

Building momentum for global action on climate change: Crafting policy approaches that enhance efficiency, effectiveness, and incentives for participation in international action

Submission to the Stern Inquiry into the Economics of Climate Change,
March 2006

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Introduction

Insights from economics have much to offer the development and adoption of effective climate change policies. To date, economic contributions to climate policy have focused primarily on the design of incentive based emissions mitigation frameworks. Less attention has been given to incentives for policy adoption, which is frequently characterised as a political issue.

Economics and institutional theory suggest, however, that effective environmental policies are most likely to evolve where environmental processes are well understood, where physical scale matches (or is smaller than) the relevant jurisdiction or social decision making process, and where the costs and benefits of the policy are borne by overlapping groups (allowing the negotiation of net benefit outcomes).¹ The first of these issues now seems to be substantially met for climate change, with widespread acceptance of key aspects of the science.² This re-emphasises the importance of developing mechanisms that overcome the major collective action challenges posed by climate change, with an emphasis on crafting strategies for drawing nations and groups of nations into an effective global compact.

This note responds to this challenge, and the invitation extended by the Stern Inquiry (2006), by outlining an opportunity for building the momentum required to make significant reductions in global emissions by 2050.

Crafting approaches that are worth implementing and attractive to join

Recent years have seen a dramatic reduction in the perceived time-frame available for slowing and then reversing the increase in global emissions. It has been difficult to achieve the first round of emissions reductions by developed countries. It is likely that negotiating binding emissions targets for developing countries will be even more difficult. This suggests a more lateral or layered approach may be required.

The current negotiating architecture is essentially focused on countries, with binding emissions targets covering specified emitting activities with developed countries, and voluntary partnership-actions whereby developed countries may gain credit for supporting win-win emissions reductions in developing countries. It is hoped that developing countries will sign up over time to binding targets.

This basic architecture does little to encourage developing countries to make systematic and significant emissions reductions, or to ensure that incremental investment in long lived plant and infrastructure in these countries takes appropriate account of life cycle emissions. It also confers a policy based competitive advantage on traded emissions intensive products from developing countries which, on balance, would be likely to reduce the environmental effectiveness of the agreement through biasing global production towards technologies with higher emissions per unit of output. The economic disadvantage and 'carbon leakage' associated with this approach appears to be a material disincentive for at least some developed countries who might otherwise embrace effective collective action. These problems are likely

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to become more difficult to manage as the emission reduction task becomes more challenging, and the associated shadow price of emissions rises.

These disadvantages of the current architecture could be significantly reduced by allowing for more neutral treatment of trade exposed emissions intensive activities (at least as long as there is a significant emissions price differential across developed and developing countries). This would have two main goals. First, to ensure ‘like treatment’ of emissions intensive products in ‘like markets’ – particularly that products would be treated in an unbiased way within developed countries, regardless of their country of origin. Second, it should provide more powerful incentives for adoption of lower emissions technologies in developing countries – particularly for emissions intensive exports to developed countries. This would improve environmental effectiveness and incentives for participation.

Design and implementation issues

Such an approach would require the identification of an agreed list of ‘trade exposed emissions intensive products’ and the development of a feasible approach to achieving like treatment of these products without any appreciable reduction in environmental effectiveness. The identification task is likely to be straightforward, as most greenhouse analysis already identifies a shortlist of emission intensive products such as aluminium, steel and concrete. These products tend to be produced in large plants, involving both point source emissions and significant electricity consumption (which may also have significant upstream emissions).

The goal of like treatment in like markets could be achieved through four key elements.

Developed countries would:

- (a) negotiate and accept binding targets for all domestic emissions, excluding emissions from an agreed list of trade exposed emissions intensive activities;
- (b) ensure that trade exposed emissions intensive activities in developed countries meet a robust technology standard or certification process, including a consistent approach to reporting on embodied emissions;
- (c) commit to country-neutral greenhouse policy treatment of all trade exposed emissions intensive products, allowing for differential treatment on the basis of embodied emissions (such as the application of a tax based on embodied emissions) but not allowing any differentiation on the basis of country of origin;

Developing countries would:

- (d) be encouraged to meet a similar technology standard or certification process and the same reporting requirements for their exports of emissions intensive products to developing countries, noting that these products would be subject to the greenhouse policy measures in (c).

Developing a feasible mechanism for (b) with low transaction costs may be a challenge. Rather than reviewing the full range of options, this note outlines one prospective approach to illustrate how the broad logic might operate.

