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Prospects for a Global Carbon Emissions Trading System

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Executive Summary

A cap and trade global emissions trading system requires a global cap on emissions sufficient to enable a carbon price high enough to provide an incentive to invest in and deploy new technologies. That key condition has not and will not be satisfied.

With the US not buying permits, Japan, Canada and the EU will be the major buyers. An excess supply of permits means that prices will be too low to stimulate investment in and deployment of emissions reduction technologies – which in countries such as China and India is the key to reducing the growth of their greenhouse gas emissions.

The assertion that a shift in US public opinion and the prospect of a Democrat President with a majority in both houses of Congress means that the US will ratify the Kyoto Protocol and participate in its emissions trading system ignores economic and political realities. The protectionist inclinations of many of the new Democrat politicians and the Byrd-Hagel Senate Resolution (requiring developing countries to assume binding emission reduction targets as a condition for US ratification) suggest that Congressional ratification is not feasible. Developing countries continue strongly to oppose binding targets and timetables in negotiations on a second Kyoto Protocol commitment period after 2012.

The European Union's Emissions Trading Scheme (ETS) gives no grounds for confidence that a global system will work. Permits in the ETS have been over allocated to protect industrial sectors – especially coal generated electricity in Germany. After an initial spike, prices have collapsed to close to zero. At such prices there is no incentive to apply new technologies. One of the key arguments in support of a global emissions trading system has therefore failed its first major test.

Differences in allocation arrangements, rules and institutional arrangements between the ETS and current and prospective national emissions trading systems suggest that an efficient and effective global emissions trading system cannot evolve from a progressive amalgamation of such systems.

There are important implications for Australia in designing an emissions trading scheme. Sinks credits remain one of the most cost-effective abatement option in Australia, and deliver other environmental benefits. Such credits are not recognized in the ETS. Designing an Australian emissions trading scheme to be consistent with the ETS, with a view to eventually establishing a link with it, would require the exclusion of sinks credits. Costs would be much higher than they would otherwise have been.

An efficient and effective global carbon market is a chimera. The Asia Pacific Partnership on Climate Change is a much better instrument to encourage key developing countries such as India and China to accelerate the introduction of new emission reduction technologies. Companies that wish to hedge their carbon dioxide exposure can join the Chicago Climate Exchange.

Prospects for a global carbon emissions trading market.

An efficient and effective global carbon emissions trading market requires a global carbon constraint high enough to deliver a carbon price that provides an incentive to develop and deploy new emission reduction technologies. While consistent monitoring and reporting arrangements under the Kyoto Protocol are in place, this key condition has not been met.

Background

While there has been no substantial change in the science, the political momentum in support of action to address global warming has accelerated. But political momentum is not matched by the set of economic and political conditions required for an effective and efficient global carbon trading market. Such conditions conflict with significant national economic interests.

The economics of emissions trading

Global emissions trading requires a cap on global greenhouse gas emissions. Governments and firms have the option of buying permits to meet any shortfall in their targets of investing in abatement options. A carbon price emerges from allowing the market to facilitate countries and firms requiring permits to acquire them from those with excess permits to sell. In theory, emissions trading enables least cost solutions to be obtained: firms that need to reduce the growth of their emissions can invest in abatement or buy permits.

Evidence from the US sodium dioxide emissions trading scheme is cited by proponents of a global carbon trading scheme as an example of what such a scheme could achieve. But transposing evidence from this national scheme to an international carbon trading market entails considerable risks.¹

Babiker, Reilly and Viguier have noted how taxes and other distortions can mean that global emissions trading can reduce welfare “because of general equilibrium effects when there are distortions. It occurs in countries exporting emission permits when efficiency costs associated with pre-existing distortionary taxes are larger than the primary gains from emissions trading”.²

By imposing a price on carbon, it is alleged that a global carbon trading market will provide the incentive for investment in modern technologies.

Tietenberg notes that “A specific theorem of environmental economics demonstrates that, under specific conditions, an appropriately defined tradeable-permit system can minimize the cost of reaching a predefined environmental target. In a perfectly competitive market, permits will flow towards their highest-valued use. Those that would receive lower value from using the permits (owing to lower abatement costs, for example) have an incentive to trade them to someone who would value them more. The trade benefits both parties. The seller reaps more from the sale than s/he could from using the permits and the buyer gets more value from the permit than s/he pays for it.”³

Edmonds, Scott, Roopen and MacCracken put the proposition as follows: “GHG (greenhouse gas) emissions control would be less costly overall if those countries and organizations that have relatively high costs of emissions reductions were allowed to pay those with lower costs of emissions reduction to undertake more of the actual emissions reductions. The costs of savings (ie, the gains from trade) would be realized if markets could be established that allowed trading of “permits” or rights to emit GHGs. Nations with higher emissions control costs could then compensate lower-cost nations to undertake

¹ For an analysis of critical role of design arrangements for the US sodium dioxide scheme, see page 19 pp of Evans, D, Hobbs, B, Oren, C and Palmer, K, *Modelling the Effects of Changes in New Source Reviews of SO₂ and NO₂ emissions from Electricity-Generating Units*, at <http://www.rff.org/Documents/RFF-DP-07-02.pdf>.

