealt with individually in the Kyoto Protocol with the exception of the European Union, which received a collective target. Since COP-3, the European Union has agreed to a differentiated burden sharing arrangement, with some countries such as Denmark agreeing to reduce and others such as Greece being allowed to increase their emissions.⁴

While the majority of Annex 1 countries were given targets below their 1990 GHG emission levels, Australia's target was set at 8 per cent above the 1990 level (See Appendix 1). This concession to Australia followed much criticism of Australia's environmental stance, as Australia went into negotiations at Kyoto

¹ Barnard R and Morgan D, "The National Academy of Sciences Offers a New Framework for Addressing Global Warming Issues" (2000) 31 *Regulatory Toxicology and Pharmacology* 112 at 113.

² Smeloff, E., "Global warming: The Kyoto Protocol", (1998) 28(2) *Environmental Policy and Law* 63 at 64.

³ Information and Research Services. *Current Issues Brief No.10. Terms and Impacts of the Kyoto Protocol*, Published by the Department of the Parliamentary Library, Canberra, 1998 at 1.

⁴ *Ibid* at 3.

opposing flat rate GHG emission targets pursuant to a binding treaty.⁵ Australia's position was based solely on the climate change economic modelling conducted by the Australian Bureau of Agricultural and Resource Economics (ABARE), which forecast major economic costs from reducing GHG emissions.⁶ This modelling has itself been criticised as it was funded by the fossil-fuel industry, thus casting doubts over its accuracy. In addition, it has been alleged that the modelling is riddled with absurd assumptions and is misleading as a result.⁷ Nevertheless, Australia has been allowed to increase its GHG emissions, albeit grudgingly, in recognition of Australia's dependence on the fossil fuel industry.

The non-inclusion of developing countries in the Protocol has proved a contentious issue. While Annex 1 countries are undoubtedly the main contributors to GHG emissions at present, this is likely to change in the near future. In fact, developing countries' emissions are expected to pass those of the industrialised world in the next 20 to 30 years.⁸ Thus, the fact that non-Annex 1 countries were not given binding targets under the Protocol may prove a stumbling block to its implementation. However, as will be discussed later, developing countries are slowly being drawn into accepting binding abatement targets in the lead up to the Protocol's realisation.

Although the Protocol was signed in December 1997, Party countries are not bound by it. The Protocol will enter into force 90 days after it has been ratified by at least 55 parties to the UNFCCC, representing at least 55 per cent of carbon dioxide emissions in 1990 from Annex 1 countries. The current status of ratification of the Protocol is outlined in Appendix 2.

⁵ Cusack, V., "Perceived Costs versus Benefits of Meeting the Kyoto Target for Greenhouse Gas Emission Reduction: the Australian Perspective" (1998) 16 *Environmental and Planning Law Journal* 53 at 54. Australia originally asked for an 18 per cent increase in GHG emissions between 1990 and 2010.

⁶ *Ibid* at 55.

⁷ Thorp, D, "Why the Australian Government's Economic Modelling Of Greenhouse Abatement is Flawed- the Advantages of Emission Permits", Paper Presented at the Bridge to the Future Forum, Federal Parliament House, Canberra, 23rd October 1997.

⁸ Smeloff E., *supra* n2 at 65.

2.2 Coverage and Sinks

The six GHGs included in the Protocol are carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. Emissions of GHGs are generally referred to in carbon dioxide equivalent units. The target emission levels are to include emissions from land-use change where they were a net source of emissions in 1990.⁹ This means that reductions in GHG emissions from declining rates of land clearing or forestry can be used to meet target commitments. This is particularly relevant to Australia as in 1990, land clearing in Australia was extensive and accounted for 25-30 per cent of overall emissions¹⁰. Since then land clearing rates have fallen dramatically, meaning that without Australia doing anything at all, that our GHG emissions have significantly fallen for the purpose of meeting Kyoto abatement targets.

In addition, the sequestration of carbon dioxide from the atmosphere into biological systems can be used as a credit in meeting a country's emission target or sold in an emissions trading system. These systems are known as "sinks" and can easily be created by, for example, planting forests or by soil management activities. Article 3.3 of the Kyoto Protocol states, in part, that countries are to meet their commitments through "the net changes in GHG emissions by sources and removals by sinks resulting from direct human-induced land-change and forestry activities, limited to afforestation, reforestation and deforestation since 1990." Article 6 of the Protocol expressly provides for trading in sinks between Annex 1 Parties, and Clean Development Mechanism arrangements with non-Annex 1 countries are foreseen under Article 12.¹¹

Much more work still needs to be done on the inclusion of sinks into the Kyoto Protocol. The provisions dealing with sinks are vague, and no official definitions of key terms – such as afforestation, reforestation and deforestation – have yet

⁹ Article 3.7 of the Kyoto Protocol

¹⁰ Cusack V, supra n5 at 55.

¹¹ The concept of the Clean Development Mechanism is later discussed.

been negotiated in the international arena. Final agreements need to be reached in relation to such issues as how long a plantation must be maintained before it is harvested and what vegetation is allowed to be used as a sink. This is important, as without proper guidelines, there could be an incentive for countries to cut down valuable old-growth forests and replace them with fast-growing trees to gain extra emission credits. Also, more work needs to be done on verifying the amount of carbon that is sequestered by sinks. While the accurate measurement of sequestration is difficult at present, current advances in satellite remote sensing using geographic information systems are showing great promise.¹²

The inclusion of sinks in the Kyoto Protocol has been controversial. The European Union and some developing countries are opposed to sinks being used as an emission offset mechanism as they are concerned that Annex 1 countries will use sink activities to meet their Kyoto targets without addressing the underlying problem of fossil fuel consumption.¹³ In contrast, Australia, Japan, the United States, New Zealand, Iceland, Russia, Canada, Norway and the Ukraine have formed a bargaining alliance known as the "Umbrella Group" and support a more comprehensive inclusion of sinks under the Protocol.¹⁴

The Australian Federal Government hosted a forum in Perth on 18 April 2000 on greenhouse sinks. According to the Australian Environmental Minister Senator Hill, the invitation-only meeting of 30 countries was not an attempt to create loopholes and avoid environmental responsibility, but was aimed at defining greenhouse sinks in time for the next Conference of the Parties in The Hague later this year (COP-6).¹⁵ Environmental Groups such as Greenpeace claim that Australia and other Umbrella countries have another agenda - to pressure other Kyoto signatories into supporting their push to use carbon sinks as the main

¹² Speech by Senator Robert Hill, Minister for the Environment and Heritage, *High Level Forum on Greenhouse Sinks – Opening Address*, Perth, 18 April 2000.

¹³ AGO, *Greenhouse Sinks and the Kyoto Protocol*, Australian Greenhouse Office, Canberra, 2000 at 3.

¹⁴ *Ibid.*

¹⁵ Speech by Senator Robert Hill, *supra* n12.

solution to global warming.¹⁶ Senator Hill's unhelpful response to such criticism has been to declare environmental groups as being "out of their trees".¹⁷

As long as the Parties to the Convention comprehensively define sinks and Annex-1 countries are able to use them to meet their abatement targets, the impetus and dubious ideological correctness behind the inclusion of sinks in the Kyoto Protocol is unimportant. Our primary concern should be that the levels of GHG emissions in our atmosphere are reduced – how that is achieved is important, but only as a secondary matter. If sinks can be conclusively proved to reverse global warming, then their use as a GHG abatement tool can be justified.

2.3 Flexibility Mechanisms

The Protocol establishes a number of mechanisms, which if implemented, could reduce the cost of meeting the emission targets. These mechanisms are aimed at increasing the likelihood that the Protocol will be ratified and the targets met.¹⁸ The mechanisms suggested are international emissions trading¹⁹, joint implementation²⁰ and the clean development mechanism:²¹

- Emissions Trading

Article 17 of the Protocol provides that countries "may participate in emissions trading for the purposes of fulfilling their [2008-12] commitments ...". Emissions trading allows the marginal abatement costs in different Annex 1 countries to be balanced by trading emission permits so that countries who can reduce their emissions cheaply will do so and sell their excess emission permits to countries where emission reductions are more costly. The Kyoto Protocol states that emissions trading is to be supplemental to domestic action to meet the abatement targets.

¹⁶ "Greens claim talks rigged", *Sunday Telegraph*, 16/4/00, p38.

