Submission to the Prime Ministerial Emissions Trading Task Group

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Summary

A future international climate agreement could well be based on emissions targets and trading, but would need to be much more flexible than the Kyoto Protocol to ensure broad participation. There are options for commitments tailored to countries' circumstances, and for breaking down the dichotomy between countries that have targets and those that do not. Flexible design of a future international scheme could help facilitate participation by industrializing and developing countries, and would make it more attractive for Australia to be part of an international climate treaty. Australia could enjoy significant advantages by taking a leadership position in the international debate and negotiations for a post-Kyoto agreement. Regarding domestic policy, there is a strong case for pervasive emissions pricing coupled with targeted support for technology development. Transitional arrangements could be made for emissions and trade intensive industries, and a broad view should be taken on Australia's energy future.

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1. Likely future architectures for international climate policy

There is as yet no clear roadmap for an international climate agreement, but there is a strong impetus to have a new structure in place by the time the Kyoto Protocol's first commitment period ends in 2012. Important choices are to be made about the architecture of a future agreement, and about mechanism design. Drastic changes in global emissions paths are necessary to stabilize atmospheric greenhouse gases at levels that limit the risk of dangerous climate change, and a future climate policy framework needs to lay the foundation for strong long-term action.

Alternative architectures

Some observers have argued that choosing the targets and trading route for the Kyoto Protocol was a mistake, and that it should be ditched in favour of an entirely different architecture. In particular, it has been argued that market mechanisms should rely on price-based instruments to avoid the risk of overly large uncertainty about compliance costs; and that there should be more direct policy approaches to support the development of low-emissions technologies. Also, the dichotomy between countries that have emissions targets and those that do not has been a political stumbling block under the Kyoto Protocol.

In the Australian discussion, the most prominent proposal is the 'blueprint' by McKibbin and Wilcoxen (2002). Under this 'hybrid' system, national governments would issue short-term permits and thus control the maximum permit price at any point in time, while emitters would also own long-term permits. Another proposal by an Australian economist is that by Pezzey (2003) for emissions taxation with tax thresholds, designed to limit the amount of revenue generated and to make taxation more palatable to emitters.

These and other proposals for alternative architectures have great intrinsic merit, but are largely untried and not (or perhaps not yet) part of the mainstream international debate. Support from the United States or another large power for a new approach could change the picture, but to date the political momentum clearly is for evolution of the existing approach, not revolution with a new one. This needs to be considered in setting Australian policy and positions in international negotiations.

The dominance of cap-and-trade

The EU is wedded to cap-and-trade despite troubles from over-allocation of permits by national governments, and Northeastern US states as well as California have chosen cap-and-trade as their main policy instrument. In Australia, emissions trading is receiving growing support from parts of Australian industry, and is being favoured by the states. The possibility of compensating emitting firms by giving away free permits clearly contributes to the attractiveness of trading schemes. Internationally, cap-and-trade allows differentiation of commitments between countries without explicit side-payments, and so improves the scope for reaching agreement. In the public discussion, emissions targets and trading has appeal because of the relative clarity and simplicity of limiting emissions to some predetermined level, and because negative connotations of taxes or levies are absent.

Experience with the Kyoto Protocol has shown that a future international climate treaty will need to be much more flexible, in order to achieve the necessary broad participation. Commitments need to be tailored to countries' circumstances, a broad menu of different commitment options is needed, and options for entry-level commitments for developing countries need to be found as a stepping stone toward full commitments.

This submission focuses on improving the cap-and-trade approach by allowing for more flexible commitments, and a broader range of commitment options. These would be in Australia's interest, and would help facilitate commitments by industrializing and developing countries. Selected aspects of domestic Australian greenhouse gas policy are also discussed.

2. Design options for a future international emissions trading scheme

A range of options have been proposed for more flexible emissions targets and trading, and for broader commitments linked to a cap-and-trade scheme. Some important design options are described here. Further non-technical discussion can be found in Jotzo and Pezzey (2006a); and selected more technical references, including to modelling work by myself and colleagues, are given in the text below.

Intensity targets

Intensity targets would link targets to future GDP levels. Their main attraction is that they are more generous if economic activity turns out higher than expected: if economic growth is fast,

there are extra permits to accommodate higher emissions; conversely if economic growth is slow, the target is tighter in absolute terms (see Ellerman and Sue Wing 2003). They thus compensate for GDP-related uncertainty about future emissions, and so can reduce uncertainty about compliance costs.