² Babiker, M, Reilly, J and Viguier, L, *Is International Emissions Trading Always Beneficial?*, page 53, *The Energy Journal*, Vol 25, No. 2, at http://web.mit.edu/globalchange/www/MITJPSPGC_Reprint04-4.pdf.

³ Tietenberg, T, *The Tradeable-permits Approach to Protecting the Commons: Lessons for Climate Change*, in *Climate-Change Policy*, edited by Dieter Helm, pages 167-168.

emissions control on behalf of the higher cost nations. Of course, the principle is silent on the question of how the savings are actually shared (ie, who pays whom how much). Nevertheless, the gains from trade are still potentially available to be shared regardless of how responsibility for mitigation is assigned".⁴

Econometric modelling demonstrates that the costs of a global emissions trading system are minimized when such a system includes all major sellers and all major buyers of permits. Edmonds et al conclude that "the gains from trade are potentially much greater if the group of nations undertaking reductions could be expanded to include the non-Annex 1 countries as well as the Annex 1 countries".⁵ They present modelling results of marginal carbon control costs of \$US24 per ton when developing countries can participate in trading – which increase to \$US106 per ton with Annex 1 (developed countries) trading or between \$US139 a ton to \$US 304 per ton with no trading. They conclude that "the broader trading possibilities mean that the marginal abatement cost (and the permit price) is much lower than it would be with more limited trading opportunities".⁶

This is consistent with other modelling, which shows that the greatest potential gains will flow from a **global** emissions trading system: one that includes not only all sources of permits but all major buyers of permits.

But the emissions reduction targets in the Kyoto Protocol are limited to developed countries. Key developing countries such as India and China, whose emissions are growing very strongly and which offer the greatest sources of least cost abatement, cannot participate in the Kyoto Protocol's emissions trading regime as they do not have binding emissions reduction targets. The largest potential buyer, the US, has not ratified the Kyoto Protocol and hence has no need to buy permits as it does not have a legally binding target.

The problems confronting the design of an efficient and effective emissions trading system have been summarized by Pezzey: "policy design needs to consider both the full range of instruments (taxes, permits, and hybrids of taxes and permits, with intermediate levels of tax thresholds and free permits, and possible limits on market incentives), and a full range of costs (allocative, administrative and 'political') before the best instrument for any particular application can be found".⁷ Satisfying these conditions will clearly be very difficult, if not impossible.

Requirements for a global carbon trading market

An efficient and effective global emissions trading market would need to satisfy the following conditions:

- Have efficient rules and administrative arrangements.
- Include all major suppliers of and demand for permits.
- Ensure that supply and demand for permits delivers a price on carbon that is high enough to encourage abatement, yet not so high as to dramatically reduce growth.
- Deliver certainty.

⁴ Edmonds, J, Scott, M, Roop, J and MacCracken, C, *International emissions trading and Global climate change: Impacts on the Costs of Greenhouse Gas Mitigation*, page 2.

⁵ Edmonds et al, op cit, page 16.

⁶ I bid, page 16.

⁷ Pezzey, J, *Emission taxes and tradeable permits: a comparison of views on long run efficiency*, page 17, at http://econ.anu.edu.au/download_files/een0210.pdf.

Does the Kyoto Protocol's emissions trading regime meet these conditions?

Rules and administrative arrangements

An extensive set of rules for the Kyoto Protocol's emissions trading regime has been agreed. They rest on the Kyoto Protocol's monitoring and reporting rules and institutional arrangements. The assumption is that all countries will report their greenhouse gas emissions honestly and accurately. Many countries can be expected to do so. Others, especially those that cannot meet their targets, may not.

Financial markets, such as a global carbon trading system, depend on confidence. If confidence in the basic data on which such a system rests is undermined (for example by evidence that some countries are under reporting their emissions, or that they are experiencing major technical difficulties in doing so), the efficiency of the Kyoto Protocol's emissions trading system would be undermined.

The obligation for ensuring that a permit conforms with the Kyoto Protocol's rules rests with the buyer. Buyer liability reflected reservations about whether permits issued by Russia and the Ukraine (the largest sources of emissions credits) would be in accordance with Kyoto Protocol rules. There was a concern that multiple permits might be issued for the same emissions reduction activity – and that those holding such permits might find when they needed to acquit them that they are invalid and substantial penalties apply.