¹⁷ Speech by Senator Robert Hill, *supra* n12.

¹⁸ OECD, *Action Against Climate Change: The Kyoto Protocol and Beyond*, Organisation for Economic Co-operation and Development, Paris, 1999 at 8.

¹⁹ Pursuant to Article 17 of the Kyoto Protocol.

²⁰ Pursuant to Article 6 of the Kyoto Protocol.

- Joint Implementation (JIM) and the Clean Development Mechanism (CDM)

The JIM allows one Annex 1 country to finance an emissions reduction program in another Annex 1 country. The financing country would then receive credit for the emission reduction. Correspondently, the host country would have the same amount deducted from their allowed emission level. The CDM is based on the same principle, but the host country is a non-Annex 1 country. The aim of the CDM is to reduce emissions in developing countries and to help them to achieve sustainable development. No expense is borne by the developing country. This is important, as the Kyoto Protocol does not bind developing countries to emission reduction targets, as this would be economically unfair. Projects within the CDM may include technology development, energy efficiency improvements, the planting of forests to create carbon sinks or other assistance.²²

Following the Kyoto Protocol, international emissions trading has emerged as a credible means of tackling the world's greenhouse problem. In fact, the establishment of a trading system has become an almost de facto condition for many Annex 1 countries to ratify the Protocol, with the fate of the Protocol consequently hinging on the establishment of an international emissions trading system. As a result a plethora of studies have been conducted on how best to implement a tradeable permit scheme, as well as on the respective merits and shortcomings of tradeable permit schemes.

If the Kyoto Protocol is ratified in its present form, the result will not be mandatory international emissions trading. Rather, individual countries would be able to decide whether or not they would like to participate in such a scheme. Rather than trading internationally, countries could choose to institute a different

²¹ Pursuant to Article 12 of the Kyoto Protocol.

²² Information and Research Services. Current Issues Brief No.10, supra n3 at 5.

international policy (such as GHG taxes) or new domestic policies to abate GHG emissions. However, as this paper argues, an international emissions trading scheme is the best way for us to fight global warming pursuant to the Kyoto Protocol. As will be discussed later, many countries are already investigating the implementation of domestic trading schemes in the lead up to the Protocol's ratification. It is envisaged that such domestic schemes would be compatible with a future international trading scheme.

3. INTERNATIONAL EMISSIONS TRADING SCHEMES

3.1 Operation

Emissions trading is an example of an economic instrument that can help to abate pollution. Emissions trading schemes were conceived in the United States more than 20 years ago as a result of the dissatisfaction with the cost effectiveness of the regulatory approach to pollution then in place.²³ The idea behind emissions trading was that rather than relying on direct regulation, it would be more cost effective to have an overall limit of emissions set by the regulatory authority and to design a market based mechanism that would allow polluters to find the least cost method of meeting regulatory targets.²⁴

An international emissions trading scheme has three key features as a method of pollution control²⁵:

1. There must be a limit imposed on the total allowable emissions of a given pollutant for each country involved, with emitters being assigned emission permits equal to their allowance.
2. As the permits can be traded, a permits market will emerge amongst emission producers. Countries with low abatement costs will clean up their

²³ Hinchy M., Fisher B. and Graham B., "Emissions Trading: Developing a Framework in Australia" (1998) 5 *Australian Commodities* 76 at 78.

²⁴ Ibid at 77

²⁵ McKibbin, W.J., *Global Emissions Trading: Prospects and Pitfalls*, Paper to Kyoto the Impact on Australia Conference, Melbourne, 12-13 February 1998 at 2.

act and sell their extra permits to countries whose emission levels are above the limit and cannot afford the cost of abatement measures. As such, pollution abatement will be done at the minimum possible cost to the economy.

3. The costs of clean up are shared amongst countries even when the countries do very different amounts of abatement.

The price of emission permits is self-adjusting and is determined by the market forces of supply and demand. In relation to the Kyoto Protocol, countries that can lower their emissions at a minimal cost will sell their extra emissions permits until the marginal cost of cutting back a ton of carbon (equivalent) emissions at home equals the price of a ton "exported" through the sale of an emission permit.²⁶

One of the better-known applications of an emissions trading scheme is the use of sulphur dioxide emission allowances in the US Acid Rain program under the *Clean Air Act Amendments of 1990*²⁷. There are two phases to the acid rain program. The goal of Phase One (1995 to 1999) was to reduce annual sulphur dioxide emissions by 10 million tonnes below 1980 levels by 2000. This phase focused on 110 of the highest-emitting electricity generating plants, although other plants and industrial sources were able to participate voluntarily. Phase Two of the program (2000 and beyond) has the goal of capping annual sulphur dioxide emissions from electricity generating plants at about 9 million tonnes per year. The program will expand to include most existing fossil fuel power plants under Phase Two.

The scheme involves distributing permits to sulphur dioxide emitters, with each permit allowing the holder to emit 1 tonne of sulphur dioxide. After permits have been allocated, holders may either use them to cover their emissions, sell their

²⁶ Cline W.R., *The Economics of Global Warming*, Institute for International Economics, Washington, 1992 at 351.

²⁷ Most of the information on the US Acid Rain Program in this paper was collected from the US EPA web site at <http://www.epa.com.htm>.

excess permits to other emitters if they have been able to reduce their emissions below their entitled amount, or buy extra permits from other holders if they are unable to reach their abatement targets. The exact nature of this scheme will be outlined throughout this paper.

The US Acid Rain Program has been a success. Sulphur dioxide emissions have been kept to their target levels. In reducing their emissions to the allowed level by using emissions trading, an estimated \$US225-375 million was saved in the period up to 1998 compared to what would have been spent if the Act's emissions trading provisions had not been available.²⁸ Although this scheme is domestic in nature, its success can be extrapolated to an international emissions trading scheme. An international scheme would be more complex, but involves essentially the same principles.

3.2 Economic Issues

3.2.1 *Setting up the scheme*²⁹

There are several theoretical considerations that must be addressed before implementing an emissions trading scheme. Firstly, the nature of the tradeable permit must be defined. The duration of the permit, allowable emissions per permit³⁰ and the overall emission cap³¹ would all need to be decided by the UNFCCC.

²⁸ Ellerman, Schmalensee R., Joskow, P.L, Montero J.P and Bailey E.M., "Summary evaluation of the US SO₂ emissions trading program as implemented in 1995" in Sorrell, S and Skea J.(ed.), *Pollution for Sale: Emissions Trading and Joint Implementation*, Edward Elgar, Cheltenham, 1999 at 38.

²⁹ It is beyond the scope of this paper to comprehensively analyse the administration of an emissions trading scheme.

³⁰ For example, 1 permit may allow the emission of 1 tonne of carbon dioxide equivalent.

³¹ The emission cap is the level of total emissions that can be emitted internationally during a permit period. The authority governing the trading scheme would have the power to vary the emission cap when appropriate. Using an emission cap is not the only way to design a TEP scheme. One could also implement a baseline and credit scheme. Most discussion since the Kyoto Protocol has maintained that a cap system is preferable (including OECD information papers). As such, that is the only scheme that will be considered in this paper.

Secondly, the market needs to be determined in relation to who will participate in the scheme. There are two types of participants: compulsory and voluntary. Compulsory participants are those who are legislatively required to hold permits to cover their emissions of GHGs. Theoretically, an ideal emissions trading scheme would require all emitters to hold permits. This is impossible in practical terms. However, small-scale consumers of energy could be included in the equation by, for example, emissions trading schemes being operated at the wholesale level.³² For example, transport accounts for 23 per cent of carbon dioxide emissions in Australia. To account for this, an emissions trading scheme could be operated at the level of petroleum wholesalers and be based on estimated emissions associated with fuel sales.

Voluntary participants are parties who are not legally required to take part in the scheme. They could include environmental groups wishing to decrease the number of permits in circulation and brokers facilitating the trading of permits. Ideally, an emissions trading scheme would include both types of participants to ensure full market regulation, as more permits would be exchanged.

Finally, there must be an equitable means of allocating permits prior to trading. Pursuant to the international emissions trading scheme envisaged at Kyoto, each country participating would be given a set number of permits. Each country would then be responsible for domestically distributing the permits.³³ Permits would need to be allocated to compulsory participants. Voluntary participants would need to acquire emission permits through sale or trade. The 2 main methods of initially allocating permits are auctioning and grandfathering.