Encouraging ‘forward looking best practice’

Technology standards have a range of advantages and disadvantages. They are relatively simple to implement, and are widely considered to involve little disruption (and attendant political difficulties) when applied to new products and investments. Against this, standards usually only apply to new investments (and so take effect only as the stock of assets is turned over), may result in a comparative disadvantage for new investments (discouraging environmentally beneficial renewal of the stock), generally do not encourage continuous improvement, may be poorly targeted environmentally, and may impose additional compliance costs. An important additional shortfall is that they generally provide no incentive for reduced asset use – helping to explain why fuel consumption per vehicle is so much higher in North America (with low fuel prices), than in the EU (with high fuel prices), despite broadly similar fuel efficiency standards and fleet fuel efficiency averages.

One approach that would retain these advantages while reducing the disadvantages would be to base the standard on a forward looking audit approach rather than a pure technology approach. This would define ‘forward looking best practice’ for all listed emissions intensive activities in terms of whether the activity is as cost effective as possible given a nominated emissions price, or schedule of emissions prices over time. This would identify whether established plants had cost effective refurbishment options, taking account of the condition and future operating life of the plant, and whether greenfield investments were the most sensible accounting for the shadow price of emissions. This approach would also – at least in principle – take account of alternative operating practices that impact materially on emissions. For efficiency, the benchmark emissions price schedule should be uniform across all countries and sources of emissions. The standard should allow, however, for countries to implement the audit with an emissions shadow price above the benchmark, or a price that rises more steeply over time, to allow for a diversity of views on the trajectory of future emissions prices and better coordination with specific domestic policy regimes.

This approach would complement a number of existing climate change policy mechanisms, particularly those encouraging technology development and transfer.

Firm level outcome

In broad terms, this approach would result in listed activities operating ‘as if’ they were subject to an emission tax or permit regime equivalent to the nominated emissions price. This addresses the supply side factors that determine the embodied emissions per unit of product, without the need to actually impose the tax. It would also provide robust and comparable information on the embodied emissions associated with each product, providing the information base required for consuming country’s greenhouse treatment of these products – addressing the demand side factors in at least developing countries. Demand for emissions intensive products in developed countries would be managed by the country-neutral measures outlined in point (c) above.

While implementing an audit based approach would involve compliance and administration costs, these are likely to be smaller than for the imposition of an actual emission tax or equivalent permit regime, and would be limited to an agreed list of emission intensive activities. In addition, many energy intensive firms already regularly conduct cost and energy audits, implying the additional information burden may be small (although the cost of implementing steps required to meet the standard may not be small in some cases).

Revenue potential

Countries could, if desired, actually implement an emission tax on these activities. Incentives for developing country engagement would be greatest if the policy treatment of emissions intensive products effectively ‘tops up’ the price by crediting emissions taxes that have already been paid, at least to the benchmark price (allowing developing countries to collect an emissions tax on exported emissions intensive products without any trade disadvantage). The alternative approach, which would allow destination countries to capture all or most of the emissions tax revenue, would risk undermining the willingness of developing countries to implement the best practice standard. This could reduce the direct environmental benefits of the agreement (through higher greenhouse emissions), and may also undermine potential flow-on benefits through the reduced emissions from activities servicing consumption within developing countries.

Box 1: Providing a uniform signal that takes account of firm-level context

Alka Smelter operates an aluminium plant in a developed country with a remaining economic life of 20 years. Compared to current generation plants it is quite energy intensive, and so it has relatively high embodied emissions per unit of output. Refurbishing the plant would be very expensive, however, and would only satisfy normal investment criteria if the emissions saved over the remaining life of the plant were priced at \$40 per tonne. This is higher than the benchmark emissions price schedule, and so Alka Smelter is not required to undertake the refurbishment. They are required, however, to report the embodied emissions of their product.

Bigg Energy Co is considering the development of a new emissions intensive production facility targeting markets in developed countries. It understands that their product will receive the same greenhouse treatment in these markets regardless of where their facility is located, and chooses to invest in a developing country with slightly lower cost skilled labour and more generous government concessions. With a projected economic life of 50-70 years (including refurbishments), Bigg Energy Co chooses to manage their long term emissions price risk by investing in the best available low emissions technology. This more than satisfies the audit standard. They also negotiate a 25 year contract for the majority of their electricity to be sourced from hydro and an integrated biofuel plant, giving them low embodied emissions relative to their competitors.