Tietenberg observes that "Enforcement at the international level relies heavily on the effectiveness of national enforcement. National enforcement capabilities vary widely across countries. Weak national enforcement systems would provide a significant opportunity for non-compliance in those countries, jeopardizing the achievement of the climate-change goals. ... Countries with poor enforcement systems could end up selling permits to those with good enforcement systems, in effect substituting ineffectively for effectively enforced permits."⁸

Wariness about the legitimacy of permits and/or reporting is likely to encourage countries and firms to undertake their own abatement rather than risk finding that Kyoto Protocol permits are non compliant. This will reduce demand for permits and inhibit the emergence of a liquid secondary market.

An efficient and effective global carbon market requires that compliance costs be minimized. The higher the compliance costs, the lower the demand is likely to be for permits. Johnstone notes that "verification" under the UK emissions trading scheme are estimated to be around 5 per cent of total costs.⁹

The Kyoto Protocol's emissions trading rules are complex. Concerns about compliance, liability, and the accuracy of the underlying data constitute major difficulties to it becoming an efficient and effective global carbon market.

Supply of and demand for permits

The major supply of permits under the Kyoto Protocol's emissions trading system will be Russia and the Ukraine. This reflects the dramatic declines in their economies after 1990 –

⁸ Tietenberg, op cit, page 190.

⁹ Johnstone, N, *Tradable Permits for Climate Change: Implications for Compliance, Monitoring, and Enforcement*, in Helm, op cit, page 245.

so-called “hot air”. Those countries that are likely to need to buy permits (Japan, Canada and the EU) will source most of them from Russia and the Ukraine.

Grubb and Neuhoff present data estimating that “the potential supply of surplus Kyoto allowances available from eastern Europe (including the new EU states, Russia and the Ukraine), without the need for specific projects, is ... (3000-8000 MtCO₂eq – million tons of carbon dioxide equivalent). The amount made available on terms attractive to potential buyers is subject to political uncertainty. Japan is likely to need 250-1000 MtCO₂eq imports to comply with its Kyoto obligations, some of which would be drawn from allowance trading; Canada could also compete but with less certainty. Thus the Kyoto system has a supply of project-based credits already in the pipeline (officially or unofficially) that is likely to substantially exceed non-EU demand, plus a ‘buffer’ or surplus Kyoto allowances potentially available.”¹⁰

Russia and the Ukraine are in a very good position to engage in gaming: restricting the supply of permits to increase the price. Such gaming has the potential to undermine the effectiveness of the Kyoto Protocol’s emissions trading system. As Barrett argues, “if Russia needs even more hot air or other concessions (in subsequent commitment periods) this will only raise the cost to other countries of participating in the agreement – and so diminish *their* incentive to participate”.¹¹

The US has no need to buy Kyoto Protocol emissions trading permits. There will clearly be an excess supply of credits in the first commitment period. The Kyoto Protocol’s emissions trading scheme, and the benefits that it was expected to deliver, will therefore be much smaller than was envisaged when its rules were negotiated.

Public opinion in the US, as elsewhere, is moving in support of action to address climate change. Some have asserted that this sentiment, combined with the prospect of a Democrat President in 2008 with a Congressional majority in both houses, means that the US will ratify the Kyoto Protocol – and that therefore US demand for Kyoto Protocol permits will restore a greater balance between the supply of and demand for permits.

This ignores reality. The US has the most onerous Kyoto Protocol target of all developed countries. Reducing its emissions by its 7 per cent target would be very costly – especially as it is expected that US emissions under a business-as-usual scenario will be at least 30 per cent higher in 2008-12 than in 1990.¹²

If a Democrat is elected as President in 2008 and enjoys a majority in both houses of Congress, it does not follow that Congressional ratification can be secured. Many of the new Democrat members of the House and Senate have strong protectionist instincts. They represent sectors and regions concerned about opening US markets to more foreign competition. Growing concerns about Chinese exports to the US will accentuate such concerns.

Politicians who oppose trade liberalization on the grounds that it would hurt their regions and constituents are most unlikely to support ratifying the Kyoto Protocol - which would impose far higher costs (on their constituents, regions and the economy) than trade liberalisation. Unlike trade liberalisation, ratifying the Kyoto Protocol would not deliver wider economic benefits with which to compensate the losers.

¹⁰ Grubb, M and Neuhoff, K, *Allocation and competitiveness in the EU emissions trading scheme: policy overview*, page 20, at <http://www.electricitypolicy.org.uk/pubs/tsec/grubb.pdf>

¹¹ Barrett, S, *Kyoto Plus*, in Helm, op cit, page 295.