Auctioning emission permits involves selling permits to the highest bidder, with purchasers paying the government. Revenue raised by auctioning could be recycled, meaning that governments could reduce payroll and/or company tax.

³² Hinchy et al., *supra* n23 at 74.

³³ Cramton P. and Kerr S., *Tradeable Carbon Permit Auctions: How and why to auction not grandfather*, University of Maryland Department of Economics, 1999 at 4.

The grandfathering of emission permits involves emitters being allocated permits free of charge on the basis of their emissions in an historical period. Grandfathering is not as attractive as auctioning as it is likely to result in costly government lobbying, as interest groups are likely to fight bitterly for their share of permits and because it discourages early action as polluters are effectively rewarded for polluting.³⁴ Grandfathering is also not equitable in an international emissions trading scheme as developing countries with historically low levels of GHG emittance would be disadvantaged.³⁵ There are advantages associated with grandfathering, the main one being that there are effectively no additional taxes imposed on industry and correspondingly no additional revenue raised for the state. This allows for the clear separation of environmental and fiscal policy, and consequently for public confidence.

The most equitable way of allocating permits would be to auction them with the binding assurance that the program would be revenue neutral, with tax cuts offsetting the auction revenue. Alternatively, emission permits can be distributed using a mixture of grandfathering and auctioning. This way business is appeased yet the intrinsic inequity associated with grandfathering is lessened.

The US Sulphur Dioxide Trading Scheme illustrates how this could be done. The US Environmental Protection Authority (USEPA) initially grandfathered permits based on historical fuel consumption and a specific emission rate. New polluters, who were not initially included in the grandfathering, are responsible for buying their own permits at auction. The USEPA withholds approximately 2.8 per cent of the total annual allowances, which are then distributed to emitters via direct sale or auction. The Chicago Board of Trade holds an annual direct sale that sells permits at a fixed price of \$US1500 each (adjusted for inflation). Unsold permits from the direct sale are then auctioned off yearly. Private parties are allowed to

³⁴ Ibid at 15.

³⁵ Grubb, M, "Global Policies for Global Problems: The case of Climate Change" in Sterner, T (ed.), *Economic Policies for Sustainable Development*, Kluwer Academic Publishers, The Netherlands, 1994 at 303.

buy permits at auction. Owners are allowed to sell permits to market participants, brokers, speculators or environmental groups.

There are, of course, problems associated with the auctioning of permits in an international scheme. A main concern is the question of who will collect the revenue. As the permits are being allocated at an international level, funds generated could be claimed as belonging to either the international governing body or the governments of the individual countries themselves. As potentially enormous sums of money are involved in auctioning off permits, comprehensive guidelines relating to the potential auctioning of permits need to be drafted.

3.2.2 *Administering the scheme-*

The authority charged with the task of administering the emissions trading scheme would be responsible for monitoring emissions and enforcing compliance with the relevant regulations. Existing methods could be used to monitor emissions. For example, the New South Wales Environmental Protection Authority currently has a system in place that monitors air and water pollutants for its load based licensing scheme.³⁶ Here, polluters fill out a compliance return detailing monitoring they have done and the subsequent results. These returns are randomly audited to ensure their authenticity.³⁷

Compliance is vital for the success of the trading system. A fine of some type must be imposed if nations emit more carbon than their permits entitle them to. These fines must be sufficiently punitive so as to make compliance more appealing than default. To avoid sovereignty issues, an international body must impose them.³⁸

³⁶ Gunasekera D. and Cornwall A., *Economic Issues in Emission Trading*, Paper to Kyoto the Impact on Australia Conference, Melbourne, 12-13 February 1998 at 8.

³⁷ Ibid.

³⁸ Kellow, A., "The Political Economy of International Emissions Trading", Paper to Kyoto the Impact on Australia Conference, Melbourne, 12-13 February 1998 at 3.

The US Acid Rain Program provides an example of how the monitoring and enforcement of an emissions trading system can be implemented. Here, sulphur dioxide emissions are monitored at each unit by continuous emissions monitoring (CEM) systems. USEPA guidelines require that all CEM systems are in continuous operation and able to sample, analyse and record data hourly. Units then submit the data to the USEPA on a quarterly basis. The USEPA verifies the data and carries out performance tests on CEM systems regularly. Sulphur dioxide emitters are required to submit permit transaction records to the USEPA by 30 January of each year. If a unit's emissions are less than the number of permits that it holds then those permits are banked into the following year's account. If a unit's emissions are greater than their permits allow for, there is an automatic penalty of \$US2000 (subject to inflation) per excess tonne. In addition, the offender must surrender permits equivalent to their excess emissions for the following year's account.

Different approaches to non-compliance have been suggested with respect to the Kyoto Protocol. The Organisation for Economic Co-operation and Development (OECD) has recommended monetary liability in conjunction with the suspension of trading privileges.³⁹ The Umbrella Group of nations favour countries falling behind in their Kyoto obligations having recourse to technical and financial international assistance before any sanctions are imposed upon them.⁴⁰ In contrast, the European Union is demanding that a strict sanctions system be implemented to ensure compliance with the Protocol.⁴¹

It is important that rules governing liability are clear from the outset. In relation to the Kyoto Protocol, discussions on compliance issues for an international emissions trading scheme were on the agenda at COP-5.⁴² Although no consensus was reached, parties to the Protocol signaled their commitment to

³⁹ OECD, *International Emissions Trading Under the Kyoto Protocol*, Organisation for Economic Co-operation and Development, Paris, 1999 at 24.

⁴⁰ "Global aid plan for emission targets", *Sydney Morning Herald*, 24/1/00 at p2.

⁴¹ Ibid.

reaching a decision on the compliance system at COP-6.⁴³ Clearly, some countries will take their Kyoto obligations more seriously than others, for economic and political reasons. As a consequence it is unlikely that all countries bound by Kyoto targets will agree on the appropriate response to non-compliance. If the Kyoto Protocol is ratified, there will undoubtedly be pleas for mercy from countries falling behind in their obligations. It is undesirable to allow different standards to apply to different countries in this regard, especially considering that the differentiated abatement targets have already taken individual countries' circumstances into account. Unfortunately the reality is that the Protocol will probably not be ratified unless there is provision for leniency, at least in the first few years of the Protocol's operation.

3.3 Credits

Article 3.3 of the Protocol (already outlined) establishes a basis for a system where carbon sinks, such as forestry plantations, could be incorporated into an emissions trading system by allocating credits for the amount of carbon sequestered.⁴⁴ This means that the Commonwealth Government could issue carbon credits to the owners of sequestered carbon equal to the change in the carbon stock that is verifiable as having been sequestered in the years of the commitment period, 2008 to 2012, in Kyoto forests. The operators of these plantations would then be able to sell those credits in an emissions trading system or use them to help achieve their own emission reduction targets.

State governments in Australia have recognised the potential market in carbon credits and have acted quickly in the wake of the Kyoto Protocol to set down a legislative framework to regulate carbon rights. In New South Wales, the Carbon

⁴² Held in Bonn, Germany from 25 October – 5 November 1999.

⁴³ AGO, "Outcomes from Bonn", <http://www.greenhouse.gov.au/pubs/factsheets/fscop5.html>, Accessed 26/4/00.

⁴⁴ AGO, *Crediting the Carbon- Discussion Paper 3*, Australian Greenhouse Office, Canberra, 1999 at 9.

Rights Legislation Amendment Act 1998⁴⁵ was enacted to recognise that rights associated with carbon sequestered by trees and forests from the atmosphere may be a species of forestry rights and be the subject of a forestry covenant. These carbon sequestration rights are separate from traditional rights to land and timber.

As such, this right can be registered with the Land Titles Office and any transfer or sale of these carbon credits can result in ownership being securely transferred.⁴⁶ This means that plantation owners in New South Wales can register their interest in carbon credits and that buyers of these credits can be fully confident in their purchase, as the New South Wales Land Titles Office would legally register any transfer of ownership. Other Australian States have yet to implement such legislation. As such, only carbon sequestered in New South Wales can currently be owned with certainty.

The UNFCCC has not made a final decision yet as to how exactly carbon sinks (and their associated credits) will be incorporated into the Kyoto Protocol. Final agreement on the use of sinks in meeting emission commitments is to be completed at COP-6 at The Hague in November 2000.⁴⁷ If negotiations go well, it is anticipated that other States will pass legislation similar to that of New South Wales. Despite this uncertainty, carbon sequestration investments are already being made and the Sydney Futures Exchange is developing a trading program for carbon credits. This will be specifically discussed later in this paper.