Intensity targets (also referred to as dynamic, indexed, relative, or rate-based targets) have received attention since the Bush administration's pledge to reduce the greenhouse gas intensity of the US economy by 18% from 2002 to 2012 (under the 'Climate Change Initiative'). Recently, China announced a goal to reduce energy intensity by 20% from 2006 to 2010 (under the 11th 5-year plan), and the Canadian government plans to set goals for future emissions intensity (under the 'Clean Air Act' of 2006). Clearly, intensity targets can be politically more acceptable than Kyoto-style absolute targets, although some of the goals taken on to date imply little reduction effort below business as usual.

An intensity target would not need to be indexed one-to-one to GDP. Rather, the degree of indexation could be varied according to countries' preferences and circumstances. There could be a continuum from Kyoto-style absolute targets, through partially indexed targets, to one-to-one indexation or even 'super-indexation'.

Modelling analysis (Jotzo and Pezzey 2007) shows that the optimal degree of indexation varies greatly between countries, and that overall cost uncertainty could be reduced significantly compared to absolute targets. For Australia, optimal indexation in an illustrative modeling scenario would be around 0.8, so that a 1% rise in Australia's GDP above expectations would result in a rise of 0.8% in Australia's emissions target. Specific results depend on the target's coverage and stringency, and expected GDP-emissions linkage. Detailed empirical research would be necessary to guide policy.

Non-binding targets

Non-binding targets would allow some countries to opt out of their quantitative commitment and the cap-and-trade scheme, without penalty. The idea of non-binding targets (also referred to as 'opt-out' or 'no-lose' targets) is aimed at bringing developing countries into a future climate treaty. They could act as a stepping stone for some countries on the way to binding targets, and help break the political impasse over commitments for developing countries (see Philibert 2000).

The rationale for non-binding targets is that a developing country should be able to benefit economically from taking on a fairly generous greenhouse gas target, as the revenue from selling spare permits should outstrip the cost of freeing up those permits. This is a win-win situation as permit buyers benefit from reduced compliance costs compared to a situation where the developing country in question remains outside of the system. Non-bindingness simply creates an 'emergency exit', to be used if for some reason the target turned out too hard to achieve.

Modelling (Jotzo and Pezzey 2006b) shows that a non-binding target of similar nominal stringency would be much more acceptable than a binding target; and conversely, that a non-binding target could be much more stringent in level terms than a conventional target. However, the reduction in risk to countries with the non-binding target goes hand in hand with the risk that the treaty parties collectively miss out on access to low-cost abatement options in the country in question, if the target is not enacted. Also, only a limited number of countries can have non-binding targets, as binding targets are needed for buyers in order to guarantee demand in the permit market.

Non-binding targets would therefore best be used to help draw a limited number highly risk-averse countries into a future agreement, ideally with reasonably generous target levels. They should be seen as a transition measure toward binding commitments further down the track.

Sectoral targets

Targets could be set for specific sectors or industries in the major producing countries, as an alternative or complement to Kyoto-style national targets. Sectoral targets could apply in energy intensive industries such as iron and steel, aluminium, chemicals, cement, and pulp and paper. Their level relative to the baseline could differ between sectors and countries, and could include features such as indexation or non-bindingness (see Schmidt et al. 2006).

Sectoral targets could be tailored to each industry’s circumstances, and they are likely to be easier to negotiate than national targets. Only the major players in each industry would need to be covered for the scheme to be effective, and only a small number of developing countries would need to be brought on board in each of the main industrial sectors. For example, just three countries (China, India and Brazil) account for over 90% of all developing countries’ emissions in the iron and steel industry. Sectoral targets could thus help address the problem of carbon leakage.

For overall cost effectiveness, it will be important to link sectoral targets to wider emissions trading, to achieve equalization of marginal abatement costs. Sectoral targets therefore would work best if integrated with overall national targets in countries that take on such commitments, and fully linked to international emissions trading in countries that only take on commitments for some sectors. For example, under a post-2012 treaty key developing and industrializing countries might have targets only for selected sectors, while for developed countries any sectoral targets would be added into a national cap.

Price caps

A price cap would set a maximum or capped price (also referred to as a ‘safety valve’ or ‘trigger price’) for permits traded in the international market, by making additional permits always available at the 'cap' price. This would protect buyers of emissions permits from the risk of excessive compliance costs. In existing permit trading schemes, compliance penalties in some respects act as de-facto price caps.

A price cap addresses the main economic argument for greenhouse gas control by price instruments rather than by quantity instruments: getting the cost of emissions control wrong (as can happen with permits) has far greater efficiency costs than getting the amount of emissions released into the atmosphere wrong (as can happen with taxes).

Modelling analysis (Jotzo 2006) shows that significant efficiency gains can be achieved, especially if a minimum price were set alongside a maximum price. The gains from reduced cost uncertainty however are not as large as estimated earlier in single-region models (such as Pizer 2002), and in practice the price control element is limited by the need to avoid overly large public revenue or expenditure. Revenue would accrue from the sale of additional permits into the market, while public expenditure would be necessary to uphold a minimum price.