¹² Barrett, S, *Kyoto Plus*, in Helm, op cit, page 295.

Commentators who suggest that Congressional approval is feasible ignore the reasons for and lessons from the Byrd-Hagel Resolution. Passed 95-0 in 1997, this “sense of the Senate” resolution resolved that the US should not be a signatory to any agreement that “mandates new commitments ... unless the protocol or other agreement also mandates new specific scheduled commitments to limit or reduce greenhouse gas emissions for Developing Country Parties within the same compliance period”. It also notes that “the exemption for Developing Country Parties is inconsistent with the need for global action on climate change and is environmentally flawed”; and that the proposals under negotiation at Kyoto “could result in serious harm to the United States economy, including significant job losses, trade disadvantages, increased energy and consumer costs, or any combination thereof”.¹³

Political sentiment and the composition of the Senate have changed since this resolution was passed. But concerns about the competitiveness implications for the US from it assuming binding emission reduction commitments without key developing countries doing the same would quickly reassert themselves should a new President seek Congressional ratification of the Kyoto Protocol.

Political and economic realities indicate that the US will not ratify the Kyoto Protocol. It can be expected to remain outside its emissions trading scheme. The same realities suggest that negotiating a second commitment period set of arrangements under the Kyoto Protocol will be extremely difficult. With developing countries opposed to binding targets and timetables and the US not agreeing to them without such developing country commitments, the EU, Japan, Canada and other developed countries will be very reluctant to go it alone.

The price of carbon

The Kyoto Protocol’s emissions trading system is a long way from a truly global system. Without the major buyer, demand for permits is limited to countries such as Japan, Canada and the EU, which unlike Australia are not on track to achieve their Kyoto Protocol targets by domestic policies and measures. They will need to avail themselves of the Kyoto Protocol’s flexibility mechanisms: emissions trading, the CDM and Joint Implementation. Which combination of these options they use will depend on the relative prices of permits under these mechanisms and associated compliance costs.

Compliance costs under the Kyoto Protocol’s emissions trading scheme will be high. Uncertainty on the accuracy of reporting of emissions is likely to make compliance costs higher than they would otherwise have been. How compliance costs affect demand for the Kyoto Protocol’s flexibility mechanisms remains to be seen.

Without US demand Kyoto Protocol permit prices will be lower than they would have been with the US participating. A low price of carbon means that the incentive to undertake abatement and to invest in new technologies will also be lower.

The Stern Report argued that the price for a tonne of carbon would need to rise from around \$US20 to about \$US50 to stabilize atmospheric concentrations of greenhouse gases. Can the Kyoto Protocol deliver such carbon prices? It has been estimated that there will be a supply of around 5.2 billion tonnes of carbon credits available under the various Kyoto carbon trading mechanisms by 2012. But the EU, Canada and Japan are estimated collectively to exceed their targets by 3.6 billion tonnes.¹⁴ In other words, supply will significantly outstrip demand. “We are going to see the same scenario as with the ETS (European Emissions Trading System) whereby the price for a tonne of carbon starts high

¹³ Byrd-Hagel Resolution, at <http://www.nationalcenter.org/KyotoSenate.html>.

¹⁴ IT Week Tech Finder, Green Business News, *Emission trading suffers as carbon prices plummet*, at http://green.itweek.co.sion_tradin.html.

and then collapses to close to zero by the end of the scheme ... which is precisely the wrong message".¹⁵

Carraro concludes that with the US not participating in the Kyoto emissions trading market, "the emissions market loses its largest permit demander, which implies that there is a higher amount of hot air available for the remaining Annex B countries and that the permit price falls. This reduces the cost of energy in the remaining Annex B countries, thus mitigating the potential impacts on energy demand (which could possibly rise)".¹⁶

Bohringer and Loschel estimate that "for competitive permit trade, environmental effectiveness (from the Kyoto Protocol's emissions trading system) would be reduced to zero since the US withdrawal implies an excess of supply of permits driving permit prices down to zero. Efficiency losses from monopoly behavior by FSU (former Soviet Union) under US withdrawal double total compliance costs compared to a competitive permit market system which achieves the same environmental target."¹⁷

IT Week Tech Finder quotes Professor Jepma of the University of Amsterdam as concluding that "there is a good chance that the carbon credits that are meant to provide incentives for reducing emissions will be available for next to nothing"; that the Clean Development Mechanism is "in danger of becoming a victim of its own success with over 500 projects already approved by the CDM and a further 1000 projects in the pipeline awaiting approval. He predicted that as a result over 2.4 bn (billion) CERs (Certified Emission Reductions) will be available by 2012"; and that "Russia and many of the Central European States are on track to be well below their Kyoto emission targets for 2012 meaning they will generate 2.8 bn (billion) credits or Assigned Amount Units that they can sell".¹⁸

With permit prices under the Kyoto Protocol's emissions trading system expected to be very low, if not zero, given the excess of supply over demand without US participation, it is unrealistic to assert that this system will constitute an effective and efficient global system. It will not provide the incentive to encourage the development and deployment of new technologies.