3.4 Legal Issues

⁴⁵ This Act amended the Conveyancing Act 1919 (NSW).

⁴⁶ AGO, supra n44 at 36.

⁴⁷ AGO, supra n43.

There are potential legal challenges to emissions trading systems. It is vital that enabling legislation has the necessary power to establish an emissions trading system and pass regulations to govern such a system.⁴⁸ The legislation should address specific classes of polluters so that charges of discrimination from different polluters are minimised. The Australian Greenhouse Office has announced that if a tradeable permit system is to be established domestically in Australia, that it would be under the auspices of Federal legislation.⁴⁹ It is important that such Federal legislation should substantiate the constitutional basis for an emissions trading system so that it can be protected from claims that it was not within the Federal jurisdiction to regulate the system.⁵⁰ It is also vital that Federal enabling legislation is consistent with international law as integration of the system with other signatories to the Kyoto Protocol will be a key requirement.

The enabling legislation should also address the common concern as to whether emission permits create property rights.⁵¹ One issue that arises in relation to this is whether polluters have an implied right of ownership over the permits.⁵² This principle is embodied in the allocation process of grandfathering and should be rejected on the same basis. That is, that polluters should not be rewarded for their past environmental inaction and that by releasing pollutants into the communal atmosphere, it is only fair that emitters must “pay” the community to accept them. There is no basis whatsoever for polluters to believe that they own an entitlement to pollute.

Another related concern is that polluters may claim that they are entitled to compensation for the expropriation of their “property rights” in the event that the

⁴⁸ West Coast Environmental Law (WCEL), “Tradeable Permit Systems”, http://www.wcel.org/wcelpub/4994_5.html at 2. Accessed 21/10/99

⁴⁹ AGO, *Establishing the Boundaries- Discussion Paper 1*, Australian Greenhouse Office, Canberra, 1999 at 8

⁵⁰ WCEL, *supra* n48 at 3.

⁵¹ *Ibid* at 4.

⁵² AGO, *supra* n49 at 29.

number of permits in circulation is reduced.⁵³ Prima facie this is dealt with by section 51(xxxi) of the Australian Constitution, which allows the Commonwealth to make the acquisition of property on “just terms”. This constitutional provision cannot, however, be relied on as it is conditional on judicial interpretation of what is “unjust”.

Rather, it is preferable to avoid any potential problems by providing in the enabling legislation that emission permits and allocation rights are not property rights, but are merely a revocable license to emit pollutants lawfully. This approach was taken by the United States in their sulphur dioxide trading program to overcome any argument that permittees should receive compensation if the pollution allowed by their permits were to be revoked.⁵⁴ Here the enabling legislation specifically provided that tradeable permits were not property rights, but a revocable license. This acted to disallow any claims for compensation based on the constitutionally entrenched right in the United States to compensation on expropriation.⁵⁵

4. THE CASE FOR AN INTERNATIONAL EMISSIONS TRADING SCHEME TO MEET KYOTO TARGETS

One of the major arguments for emissions trading is that they are a type of economic instrument. Economic instruments are a more efficient tool than conventional “command and control” measures, as they serve to modify the behaviour of polluters by persuading them to take account, in their choices, of the damage for which they are responsible.⁵⁶ As with all market-based instruments, the central claim for emissions trading is that it will lower the costs of meeting a given environmental goal, by allowing emission producers to independently assess whether it is more cost effective for them to abate their emissions or to

⁵³ Ibid.

⁵⁴ WCEL, supra n48 at 4.

⁵⁵ Ibid.

buy excess permits from another emitter who can reduce their emissions at a lower cost.

Emissions trading schemes also have the advantage of providing a continuous incentive for technological innovation.⁵⁷ They provide an incentive for emitters to search for new technologies that reduce the cost of compliance of meeting the mandated target, with the added encouragement to search for technologies that can reduce emissions by more than the required standard as a profit can be made from the sale of surplus permits.⁵⁸ Polluters can then use this profit to finance the new technologies. In addition, if economic growth leads to an increase in the demand for permits the price will rise, creating an escalating incentive to reduce emissions.⁵⁹

Emissions trading is best suited to achieving set emission reduction targets under the Kyoto Protocol as the quantity target is built into the instrument.⁶⁰ That is, by the Protocol putting a ceiling on the amount of GHGs each country can emit and the government then distributing the resulting number of permits domestically, the set environmental goal can be theoretically achieved (given that the scheme is monitored and enforced adequately). This means that the quantities of GHGs emitted will meet or fall below the set target and international environmental obligations will be satisfied.

The incorporation of sinks into the Kyoto Protocol in conjunction with the CDM creates an impetus for industry to invest in environmentally friendly projects in return for carbon credits. This can help non-Annex 1 countries not included in the Protocol's abatement targets to raise badly needed funds and to contribute to the

⁵⁶ Jeanrenaud, C, "Economic Instruments for Environmental Policy" in Jeanrenaud, C (ed.) *Environmental Policy between Regulation and Market*, Birkhauser Verlag, Basel, 1997 at 12.

⁵⁷ Sorrell, S and Skea J, "Introduction" in Sorrell, S and Skea J.(ed.), *Pollution for Sale: Emissions Trading and Joint Implementation*, Edward Elgar, Cheltenham, 1999 at 12

⁵⁸ Ibid.

⁵⁹ Ibid.

⁶⁰ Niemeyer, S., *Consumer-Based Carbon Reduction Incentives*, The Australian National University Centre for Resource and Environmental Studies, Canberra, 1998 at 7.

environmental movement. An example of this is Costa Rica who sold their first carbon credits in January 1997, anticipating by almost a full year the Kyoto Protocol.⁶¹ The Costa Rica project involves small farmers being paid to use sustainable forestry practices to cut their GHG emissions. In June 1998, 3,000 farmers who collectively own 150,000 hectares of land, were participating in the scheme.⁶² Credits have been sold to a consortium of United States and Norwegian companies and have raised over \$US2 million for the Costa Rican Government, which uses the money for sustainable forestry practices on privately owned land. This scheme has so far involved the sequestration of more than 200,000 metric tonnes of carbon.

The Costa Rican carbon credit scheme is administered by the Costa Rican Office on Joint Implementation and was conceived by the Earth Council. The credits are independently certified by third party inspector Société Générale de Surveillance of Geneva, thus adding a dimension of security to the scheme. Currently the purchased credits represent an investment that will be realised when the Kyoto Protocol is ratified, as purchasers would get credit for reducing carbon emissions under the Protocol. If this does not happen, purchasers are confident that a similar global agreement will come into force, which will allow them to use their credits as an emission reduction tool.

The potential economic gains under an international emissions trading scheme are not limited to developing countries. If emission permits were to be auctioned (rather than grandfathered), the revenue raised by Australia domestically allocating its permits in accordance with the Kyoto Protocol, has been estimated at \$A12 billion.⁶³ This figure is merely speculative and may well overstate the potential permit revenue, especially considering that industry groups opposed to GHG abatement have commissioned the majority of permit price modelling

⁶¹ Goodman, A., "Carbon Trading Up and Running", <http://www.envifi.com/News/tomorrow.htm> . Accessed 12/1/00

⁶² Ibid.

⁶³ Sexton, E., "Money to burn", *Sydney Morning Herald*, 14/8/99, p61.

studies. As permit price predictions range from \$A10/tonne to \$A50/tonne⁶⁴, the revenue generated by auctioning permits could be considerably less than this estimation. However, keeping in mind the fluctuating Australian dollar (of late) and the fact that the permit price in an international emissions trading system would be the world price, then maybe such estimates are well founded (although this would ultimately make it more expensive for Australia to participate in the system). Whatever the size of the windfall, this money could be used by the Federal Government to abolish or reduce payroll tax, thereby delivering a double dividend of increased employment and reduced GHG emissions.⁶⁵ The revenue could alternatively be used to reduce company tax or to change accelerated depreciation.⁶⁶

The emissions trading scheme envisaged at Kyoto encourages polluters to take early action in reducing their GHG emissions via the incorporation of sinks, the JIM and the CDM. Assuming that permits will be auctioned, emitters will be encouraged to abate their emissions before the Protocol is ratified. This is because the more abatement before the auction point, the less need there is to purchase permits.⁶⁷

Another way in which emissions trading systems encourage early action is through the establishment of carbon credit trading markets. The potential trade in carbon credits has not gone unrecognised in financial circles with the Sydney Futures Exchange (SFE) set to create the world's first exchange-traded market for carbon sequestration credits.⁶⁸ SFE is developing the market in association with NSW State Forests. The carbon sequestered by forests within the ambit of Article 3.3 of the Kyoto Protocol would form the underlying commodity traded.