Price caps would increase the chances for a meaningful post-2012 international climate agreement, by providing a safeguard against excessive costs for countries with ambitious targets, and possibly also assurance of some minimum level of effort. However, their role probably will need to be confined as a ‘safety valve’ rather than as de-facto price-based control, because of the political difficulties inherent in large revenue flows.

Commitments for technology development

A flexible future climate agreement could incorporate funding commitments for climate change related activities, and this link is increasingly recognized as an integral part to an effective future regime. For example, the São Paulo proposal (BASIC 2006), one of many proposed roadmaps for a post-2012 climate policy architecture, suggests that rich countries should have the choice of fulfilling part of their overall commitments by financing technology development or climate change adaptation measures in poorer countries.

The advantage of such an approach is that it would recognize efforts that do not result in short-term emissions reductions within each country, but that may help pave the way toward long-term global reductions. It could help build a bridge between efforts under the UNFCCC and technology-focused initiatives such as the Asia-Pacific Partnership on Clean Development and Climate (AP6), and provide incentives to adequately resource such initiatives. Importantly, it could directly reward efforts by Australia to develop carbon capture and storage (CCS) technology, or any future efforts to develop new renewable energy technologies.

In proposals to date it is unclear what efforts and funding commitments would be eligible for consideration, and what an 'exchange rate' might be between dollars spent on technology policy on the one hand, and emissions reduction commitments on the other.

The proposal for funding commitments by industrialized countries has a parallel in proposals for commitments to 'policies and measures' by developing countries. Specific policies that would reduce emissions in the context of 'sustainable development' objectives could be agreed with developing country governments, and funded fully or partly by industrialized countries.

Combining flexible options and charting graduation

The options for flexible emissions targets discussed above could be combined. For example, non-binding or sectoral targets could be framed in terms of intensity, and sectoral targets could be non-binding. This makes for a broad spectrum of commitments, from highly flexible ones that apply to only parts of the economy at one end of the scale, to binding national targets at the other. Each country could negotiate a different mix of commitments, to suit its circumstances and preferences.

Graduation from limited to more encompassing and stringent commitments could be charted in advance, based on indicators such as income per capita, emissions intensity, economic structure and resource endowment. These could provide a useful guide to the likely evolution of commitments in the longer term, a crucial factor for investment decisions.

Careful mechanism design and further research would be essential, as greater flexibility also brings greater complexity. Issues of potential interaction between flexibility options need further research, as do the potential effects on individual countries. Negotiations would also be more complex as they range over more dimensions.

From the range of options explored here, it is clear that the target-based approach does not need to be nearly as rigid as under the Kyoto Protocol's first commitment period. Flexible commitments greatly improve the scope for agreement, by better accommodating developed countries' needs and by providing options for entry-level commitments by developing and industrializing countries.

Options of greatest interest to Australia

Flexible commitment options could make it a lot more attractive for Australia to take part in a future international climate treaty based on targets and trading. Particularly attractive options are sectoral targets, intensity targets, a price cap, and recognition of technology funding.

If sectoral targets applied to Australia's main competitors in the global steel and aluminium markets, this could go a long way toward alleviating concerns about carbon leakage. An intensity target could reduce overall cost uncertainty, especially for energy intensive industries. For Australia as a likely permit buyer in an international trading system with broad participation, a price cap would provide further safeguards against the risk of excessive compliance costs.

Finally, crediting technology policy could be a particularly promising option for Australia. This could directly integrate with existing policies for supporting development of cleaner technologies such as carbon capture and storage, and encourage investment in renewable energy R&D.

3. Australia's early-mover advantage

With strongly growing public awareness and concern about climate change globally, it appears increasingly likely that policies to limit or reduce greenhouse gas emissions will be implemented in many countries, and that a new international agreement will arise, or possibly several agreements in parallel.

Australia as an industrialized, high-income country, with growing emissions and high levels of emissions when measured per capita, will be expected to take part in such an agreement. Being strongly linked into the global economy and dependent on trade, Australia is not immune to international pressure to sign up to a future climate treaty, should such pressure arise.

Importantly, there are signs of impending policy change in the United States, Australia's key ally. Support for new climate policy approaches including emissions trading is growing among US interest groups and in Congress. The next Administration could well embark on a course to bring the United States to the forefront of international climate policy. Under such a scenario, it would be wise for Australia to be ahead of the game rather than left behind.

Australia still has the option to become a leader in negotiations on a climate policy regime to follow the Kyoto Protocol's first commitment period. By taking a proactive role, Australia could help steer them in directions that give the greatest prospect for broad participation and economically sensible approaches, and work toward outcomes that are acceptable to Australia. Once the cornerstones of a new international agreement are defined, it may be difficult for Australia to secure a favourable deal, and equally difficult to reject participation.