Certainty

Abatement is a long term issue. Those investing in carbon permits need long term certainty. The Kyoto Protocol does not deliver such certainty. Beyond 2012, nothing is clear. Negotiations on a second commitment period are bogged down. Developing countries have made it clear that they will not accept binding targets and timetables. The prospects for a second commitment period Kyoto Protocol emissions trading regime, resting on binding targets and timetables, look very poor. Such uncertainty means the Kyoto Protocol will not constitute an effective and efficient global emissions trading market.

This point emerges in the academic literature as a major problem. Tietenberg notes that "what will happen after the initial commitment period in the Kyoto Protocol is up in 2012 has not been defined. This means that those who are investing in greenhouse-gas-emissions reductions face a great deal of uncertainty about the value of those reductions after 2012

¹⁵ Ibid.

¹⁶ Carraro, C, *Consequences of US non-participation in the Kyoto Protocol*, at <http://www.ceps.be/files/ClimateDialogue/Consequences-of-the-US-nonparticipation-policy-brief-FEEM.pdf>.

¹⁷ Bohringer, C and Loschel, A, *Market Power in International Emissions Trading – The Impacts of US Withdrawal from the Kyoto Protocol*, Abstract, at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=296319.

¹⁸ IT Week Tech Finder, op cit, page 2.

and that uncertainty presumably has a detrimental effect on incentives to invest in abatement.”¹⁹

An understanding of the problems confronting the development of a global emissions trading market can be obtained from the experience of the European Union’s Emissions Trading System.

The European Emissions Trading Scheme

The European Union’s Emissions Trading Scheme (ETS) was established in 2005. It is a cap and trade scheme which covers almost half of EU carbon dioxide emissions. Experience since its establishment points to how difficult it is to design and operate an efficient emissions trading system among a group of homogenous countries with common institutions, broadly similar economies and with a long history of sharing sovereignty – and how much more difficult it will be for a global system to be negotiated and managed.

As Grubb and Neuhoff have observed, “Due in part to the sheer scale of the EU ETS, governments are subject to intense lobbying relating to the distributional impact of the scheme, and are constrained by this and by concerns about the impact of the system on industrial competitiveness”.²⁰

This points to arguably the most difficult and contentious issue in an emissions trading system: the allocation of permits. A system that allocates too many permits will deliver a lower price of carbon and hence not provide the incentive to undertake investment in new technologies with which to lower emissions. Insufficient permits, or a high proportion auctioned rather than allocated free, will drastically reduce economic growth. The ETS demonstrates how hard it is to get this balance right.

An indication as to whether an emissions trading system is designed seriously to reduce the growth of emissions can be obtained from the percentage of emissions allocated or auctioned. In the ETS, “while the allocation *method* is entirely in the hands of Member States, subject to the constraint that governments must give at last 90% of allowances out for free and respect the relevant criteria under the EU ETS directive”.²¹

Grubb and Neuhoff concede that “free allocations can distort incentives. If installations cease to receive free allowances when they close, the withdrawal of over-compensation creates a perverse incentive to keep inefficient facilities operational”; and “giving free allowances in proportion to the carbon intensity of new plants, can bias the incentive towards more carbon-intensive investments”.²²

This cuts to the heart of the criticisms levelled at the ETS: that in its allocation of permits the scheme is more focused on protecting key EU industries, and in particular the coal industry, rather than in achieving environmental objectives.

¹⁹ Tietenberg, T, “The Tradeable-permits Approach to Protecting the Commons: Lessons for Climate Change”, in Helm, op cit, pages 188-189.

²⁰ Grubb, M and Neuhoff, K, *Allocation and competitiveness in the EU emissions trading scheme: policy overview*, page 7, at <http://www.electricitypolicy.org.uk/pubs/tsec/grubb.pdf>.

²¹ Grubb and Neuhoff, op cit, page 19.

²² Grubb and Neuhoff, op cit, page 15.