⁶⁴ AGO, *Crediting the Carbon*, supra n44 at 16.

⁶⁵ Hamilton C. and Turton H., *Business Tax and the Environment: Emissions trading as a tax reform option*, Australia Institute Discussion Paper No 13, August 1999 at 1.

⁶⁶ Ibid at 3. However, if permits are allocated by way of grandfathering then early action would be penalised. As already discussed, most studies indicate that it would be most equitable to either fully or partially auction emission permits.

⁶⁷ Centre for International Economics, *Early Greenhouse Action*, Centre for International Economics, Canberra, 1999 at 56.

Each unit traded would be given an electronic serial number in denominations of one metric tonne of carbon dioxide equivalent.⁶⁹ Buyers could purchase credits as a hedge in future emissions trading markets, as futures prices will allow firms to make better investment decisions as well as enabling market participants to counter the risks involved with future unforeseen variances in permit prices. Carbon credits would have to cost less than the permit price for them to be as attractive to investors. This in itself creates potential problems as trading is expected to begin by the end of 2000 and there is uncertainty as to if and when an international emissions trading system will be implemented, and what price permits under such a system will be worth.

The carbon credits market has been estimated at as much as \$US5 billion (\$A7.9 billion) and the potential global market estimated at \$US700 billion by some analysts.⁷⁰ Once again, this figure is probably a healthy estimate, which has been fuelled by the financial sector in its excitement at developing an entirely new market. Carbon credit trading has obvious superficial advantages for financial businesses and savvy investors, yet this is not what the Kyoto Protocol is about. Thankfully, beyond the hype, a carbon credits market also offers environmental benefits to the wider community in line with the Kyoto Protocol. The establishment of a carbon sequestration trading market will lead to investments in carbon sinks, which ultimately translates into trees being planted. This will not only help to reduce the levels of GHGs in our atmosphere (in compliance with the Protocol), but will also result in reduced soil salinity, improved water quality and enhancement of biodiversity. These are all real problems that Australia, especially, is vulnerable to.

This carbon credit market should help emissions trading to achieve some credibility and promote early action by polluters. In this case interested parties

⁶⁸ Todd, M., "SFE expands into carbon trading", *Sydney Morning Herald*, 31/8/99, p23.

⁶⁹SFE, <http://www.carbontrading.com.au/index.asp?subj=trade&main=/content/html/trading/main.html?onload&menu=/menu.html>, Accessed 26/5/00.

⁷⁰ Ibid

could buy or trade permits before the actual regulation commences. The emergence of a credits market would indicate some policy credibility as well as give polluters an indication about the cost of abatement in the future.⁷¹

Another advantage of emissions trading as a GHG abatement tool is that they are similar to instruments with which regulators are accustomed to working. Emissions trading and the direct regulation of emissions share many similarities.⁷² A regulation standard basically represents an entitlement granted to an emitter to discharge a given quantity of pollutant into the atmosphere over a set period of time.⁷³ An emission permit also represents an entitlement to emit a certain quantity of pollutant. The only difference is that with emissions trading, companies (or countries) that make significant abatement efforts have the option of selling their excess entitlements. This means that the administration of an emissions trading scheme by the regulators will be less traumatic than that of a fundamentally different regime.

5. POTENTIAL PROBLEMS WITH AN INTERNATIONAL EMISSIONS TRADING SCHEME

As already outlined, an international emissions trading scheme is problematic to administer. A trading scheme is conceivable where there are a small number of polluters involved, but becomes an administrative nightmare when pollution sources are diffuse – as is the case with GHGs.⁷⁴ However, to focus on administrative simplicity (or lack of it) is a narrow approach to the problem with which we are faced. The primary consideration in selecting a policy instrument should be its effectiveness in achieving the given goal. In addition, despite the administrative complexity of instituting an emissions trading scheme, once the details have been worked out it requires minimal ongoing government

⁷¹ Centre for International Economics, supra n67 at 59.

⁷² Jeanrenaud C, supra n56 at 21.

⁷³ Ibid at 21.

⁷⁴ Niemeyer S, supra n60 at 7.

administration, revenue collection and control.⁷⁵ As such, to write off emissions trading on this basis is wrong. The focusing on the administrative complexity of emissions trading by many commentators should not be given undue weight, and should not serve to detract from its many positive features.

Another potential problem with a global emissions trading system is the possibility that the resulting market could fall prey to collusive actions by Annex 1 countries.⁷⁶ There is already evidence of Annex-1 countries forming cartels. For instance, the Umbrella Group of nations (already discussed) already plans to trade permits within themselves, as does the European Union.⁷⁷ These arrangements undermine the basic premise of emissions trading, as this limited trade would serve to distort the market value of permits and eliminates the potential gains from trading between developed and developing countries. Emissions trading is less likely to result in the least-cost reduction of GHG emissions when the countries trading together have similar pollution abatement technology. This problem can be solved by anti-monopoly rules applying to trades under the Kyoto Protocol.⁷⁸ In addition, the inclusion of voluntary participants in the trading scheme would assist in diluting any market abuse of the system.

There are also concerns that the Umbrella Group may not even collectively reduce its emissions. This unease stems from Russia and the Ukraine currently being well below their 1990 GHG emission levels⁷⁹. As such, they have valuable "hot air" which they can sell to other Umbrella Group members in the form of unused permits. Although this seems to be a strike against using international emissions trading to meet goals under the Kyoto Protocol, economic forecasts indicate that it is likely to be a short-lived phenomenon as growth in Russia and

⁷⁵ Moran A, Chisholm A and Wills I, Use of Economic Instruments in Pollution Control: The Respective Merits of Taxes and Tradeable Permits, Tasman Institute Occasional Paper No. B12, Melbourne, 1992 at 4.

⁷⁶ Grubb, M, supra n35 at 301.

⁷⁷ McKibbin W.J, supra n25 at 5.

⁷⁸ Grubb M, supra n35 at 302.

the Ukraine is set to escalate in the lead-up to 2008.⁸⁰ This means that any “hot air” held by Russia or the Ukraine will diminish and become negligible. In addition, it must be kept in mind that the Kyoto Protocol is a global solution to a global problem. As emissions trading effectively puts a cap on GHG emissions, it does not really matter where or how emission abatement takes place. What is most important is that global emissions are reduced. Under the Protocol, when international emissions trading is used as a tool, this is a certainty.

Related to “hot air” is the issue of carbon leakage. This refers to the possible increases of carbon emissions in non-Annex 1 countries in response to the emission reductions implemented by Annex 1 countries.⁸¹ Leakage occurs because, for example, the abatement of emissions in Annex 1 countries leads to a corresponding increase in fossil fuel prices in these countries. Consequently, non-Annex 1 fossil fuel industries gain a competitive advantage over producers in Annex 1 countries resulting in a shift in emission intensive industries from Annex 1 to non-Annex 1 countries. High carbon leakages would have the effect of reducing the environmental impact of the Kyoto Protocol.

This detail has been cited by the United States as the main reason for them not yet ratifying the Protocol.⁸² They are demanding that non-Annex 1 countries should be subject to binding targets. However, recent economic modelling has demonstrated that the threat of carbon leakage in meeting Kyoto commitments under an international emissions trading system is less than that under any alternative system.⁸³ Also, as will be discussed later, developing countries are beginning to recognise the economic advantages associated with ratifying the Protocol and are showing their willingness to accept binding targets.

⁷⁹ Millett, M., “Emission Control”, *Sydney Morning Herald*, 26/2/00, p.39.

⁸⁰ OECD, *supra* n18 at 18.

⁸¹ *Ibid* at 38.

⁸² Millet M., *supra* n79.