Cooltiara is a developed country known for its leadership in climate change issues. All emissions intensive products consumed in Cooltiara are subject to a \$35 per tonne tax on embodied emissions (roughly equivalent to the value of their domestic tradable emissions permits). Consistent with the international framework, this tax 'credits' emissions taxes paid in the country of origin. Cooltiara imposes a tax on domestic production of emissions intensive products at the minimum benchmark rate of \$20 per tonne CO₂e. It considers international emissions prices are going to rise, at least in the medium term, and so requires companies in its jurisdiction to undertake the audit on the basis of an emission price schedule that rises more rapidly than the minimum benchmark. This results, at times, in investment in lower emissions technologies for long lived assets.

Implications for signatories

This extension of the current architecture would have the following implications for different groups of countries:

- All countries would be able to take steps that reflect the greenhouse consequences or 'embodied emissions' associated with their consumption, including domestic goods and all emissions intensive goods (regardless of their county of origin).
- Developed countries would need to agree to a consistent framework for trade exposed emissions intensive activities, but would no longer bear the direct emissions risk associated with these activities.
- Developed countries would agree to implement country-neutral greenhouse treatment of the import or consumption of listed emissions intensive products. This treatment may vary from country to country, but within any one jurisdiction would treat all products solely on the basis of their embodied emissions. Developed countries may also agree to some minimum policies for their treatment of emission intensive products (such as a minimum tax on embodied emissions, or a requirement for these to be acquitted through emissions permits).
- All countries wishing to export emissions intensive products to developed nations would need to report embodied emissions – akin to current foods and safety standards. (Production for domestic consumption within a developed country is interpreted as 'export' in this context.) The negotiation of an agreed emissions measurement framework and country neutral treatment would leave little room for trade mischief.
- Developing countries would not be required to accept any binding or additional obligations (other than the information requirement for emission intensive exports), consistent with the proposition that developed countries should take the lead in reducing emissions. The framework also gives developing countries the opportunity to develop efficient export industries servicing both developed and developing country markets for emissions intensive products.

Concluding comments

The approach outlined above illustrates the potential to develop mechanisms capable of both enhancing the environmental effectiveness of a global agreement, and of providing improved incentives for all countries to participate in collective action.

Implemented properly, the proposed approach would bring a substantial and rapidly growing source of emissions within the ambit of the international agreement, while respecting the different legitimate priorities of developed and developing nations. It would also help ensure that all investment in long-lived plant and infrastructure used to produce traded emissions intensive products would take account of emissions reduction opportunities. This would reduce the risk of an ‘emissions inefficiency overhang’ – at least in relation to the traded sector – that may otherwise result from current weak incentives to reduce emissions.

The approach appears to provide a positive incentive for engagement by developing countries, and respects and maintains their existing comparative advantages. Depending on implementation, the approach may improve access to developed country markets (including where new lower emissions products are competing with products from older more emissions intensive plants), and could provide a new revenue source for developing countries (capturing the minimum emissions tax on emissions intensive exports). Although it does not offer the policy based emissions price advantage the current approach provides developing country exports, the extent of this potential advantage is contingent on widespread participation by developing nations, which is yet to be realised. Indeed, perhaps the most important incentive is that the approach may help secure an international agreement delivering significant emissions reductions, avoiding or reducing the long term impacts of climate change on developing countries.

Finally, the approach would substantially address the competitiveness issues that complicate the current ‘country only’ focus, and appear to discourage participation by developed countries who might otherwise commit to collection action. These issues will become more difficult to manage as the scale of the emission reduction task grows.

About the author:

Steve Hatfield Dodds is the Research Director of the Social and Economic Integration initiative, one of CSIRO’s Emerging Science Areas. His previous career includes senior positions in The Allen Consulting Group, Commonwealth Treasury, and the Department of Environment and Heritage.

Steve has researched and published in Australia and internationally in economics and public policy, and provided expert testimony on environmental taxes, cost sharing arrangements for ‘public good’ activities, and the design of incentive based policy tools. His research and public policy contributions were recognized by his inclusion in *The Bulletin* magazine’s inaugural ‘Smart 100’ list of leading Australian innovators (October 2003).

Steve is the President of the Australia and New Zealand Society for Ecological Economics (ANZSEE).

End notes

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² Stern, N. (2006) *What is the Economics of Climate Change?*, Keynote lecture to Oxford Institute of Economic Policy, 31 January 2006.