From prices of around Euro 10 per ton of carbon after the scheme was established in 2005, they rose rapidly to close to Euro 30 and crashed in April/May of 2006 – to around Euro 10. Prices are currently around Euro 1.²³

In analysing the trend in prices, Grubb and Neuhoff have observed that “Some excess of allocations over verified emissions, which led to the large price reductions, was predictable. Moreover, as indicated, the higher gas prices shifted some power generation back from gas to coal-fired operation, *increasing* emissions compared to the initial power sector projections”.²⁴

Grubb and Neuhoff concede that devolved allocation responsibilities create significant problems, “where free allocation forms a subsidy for new investments. This raises the prospect of a ‘race to the bottom’ as Member States compete to attract investment – though such subsidies are usually at a macroeconomic cost, in this case exacerbated by the need to then cut back emissions more elsewhere in the economy (or to buy international credits) to comply with Kyoto targets”.²⁵

An Energy Business Review article puts the problem succinctly: “Allocations are overly generous for the first phase. Of the 23 member states that reported their first-year emissions on time, only Austria, Ireland, Italy, Slovenia, Spain and the UK were short of credits. Germany, the largest emitter in the scheme, accounting for over a quarter of the EU’s overall quota, had overallocated by 4.5 per cent”.²⁶ Another source has estimated that firms have had their carbon emissions capped at 110 per cent of what they actually required.²⁷

This points to a major design flaw: allocation is designed to shield key industrial sectors, especially the coal industry in the Ruhr region in Germany, from the very outcomes that an emissions trading regime is supposed to achieve.

Energy Business Review notes that “the costs associated with emitting carbon are too low. The excess of credits at present are not incentivizing electricity producers to switch away from cheaper coal and the rising wholesale price of natural gas across western Europe has served only to exacerbate the issue”; and “The impact of rising gas prices has been keenest felt in the UK, where coal has overtaken natural gas as the key input fuel for power generation. Britain was subsequently the furthest from meeting its allocation in the first full year of emissions trading”.²⁸

The implications are significant – both for the second phase of the ETS to begin in January 2008 and for ongoing international climate change negotiations. On the former, the Energy Business Review reports that “the European Commission (had) rejected nine of the 10 NAPs (National Allocation Plans) it had received for phase two, slashing allocations in the process. The storm of protests this provoked from member states does not augur well for the future of the EU ETS. Describing cuts to Germany’s second phase NAP as “totally unacceptable”, economy minister Michael Glos and his compatriots will be lobbying hard to exempt new

²³ IT Week Tech Finder, op cit, page 2. Prices of one Euro have led Tim Curtin, Emeritus Professor of Economics at the Australian National University, to conclude that the carbon in a bottle of tonic water is worth more than the carbon value of an ETS permit.

²⁴ Ibid, page 13.

²⁵ Ibid, page 17.

²⁶ Energy Business Review, *EU emissions trading failing in current climate*, page 1, at http://www.energy-business-review.com/article_feature.asp?guid=7820D2C9-9C77-42F6A9B5-D66CC822232A.

²⁷ IT Week Tech Finder, op cit, page 2

²⁸ Energy Business Review, op cit, page 2.

coal-fired plant builds from emission curbs – a move that would threaten the integrity of the entire scheme”.²⁹

Datamonitor believes that “The inability of the European Commission to demand appropriate cuts from key emitters will see the EU miss its collective ETS and Kyoto targets, undermining the reputation and validity of the entire scheme”.³⁰

IT Week Tech Finder quotes Professor Jepma as concluding that “the only hope for keeping the price of the various carbon credits high enough to act as an incentive for countries to hit their Kyoto targets lay with convincing the Russians to retire the bulk of their credits”.³¹

This is unrealistic. Given uncertainties about a second commitment period Kyoto Protocol emissions trading regime, Russia and the Ukraine have a strong incentive to sell as many permits as possible in the first commitment period. A system which relies on Russia behaving contrary to its economic interests is deeply flawed.

Can a global emissions trading scheme evolve from existing schemes?

It is sometimes asserted that a global emissions trading scheme will somehow evolve from a gradual amalgamation of existing national and regional schemes. The premise is that while it will be impossible to negotiate a truly global scheme involving all major emitters, including developing countries, it will be possible to establish links between various emissions trading schemes – and that this will gradually evolve into a global scheme.

The hurdles look insurmountable. For a global system to evolve from national and regional emissions trading systems, allocation arrangements, coverage (whether carbon or other greenhouse gases) and rules would need to be similar or the same. This seems most unlikely to occur.

Some might argue that the market would be able to price such permits to enable them to be interchangeable. But that ignores the reality that rules and institutional arrangements determine whether this is feasible. Given experience with the ETS, there are no grounds for optimism.