Lastly, emissions trading has been criticised as granting a “right to pollute” and thus being inherently immoral.⁸⁴ Opponents such as Greenpeace have claimed that they can be seen to legitimise pollution and that the only acceptable policies are those that are aimed at creating a “zero discharge environment”.⁸⁵ This argument can be quickly discounted as all approaches aimed at abating pollution (including direct regulation) allow for pollution. The only difference is that an emissions trading scheme (or any market-based instrument) does not allow for this to occur at no cost.⁸⁶ As such, emissions trading provides a greater incentive for polluters to reduce emissions. This can by no means be viewed as morally wrong.

6. WHAT ABOUT OTHER ENVIRONMENTAL POLICY MEASURES?

6.1 Direct Regulation

Direct regulation, otherwise known as “command and control”, has been the traditional approach to pollution abatement throughout the industrialised world. It involves the imposition of emission standards, which limit the quantities or concentrations of pollutants that may be emitted, and restrictions concerning the use of specific equipment or procedures.⁸⁷ Legislation normally forms the basis for regulatory control with non-compliance usually resulting in sanctions.

In recent years it has been recognised that direct regulation has numerous shortcomings. The primary criticism of the regulatory approach to pollution abatement is that the marginal cost of abatement is not uniform across all

⁸³ Burniaux, J.M. and Oliveira-Martins, J. (1999) “Carbon emission leakages: an analytical general equilibrium view”, presented at the 2nd Annual Conference on Global Economic Analysis, 20-22 June, Copenhagen.

⁸⁴ Steidlmeier, P, “The Morality of Pollution Permits”, *Environmental Ethics*, vol.15, Summer, p.133, 1993 at 133.

⁸⁵ Greenpeace Australia, “Greenpeace scales obelisk to demand real progress from climate summit”, 3 November 1998. www.greenpeace.org.au/press/releases/1998/031198 , Accessed 17/5/00.

⁸⁶ Grubb, M., supra n35 at 294.

⁸⁷ Ibid at 8

polluters, resulting in economic inefficiency.⁸⁸ This inequitable outcome stems from companies not being able to choose the abatement technology that they feel is the most appropriate and least expensive for themselves. This is despite companies being more familiar with abatement technologies than regulatory agencies.⁸⁹

Direct regulation has also been criticised, on the basis that polluters are not rewarded for keeping their emissions below the standard. This has the effect of discouraging new economic and technological abatement initiatives, since there is no economic gain in doing so.⁹⁰ Furthermore, regulation is inflexible in the face of economic growth. This means that regulators would need to be constantly rewriting the rules, which is generally politically unacceptable.⁹¹

Although direct regulation is undesirable as a single policy tool, it still has its place in environmental policy. It may be useful when used in conjunction with other policy instruments. This possibility is discussed later in this chapter.

6.2 A Greenhouse Gas Tax

As previously discussed, economic instruments overcome many of the difficulties associated with direct regulation. Although the Kyoto Protocol explicitly outlines emissions trading as an option for countries meeting their pollution abatement targets, a GHG tax has its proponents who believe that such a scheme could be the answer to our GHG problem. A GHG tax could either come under the auspices of an international obligation to impose a uniform tax on GHG emissions or could be implemented domestically on a country-by-country basis.

⁸⁸ Niemeyer, S., *supra* n60 at 6.

⁸⁹ Jeanrenaud, C., *supra* n56 at 8.

⁹⁰ Niemeyer, S., *supra* n60 at 6.

⁹¹ *Ibid.*

Like emissions trading, a GHG tax is an economic instrument and shares the same economic advantages. That is, pollution abatement occurs at the least cost to society. Taxing GHG emissions involves setting a charge per unit of emissions. An optimal charge would be set equal to the anticipated value of the damage caused by the last acceptable unit of emissions.⁹² That charge then indicates to the emitter the cost of damage, thus providing a financial incentive to reduce emissions.⁹³ The polluter will then theoretically reduce its emissions to the level where the profit loss due to a unit reduction in emissions is equal to the damage costs involved.⁹⁴

A GHG tax has advantages over the current regulatory approach. A tax would produce revenue for the government. This in turn means that the revenue generated can be spent on projects such as offsetting conventional taxes or funding environmental programs. As such, the implementation of a GHG tax produces a double dividend⁹⁵ – countries can reduce their GHG emissions and help to meet their Kyoto commitments while transferring benefits back to the community.

While there are many similarities between a GHG tax and emissions trading, there are fundamental differences between the two, which make international emissions trading a better tool to achieve the GHG abatement targets of the Kyoto Protocol. Taxes have been criticised for their potential to impair economic growth, their uneven impact on welfare depending on socioeconomic status and on the basis that a carbon tax does not necessarily ensure significant reductions in GHG emissions.⁹⁶

⁹² Moran et al., supra n75 at 5.

⁹³ Ibid.

⁹⁴ Ibid.

⁹⁵ Bubna-Litic, K & de Leeuw, L “Can our Taxation System Support “New” Sustainable Industries?- the Argument for Ecotaxes” (1999) 16 *Environmental and Planning Law Journal* 140 at 142.

⁹⁶ Niemeyer, S., supra n60 at 7.

In relation to this last point, a major shortcoming of GHG taxes is that they do not automatically give effect to pre-determined quantity objectives.⁹⁷ Whereas emission permits have a target built into them, with taxes the authority fixes the price and the market determines the quantity by which emissions will diminish. To attain an abatement target using taxes, the authority may have to alter the tax rate several times before emitters adjust to the target level of emissions.⁹⁸

Furthermore, emissions trading is more flexible as the certainty of the abatement target ensures that the value of the permits at any given time reflects the market's view of the gravity of the GHG problem and advances made in scientific knowledge or technology.⁹⁹ Emission permits also self-adjust in price in times of economic growth and inflation, whereas a GHG tax levied at a constant level would gradually become less effective unless the rate was regularly changed.¹⁰⁰ This uncertainty relating to the base tax rate is politically infeasible and may lead to businesses making inefficient investment decisions.

Although emissions trading and GHG taxation are both economic instruments, they are not equally cost-effective. Studies by ABARE (which have been questioned on the basis of their modelling assumptions) have shown international emissions trading to be the cheapest way of controlling GHG emissions, as the market is the most efficient way of distributing the cost of carbon. An emissions tax would not be so cost-effective due to the comparably high rate of tax that would need to be charged in order to achieve sufficient GHG emission reductions.¹⁰¹ This proposition is based on the fluctuations in oil prices over recent years. Despite oil prices skyrocketing, there was not a significant decrease in oil consumption globally. This indicates that a high rate of tax is needed to induce society to modify its behaviour.

⁹⁷ Jeanrenaud, C., *supra* n56 at 19.

⁹⁸ *Ibid.*

⁹⁹ Kellow, A., *supra* n38 at 4.

¹⁰⁰ *Ibid.*

Since the aim of a GHG tax is to limit the damage from global warming, any pollution abating system implemented should cover all sources and sinks, as an emissions trading scheme would. A GHG tax that does not provide incentive for polluters to invest in carbon sinks is simply not rational public policy. Unfortunately, the incorporation of sequestration and sinks within a tax system is problematical. To include them would necessitate a tradeable system of tax credits or offsets.¹⁰² While this is feasible, it would result in the GHG tax resembling an emissions trading scheme.

Finally, taxation is not an appropriate tool to reduce emissions pursuant to the Kyoto Protocol, as it is more susceptible to political interference than emissions trading. Like direct regulation, taxes become entrenched and more complex over time.¹⁰³ It is also likely that the government, in the pursuit of fiscal demands, would raise the tax base in order to increase their expenditure or lower other taxes. As such, one cannot be confident that a GHG tax would bear any connection with the level of taxation actually required to realise the emission reduction targets set out in the Kyoto Protocol. On this basis, emission permits are preferable as the market sets the price and they are therefore worthy of public confidence.

6.3 A Mixed Policy Approach

As already discussed, different environmental policy instruments all suffer from various design flaws. This makes it naïve to expect a single instrument to

¹⁰¹ Department of the Arts, Sport, The Environment, Tourism and Territories, *Carbon Tax as a Greenhouse Response Measure*, Price Waterhouse Government Liason Services, Canberra, 1991 at 43.

¹⁰² Centre for International Economics, *supra* n67 at 75.