Domestically, expectations by the Australian public are rising for effective climate change policy. Concerns about potential climate change impacts are real, and it is increasing clear that they pose risks to Australia's natural, human and economic systems.

While it is important to acknowledge that Australia's emissions are only a small share of global emissions, it also needs to be recognized that Australia's decisions can have an important signaling role internationally. This stems from close connections with the United States, Australia's status as an important supplier of energy to the fast-growing parts of Asia, and Australia's traditional role as a supporter of sound economic policy in international treaties such as the WTO. Australia thus has good opportunities to lead by example.

4. Options for domestic policy

Of the large range of considerations for a domestic emissions trading scheme, this submission touches only on selected issues, namely considerations regarding Australian energy and energy intensive industries; and the respective roles of emissions pricing and technology policy.

The arguments are laid out in more in detail Pezzey, Jotzo and Quiggin (2006) and Jotzo (2007).

Energy industries

Australia has large reserves of coal, the most CO_2-intensive fuel, and around three quarters of coal mined is exported. Substituting away from coal is one of the most obvious greenhouse gas reduction measures globally, and reductions in coal export demand and penalties on CO_2 emissions could devalue Australia's resource stock.

It is important to recognize that challenges to the coal industry arise much more from importers than domestic policies. Australia's fossil fuel exports essentially cannot be protected through Australian policy.

The only way for coal to remain a viable fuel in the long term, in a carbon constrained world, is by way of cost-effective and reliable ways to remove and store CO_2 from coal combustion. A case can be made for large-scale investment in R&D for 'clean coal', subject to the caveat of not neglecting opportunities in other low-emissions technologies.

Alternative energy sources will benefit from emissions constraints, especially nuclear and renewable energy sources. Australia has large uranium reserves, and great potential for renewable energy sources such as wind and solar. A comprehensive evaluation of policy options should include a strategic assessment of the future potential for renewable energy, to complement the recently completed government review on nuclear energy.

Energy intensive industries

If greenhouse gas emissions are priced in one part of the world but not in others, an incentive exists for emissions intensive industries to expand production in countries where they do not face emissions constraints. For Australia, the potential problem of such 'carbon leakage' is exemplified in the aluminium industry, which relies predominantly on coal-fired electricity

(which would increase in price under emissions trading), and is heavily exposed to trade with the majority of production exported.

It is highly unlikely that all countries of the world will simultaneously join a future climate treaty, so arrangements would be needed to minimise carbon leakage during a transitional phase when Australia is subject to emission controls and some key competitors are not. That said, only a few, well-defined sectors are likely to be substantially affected.

Expectations about future emissions pricing are likely to play an important role for whether and to what extent carbon leakage eventuates. If a future climate agreement were to chart a clear path toward developing country commitments and thus foreshadowed more universal emission pricing, incentives to shift investment away from Australia would be much reduced. Carbon leakage could also be minimised if sectoral targets (discussed earlier) for energy intensive commodities could be agreed for the main producing countries.

Even without remedial action under a future international agreement, transitional domestic arrangements to protect Australian energy intensive industries may be possible. The main avenue is likely to be border tax adjustments, that is rebates paid for exports to countries where there is no emissions pricing, and taxes on imports from producers that are not subject to emissions pricing (Saddler et al. 2006). Although a number of issues would remain to be worked out, border tax adjustments are likely to be more efficient than exempting whole industries, or to compensating industries with large amounts of free permits.

The need for emissions pricing as well as technology policy

Concern about impacts of greenhouse gas policy on emissions intensive industries is a powerful political argument against market-based instruments for emissions control. The main alternative that has arisen is government support and public-private partnerships for development of low-emissions technologies, as in the Asia-Pacific Partnership for Development and Climate.

Market solutions, rather than direct government intervention, will generally yield a more cost-effective outcome. Nevertheless, externalities in technology development can create a need for government support for R&D, for low-emissions technologies that with further development could become technically and commercially viable. In Australia, this may include ‘clean coal’ technology, as well as some renewable energy technologies. But emission pricing can also induce significant amounts of innovation. And crucially, pervasive price

signals are needed to for take up of new, cleaner technologies and practices, and to foster demand-side substitution away from emissions intensive goods and services.

A strong conclusion can therefore be drawn that the most economically viable strategy for domestic greenhouse gas policy is to create a broad-based emissions price signal, be it through emissions targets and trading, emissions taxation or a hybrid system; and to provide targeted government support for the development of cleaner technologies. Putting such a policy framework in place soon would strengthen Australia's position in international climate negotiations, and prepare the economy for transition to a carbon-constrained future.

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