For a global system to emerge from the various national and regional systems, a precondition will be certainty. Yet the ineffectiveness of the ETS gives rise to questions about how and in what way the next phase of the ETS might be structured. Given the overallocation of permits under the first phase, and the problems that emerged recently in EU negotiations on renewable energy targets, there can be little confidence that the ETS represents the basis for an effective and efficient global carbon market. As the Energy Business Review has noted, “Should the scheme limp on in its current form, focus will begin to shift back to national policy instruments”.³²

Without US involvement in a second Kyoto Protocol commitment period, and with developing countries having indicated firmly that they will not accept binding targets and timetables, will the EU, Japan, Canada, the non-EU Scandinavians, New Zealand and Russia agree to go it alone with binding targets and timetables for a second commitment period? Such an outcome is most unlikely.

²⁹ Energy Business Review, op cit, page 2.

³⁰ Datamonitor Brief, August 2006, at www.datamonitor.com/energy.

³¹ IT Week Tech Finder, op cit, page 3

³² Ibid, page 2.

If companies wish to hedge their carbon dioxide exposure, they have the option of joining the Chicago Climate Exchange – which AGL has done. This exchange is “a self-regulating exchange that administers a voluntary, legally binding pilot program for reducing and trading greenhouse gas emissions in North America, with the participation of Offset Providers from Brazil”.³³ Under this system members commit to reducing greenhouse gases by 1 per cent per year over the years 2003 through 2006 relative to an average over 1998 to 2001, and can sell surplus emissions on the exchange or bank them. The total volume of trades on the exchange up to February 2007 was 3.71 million metric tons – as prices at or very close to \$US4 per ton for all years between 2003 and 2010.³⁴

Implications for Australia

An efficient and effective global emissions trading system would require substantial global emissions reduction targets and timetables for countries representing the major sources of and buyers of permits. Political and economic realities, in both developed and developing countries, suggest that that is not in prospect.

The probability of agreement being reached on the rules allowing permits to be generated in one jurisdiction’s emissions trading system to be used in another is low. If the Australian states cannot implement emissions abatement systems that are compatible between them, what prospect is there for this being done between national and regional systems?

The ETS does not allow credits from forest sinks to be used to offset emissions reduction obligations. Australia secured agreement in the Kyoto Protocol negotiations that reducing the growth of emissions from landclearing could be used to meet targets. Australia did so for a very good reason: reducing the rate of landclearing constitutes the most cost-effective method for Australia to achieve emissions abatement.³⁵ Indeed, slowing the rate of landclearing in Queensland is one of the main reasons why Australia is one of the few developed countries to be on track to meet its Kyoto Protocol target.

It would not be in Australia’s interests to design an emissions trading system that did not allow credits to be obtained from reducing landclearing. Any suggestion that Australia should not include emissions from such sources in any emissions trading scheme that it might implement in order to enable some future link to be made with the ETS should be rejected. Doing so would deliver higher economic costs than would otherwise have been the case. This is but one example of how difficult it will be to integrate national and regional emissions trading regimes – and how far such arguments are from political and economic reality.

Is there a better option?

Evidence from the ETS indicates that it is ineffective in encouraging investment in new technologies with which to reduce the growth of greenhouse gas emissions. The Asia-Pacific Partnership for Clean Development and Climate (AP6) process offers far better prospects for encouraging the development and application of new technologies.³⁶

³³ See <http://www.chicagoclimatex.com/>.

³⁴ See http://www.chicagoclimatex.com/news/press/release_20070301.CCX.pdf.

³⁵ There have been suggestions that this was somehow “unfair”. This misses the point. Targets agreed at Kyoto reflected arrangements required to secure agreement. The arrangement for Australia on landclearing was no different from the UK benefiting from the timing of the move from coal to gas for electricity generation and the economic collapse of the former German Democratic Republic – and the ability of the EU to share these benefits among its members via the collective EU target.

³⁶ Further details are at <http://www.dfat.gov.au/environment/climate/AP6/>.

The benefits from encouraging developing countries such as India and China to reduce the growth of their emissions are well known. What is sometimes less well appreciated is that India, China and other rapidly industrializing developing countries are investing in new technologies – for the very good reason that they are concerned about the health and political and economic implications of air pollution and other environmental challenges. China, in particular, is not lacking resources for such investments.

The task for the international community is not to seek to constrain the economic growth of developing countries via binding emission reduction targets and timetables – which these countries will continue to reject as they wish to raise living standards. It is, rather, to encourage them to go further and faster than their own investments imply in deploying the most modern emissions reduction technologies. The AP6 process offers by far the best prospect of achieving that objective. A global emissions trading system cannot and will not achieve it.

It is therefore surprising that at a time when so much attention is focused on an Australian emissions trading regime, and assertions about the need for such a system to link into an international system, that the AP6 process has not received more attention. This seems set to change, with a press report on 16 April that Treasurer Costello has secured US backing for a broadening of the AP6 process to include all APEC members – and that this issue would be on the agenda for the APEC meetings in Sydney in September.