¹⁰³ Hartley, P. Trade, Tax or ... Try Again Later? Can International Tradeable Carbon Dioxide Emissions Quotas Work?, Tasman Institute Occasional Paper B35, Melbourne, 1997 at 8.

achieve the goal at hand. The parties to the UNFCCC recognised this in formulating the Kyoto Protocol when they stipulated that international emissions trading should be supplementary to domestic action in meeting Kyoto targets. This provision creates difficulties as it raises the question of what level of domestic action is required to permit an entity to use the flexibility mechanisms provided under the Kyoto Protocol. On the basis of this provision there have been suggestions that there should be a ceiling set on the use of the Protocol's flexibility mechanisms. The European Union is demanding that there should be a 50 per cent cap on the amount of a country's obligations that can be achieved through trading, arguing that an open-ended system would allow heavy emitters to avoid "fixing up their own backyards"¹⁰⁴

Previous studies have come to the conclusion that economic instruments are most effective when they are used in conjunction with direct regulation.¹⁰⁵ That is, they are more successful when they are superimposed on existing regulations rather than replacing them. An example of where this is useful is when there is an environmental crisis that requires immediate short-term action.¹⁰⁶ In such a situation, the use of an emissions trading scheme or a tax is not sufficient to address the situation at hand. Using the example of air quality standards where weather patterns have led to a concentration of pollutants in the atmosphere, it is preferable to combine two instruments. In this example, emissions trading could be used to reduce pollution emission levels over the long-term to ensure that air quality standards are respected in normal periods. In addition, a regulatory scheme (such as restrictions on automobile circulation) could be maintained as an invaluable instrument for when an environmental emergency is imminent.

There may also be a place for GHG taxes within an emissions trading system. The OECD has suggested that domestic taxes could be used to curb emissions

¹⁰⁴ Millet, M., supra n79.

¹⁰⁵ OECD, *National Climate Policies and the Kyoto Protocol*, Organisation for Economic Co-operation and Development, Paris, 1999 at 14.

¹⁰⁶ Jeanrenaud C, supra n56 at 27.

from sources that cannot easily be incorporated into international emissions trading.¹⁰⁷ They advocate GHG taxes being used in sectors with a multitude of small emitters, such as transportation and households or for diffuse emissions such as agriculture. Provided that double taxation of industry and consumers can be avoided, this may be an appropriate union.

A consequence of combining different instruments is that polluters are effectively given a choice as to how they will reach their Kyoto abatement targets. This means that the polluter can choose how they will achieve their targets according to their individual needs. This is a desirable outcome as society values its autonomy and by providing polluters with a measure of this, they are more likely to accept the pollution abatement regime that is ultimately laid down.

7. THE ROAD AHEAD

7.1 Status of ratification

The road to ratifying the Kyoto Protocol is sure to be a long and rocky one. Economists, scientists and policy makers have made much progress in formulating the minutiae of an international emissions trading system that would enable Annex 1 countries to achieve their pollution abatement targets set under the Protocol. Presently 22 countries have ratified the Protocol, none of whom are classified as Annex 1 countries (See Appendix 2). The European Union and Japan have indicated that they will ratify the Protocol in 2002.¹⁰⁸ The United States says that they will not ratify until key non-Annex 1 countries are given binding targets. Australia and many other Annex 1 countries will not ratify until the United States does.¹⁰⁹

¹⁰⁷ OECD, supra n105 at 51.

¹⁰⁸ Millet, M., supra n79.

¹⁰⁹ Ibid.

However, the situation is not without hope. Non-Annex 1 countries are generally keen to see the Protocol ratified and are signaling their willingness to participate. This stems from their vulnerability to the dangers of global warming and their desire to benefit from the Protocol's CDM. At COP-5, Argentina set an example for other non-Annex 1 countries by voluntarily taking on a GHG abatement target and asking the Parties to the UNFCCC to make it into an international obligation.¹¹⁰ Argentina has also indicated that it is particularly eager to participate in international emissions trading pursuant to the Protocol.¹¹¹ In addition, Kazakhstan has announced plans to accept binding levels and has asked to be admitted as an Annex 1 Party to the Convention.¹¹²

The next meeting of the Parties at COP-6 at The Hague in November 2000 will be critical in regards to the ratification of the Protocol. Fundamental decisions are set to be made on the implementation of an international emissions trading scheme, the incorporation of sinks into the Protocol and the participation of non-Annex 1 countries in the Protocol. The outcomes of COP-6 are likely to determine whether or not the Kyoto Protocol will ever come into force.

7.2 Early action

If the Kyoto Protocol does come into effect in its present form, there is no doubt that Annex 1 countries who have implemented domestic trading schemes will have a distinct advantage over those who have not. Countries who wait to see whether the Protocol is ratified before acting will be left behind economically as they scramble to set up trading schemes. Policy commentators have compared the grudging reaction of world leaders to the Kyoto Protocol with the reaction to the new global trade rules that emerged as the General Agreement on Tariffs and Trade evolved into the World Trade Organisation.¹¹³ In that case countries

¹¹⁰ AGO, supra n43.

¹¹¹ Ibid.

¹¹² Ibid.

¹¹³ Sexton, E., supra n63.

not willing to join in at the beginning were eventually forced to and paid the price for their delaying tactics. The same could well be true for the Kyoto Protocol.

Many Annex 1 countries have already signaled their confidence in the Kyoto Protocol and international emissions trading by taking early action. Australia is one of the many OECD countries moving towards the implementation of a domestic GHG emissions trading scheme.¹¹⁴ The Australian Greenhouse Office (AGO) has been established by the Federal Government to examine the feasibility of a national GHG emissions trading system and how to make it compatible with the international trading scheme put forward at Kyoto¹¹⁵. The United Kingdom, Japan and New Zealand have already announced that emissions trading is their dominant policy response to the Kyoto Protocol.¹¹⁶ The United States expects to begin its domestic trading system by 2008, modelled on its successful Acid Rain Program.¹¹⁷ Despite all of these nations spending millions of dollars investigating the viability of domestic trading schemes, no one has yet actually implemented such a system for GHGs. This raises the question of whether such studies are merely designed to stall the abatement process as countries wait to see whether the Protocol is ratified.

As already discussed, Annex 1 countries have already begun investing in carbon sinks in anticipation of gaining credits under an international emissions trading scheme. In February 2000 the Tokyo Electric Power Company (TEPCO) signed an agreement with State Forests of New South Wales for carbon sequestration rights.¹¹⁸ TEPCO's investment (worth \$A130m over 10 years) is expected to be classified as a JIM program once international emissions trading has begun. Other Japanese companies as well as European and United States firms are

¹¹⁴ Ibid.

¹¹⁵ For further information see <http://www.greenhouse.gov.au/pubs/>

¹¹⁶ Sexton, E., supra n63.

¹¹⁷ Eizenstat S., (1998) "Stick with Kyoto: A sound start on global warming", 77(3) *Foreign Affairs* 119 at 120.

¹¹⁸ Millett, M., supra n79.

currently negotiating similar deals with State Forests of New South Wales.¹¹⁹ In addition, the pending introduction of carbon credit trading markets lends credibility to the Protocol being ratified and international emissions trading being implemented.

7.3 Where are we now?

Recently, the Australian Federal Government released new estimates that revealed that Australia's GHG emissions were 19 per cent above 1990 levels in 1998.¹²⁰ The government has blamed this unexpectedly high level of emissions on economic growth. In addition, ABARE has made public new research showing that Australia's gross national product could decrease by up to 1.4 percent in 2010 and that petrol prices could rise by up to 18 cents a litre, if Australia complies with the Kyoto Protocol.¹²¹ This information reveals that Australia is doing little in the lead-up to the Kyoto implementation period of 2008, apart from establishing the AGO and releasing numerous discussion papers. It appears that the Australian Government is more concerned about stalling economic growth than it is about reversing global warming.

These latest figures released by ABARE will only serve to further intimidate the business sector, which is already reluctant to see the Protocol implemented, as they fear its economic consequences. The timing of the release of these figures seems questionable as they seem to justify the Australian Government's lack of commitment to abiding by the Protocol. It is important for the Australian Government to abandon its "wait and see" philosophy and take action, even if that does mean facing a backlash from Australian industry. This political reluctance displayed by the Australian Government is widespread, and has resulted in another classic term in environmental policy. The Kyoto Protocol has

¹¹⁹ Planet Ark, <http://www.planetark.com.au/dailynewsstory.cfm?newsid=5715&newsdate=17-Feb-2000>. Accessed 27/4/00.