Conclusion

A global emissions trading scheme that would impose a price on carbon as a means of reducing the growth of global emissions and encouraging investment in and deployment of new and more energy efficient technologies is not in prospect. The political and economic difficulties are too great.

Given the deficiencies in the ETS, especially its politically-based permit allocation arrangements, it is unrealistic to expect the ETS gradually to merge with national emissions trading systems and evolve into a global system.

The US is most unlikely to ratify the Kyoto Protocol without developing countries taking on meaningful emission reduction targets and timetables. There are no signs that these countries will agree to do so. A second Kyoto Protocol commitment period agreement involving binding targets and timetables, and hence a global carbon constraint, will be very difficult, if not impossible, to negotiate. Without the US buying permits, and with Russia having an incentive to sell as many permits as it can under the Kyoto Protocol's first commitment period, the price of carbon can be expected to be low under the Kyoto Protocols emissions trading system. As has been the case with the ETS, the price of carbon will not be high enough to stimulate investment in and deployment of new emissions technologies.

As the ETS does not recognise forest sinks credits, Australia would face very high costs should it design an emissions trading regime so that it might be linked to the ETS, which ignores forest sinks credits. If it is to have an emissions trading regime, Australia should develop a system that reflects its own interests.

The AP6 process is a much better way of encouraging China, India and other industrializing developing countries to apply emissions reduction technologies. Extending it to other APEC countries offers a much better and more practical option than a second Kyoto Protocol commitment period with binding targets and timetables.

Should companies wish to hedge their carbon exposure, they have the option of joining the Chicago Climate Exchange.

Prospects for a global emissions trading market

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- A global carbon market can achieve least cost outcomes and stimulate investment in more efficient technologies
- But taxes and other distortions mean it can also reduce global welfare. The devil is in the detail
- Maximum benefits requires inclusion of all major sellers and buyers

- An efficient and effective global emissions trading system requires:
 - Efficient rules and administrative requirements
 - Inclusion of all major suppliers and sources of demand
 - A carbon price high enough to encourage abatement and new technologies, but not so high as to reduce growth
 - Certainty

- Monitoring and reporting of emissions under Kyoto depends on honesty. Confidence will be undermined by cheating
- Buyer liability reflected concerns about legitimacy of permits issued by Russia and the Ukraine
- Non compliance results in severe penalties.

- Russia and the Ukraine the dominant suppliers
- Opportunity for gaming and incentive for them to sell as many permits as possible now given uncertainty
- The US would have been the major source of demand but is not a participant
- Demand by EU, Japan and Canada will be much less than supply

- US most unlikely to ratify Kyoto and participate in Kyoto emissions trading.
- Even if a Democrat President had a majority in both houses, securing Senate approval looks impossible.
- Ratification would impose major economic costs on the US

- Global supply of carbon credits estimated to be around 5.2 billion tonnes.
- EU, Canada and Japan to exceed their targets by 3.6 billion tonnes
- Prices will be low and nowhere near Stern estimates of \$US20-\$US50 required to stabilise atmospheric greenhouse gases

- Low or zero permit prices cannot stimulate investment and deployment of new technologies
- Negotiations on second commitment period Kyoto Protocol targets and timetables are bogged down.
- Uncertainty undermines the Kyoto emissions trading market

- Prospects for binding targets and timetables in the second commitment are poor
- Major developing country emitters will not agree
- Without their agreement US involvement most unlikely
- EU, Japan, Canada and others unlikely to go it alone without developing country and US targets

- The European emissions trading scheme is flawed. 90% of permits must be allocated free
- Permits were over allocated to protect sensitive sectors – especially German coal-generated electricity
- Only 6 states were short of credits in the first period. Germany, accounting for a quarter of EU emissions quota, over allocated by 4.5%

- After an initial spike prices have collapsed to one Euro. There is no incentive to invest in new technologies.
- Higher gas prices have encouraged some power generators to shift back to coal. Free allocations may have increased emissions over initial projections

- A global emissions trading system will not evolve from regional and national schemes
- Allocation and other rules would need to be consistent among schemes
- The Chicago Carbon exchange is available for those wishing to hedge their carbon exposure

- Forest sinks credits are not included in the European Emissions Trading Scheme
- Such credits are Australia's lowest cost abatement and deliver wider environmental benefits
- Designing an Australian emissions trading scheme to be compatible with the European scheme would be a very high cost option

- China, India and other developing countries will not agree to binding targets and timetables
- But they are investing in new emissions technologies to address air pollution
- The task is to encourage them to accelerate such investment over business as usual

- The AP6 system is the best instrument to encourage the uptake of technologies by key developing countries such as China and India
- Encouraging other APEC countries to participate in this process would be a far better option than pursuing the failed paradigm: binding targets and timetables