¹²⁰ Clennell, A, "Australia failing on greenhouse promises", *Sydney Morning Herald*, 25/5/00, p8.

resulted in a new variation of the well-documented NIMBY (Not In My Back Yard) phenomenon- NIMTOO (Not In My Term Of Office).¹²²

The future of international emissions trading and the Kyoto Protocol now seem to rest on political will. The United States inarguably holds the balance of power in the international arena. Many countries (including Australia) are waiting to see what it does. One thing that makes ratification of the Protocol and the implementation of international emissions trading a distinct possibility is the fact that the leading contender for the United States Presidency in 2000, Vice President Gore, has long made global warming a priority.¹²³ Considering that he has campaigned on global warming, if he is elected President, the chances of the Protocol being ratified will increase dramatically.

Even if the Kyoto Protocol does not get ratified, it is a certainty that a similar international agreement with binding emission reduction targets will take its place. The awakening of environmental consciousness has gone too far to now recede. For reasons outlined in this paper, international emissions trading is the best means for us to attain such targets in an economically rational way. An international emissions trading system would be most effective when combined with other pollution abatement tools such as direct regulation and GHG taxation. A lot of work still needs to be done in ironing out the complexities of international emissions trading, but it is an achievable task. It is the inherent openness and adaptability of emissions trading combined with the other flexibility mechanisms of the Protocol that make the task of ratification politically possible. Rather than criticising the limitations of these tools, and delaying the process any further, we should be building on them and overcoming any associated problems.

8. CONCLUSION

¹²¹ Taylor L and Skulley M, "Cabinet clash on greenhouse", *Australian Financial Review*, 24/5/00 at p1.

¹²² McKibbin, W.J., *supra* n25 at 1.

¹²³ Smeloff, E., *supra* n2 at 67.

As the long and protracted debate over which instrument is best suited to meeting the Kyoto abatement targets continues, we should not lose sight of our ultimate goal. What is of the utmost importance is that we begin to comprehensively address and deal with the problem of global warming. It has taken many years for us to degrade our environment, and as a result it will take many years for us to mend it. As such, the decision on exactly how we are going to achieve this is of secondary importance. Our primary concern should be launching our counter-offensive as soon as possible.

The Kyoto Protocol represents a remarkable achievement in international policy. It is the first time that countries have indicated their willingness to accept binding targets for GHG emissions. International emissions trading offers us a way of fighting global warming. As outlined in this paper, its advantages include that GHG abatement will occur at the least cost, the quantity target is built into the system, polluters are encouraged to take early action and through the incorporation of sinks into the system, massive revegetation will take place.

The fate of the Protocol may rest on the implementation of an international emissions trading system. Parties to the Protocol should attempt to capitalise on the strengths of emissions trading, without compromising the principles of such a system. This will involve the resolution of administrative difficulties within an international emissions trading scheme. Since the signing of the Kyoto Protocol much progress has been made on the possible implementation of an international emissions trading scheme and as a result it seems increasingly likely that the Protocol will be ratified. An international trading scheme is not without its imperfections. Yet, regardless of its shortcomings it provides us with a tangible answer to global warming.

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APPENDICES

Appendix 1. Kyoto Protocol target commitments for Annex 1 countries

Commitments are represented as percentage of base year emission levels¹ to be achieved between 2008-2012)

European Union		Economies in transition to a market economy	
Austria	92	Bulgaria	92
Belgium	92	Croatia	95
Denmark	92	Czech Republic	92
Finland	92	Estonia	92
France	92	Hungary	94
Germany	92	Latvia	92
Greece	92	Lithuania	92
Ireland	92	Poland	94
Italy	92	Romania	92
Luxembourg	92	Russian Federation	100
Netherlands	92	Slovakia	92
Portugal	92	Slovenia	92
Spain	92	Ukraine	100
Sweden	92		
United Kingdom	92		
Other Europe		Other Annex 1	
Iceland	110	Australia	108
Liechtenstein	92	Canada	94
Monaco	92	Japan	94
Norway	101	New Zealand	100
Switzerland	92	United States of America	93

1. Base year is 1990 for all countries except those with economies in transition, who may choose an alternative base year or multi-year period.

Source: OECD, *National Climate Policies and the Kyoto Protocol*, Paris, 1999.

Appendix 2. Kyoto Protocol Status of Ratification*(As at 13/1/00)

(*) Italics indicated Annex 1 parties to the UNFCCC

COUNTRY	SIGNATURE	RATIFICATION
Antigua and Barbuda	16/03/98	03/11/98
Argentina	16/03/98	
<i>Australia</i>	<i>29/04/98</i>	
<i>Austria</i>	<i>29/04/98</i>	
Bahamas	----	09/04/99
<i>Belgium</i>	<i>29/04/98</i>	
Bolivia	09/07/98	30/11/99
Brazil	29/04/98	
<i>Bulgaria</i>	<i>18/09/98</i>	
<i>Canada</i>	<i>29/04/98</i>	
Chile	17/06/98	
China	29/05/98	
Cook Islands	16/09/98	
Costa Rica	27/04/98	
<i>Croatia</i>	<i>11/03/99</i>	
Cuba	15/03/99	
<i>Czech Republic</i>	<i>23/11/98</i>	
Cyprus	----	16/07/99
<i>Denmark</i>	<i>29/04/98</i>	
Ecuador	15/01/99	13/01/00
Egypt	15/03/99	
El Salvador	08/06/98	30/11/98
<i>Estonia</i>	<i>03/12/98</i>	
<i>European Community</i>	<i>29/04/98</i>	
Fiji	17/09/98	17/09/98
<i>Finland</i>	<i>29/04/98</i>	
<i>France</i>	<i>29/04/98</i>	
Georgia	----	16/06/99
<i>Germany</i>	<i>29/04/98</i>	
<i>Greece</i>	<i>29/04/98</i>	
Guatemala	10/07/98	05/10/99
Honduras	25/02/99	
Indonesia	13/07/98	
<i>Ireland</i>	<i>29/04/98</i>	
Israel	16/12/98	
<i>Italy</i>	<i>29/04/98</i>	
Jamaica	----	28/06/99
<i>Japan</i>	<i>28/04/98</i>	
Kazakhstan	12/03/99	
<i>Latvia</i>	<i>14/12/98</i>	
<i>Liechtenstein</i>	<i>29/06/98</i>	
<i>Lithuania</i>	<i>21/09/98</i>	

COUNTRY	SIGNATURE	RATIFICATION
<i>Luxembourg</i>	29/04/98	
Malaysia	12/03/99	
Maldives	16/03/98	30/12/98
Mali	27/01/99	
Malta	17/04/98	
Marshall Islands	17/03/98	
Mexico	09/06/98	
Micronesia (Federal States of)	17/03/98	21/06/99
<i>Monaco</i>	29/04/98	
Mongolia	----	15/12/99
<i>Netherlands</i>	29/04/98	
<i>New Zealand</i>	22/05/98	
Nicaragua	07/07/98	18/11/99
Niger	23/10/98	
Niue	08/12/98	06/05/99
<i>Norway</i>	29/04/98	
Palau	----	10/12/99
Panama	08/06/98	05/03/99
Papua New Guinea	02/03/99	
Paraguay	25/08/98	27/08/99
Peru	13/11/98	
Philippines	15/04/98	
<i>Poland</i>	15/07/98	
<i>Portugal</i>	29/04/98	
Republic of Korea	29/04/98	
<i>Romania</i>	25/09/98	
<i>Russian Federation (The)</i>	05/01/99	
Saint Lucia	16/03/98	
Saint Vincent and the Grenadines	19/03/98	
Samoa	16/03/98	
Seychelles	20/03/98	
<i>Slovakia</i>	26/02/99	
<i>Slovenia</i>	21/10/98	
Solomon Islands	29/09/98	
<i>Spain</i>	29/04/98	
<i>Sweden</i>	29/04/98	
<i>Switzerland</i>	16/03/98	
Thailand	02/02/99	
Trinidad and Tobago	07/01/99	29/01/99
Turkmenistan	28/09/98	11/01/99
Tuvalu	16/11/98	16/11/98
<i>Ukraine</i>	15/03/99	
<i>United Kingdom</i>	29/04/98	
<i>United States of America</i>	12/11/98	
Uruguay	29/07/98	
Vietnam	03/12/98	

COUNTRY	SIGNATURE	RATIFICATION
Uzbekistan	20/11/98	12/10/99
Zambia	05/08/98	

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