

**CAN WE RESOLVE GLOBAL ENVIRONMENTAL PROBLEMS
WITHOUT INTERNATIONAL AGREEMENTS?**

**SOME ECONOMICS, A BIT OF POLITICAL ECONOMY
AND A DASH OF LAW, SHAKEN, NOT STIRRED**

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Introduction

It appears to be an elementary fact that reciprocal global and international externalities, whereby nations pollute themselves and others, require global and international agreements to resolve the resulting inefficiency. Yet we have many examples of international agreements which are anything but sustainable or even workable. Swanson (1999) cites the example of the North Sea Atlantic Fishery Commission, showing how actual allocated aggregate fish catch quotas repeatedly exceeded the scientifically set allowable catch, making the subsequent quotas even stricter and the chances of agreement on it even more remote. In the mid 1970s, the fishery collapsed and so did the North Sea Atlantic Fishery North Sea Atlantic Fishery Commission. If negotiators learned from these experiences, it is hard to point to the lessons. For exactly the same problems pervade the Common Fisheries Policy of the European Union today, and the North Sea fisheries are generally in a parlous state. A 1971 spawning stock of 277,000 tonnes of North Sea cod, for example, has fallen to under 60,000 tonnes this year. Closure of the Grand Banks of Newfoundland fishing grounds, in an effort to restock the cod there, have produced little success, suggesting that further agreements may even be futile: cod stocks are in irreversible decline.

The tendency has been to negotiate new agreements on international externalities as if each new agreement has its own required initiatives which are independent of what has gone before. While economists and international lawyers have been adept at drawing conclusions about what does and does not constitute the ingredients for a successful agreement, it is far from obvious that those who are charged with negotiation have learned those lessons. Part of the problem is that negotiating teams vary by the issue to be addressed: climate negotiators, say, are not the same people who negotiate fishery agreements. Even negotiators on the ozone layer tend not to be the same people who negotiate climate change agreements. The potential for cross fertilisation, for 'learning by negotiating', are minimised.

Some international agreements have, of course, been great successes. Or, at least, they appear to be great successes. The Montreal Protocol on Ozone Depleting Substances is perhaps the most widely cited success story. There are competing views of the Montreal Protocol. At one extreme are those who argue that it did no more than would have been done by the various Parties acting independently. At the other are those who point to its achievement of the essential features of successful bargaining - comprehensive global geographical coverage, side payments to poorer nations, a robust monitoring system and procedures for penalising non-compliance. On this latter view, the Protocol and its subsequent Amendments brought about a co-operative solution that improved on the non-co-operative outcome.

The question of the moment is whether the 1997 Kyoto Protocol to the Framework Convention on Climate Change will succeed or not. For those who believe climate change is one of the greatest environmental challenges of the Millennium, the signs are not good. Under its new President, the United States has decided not to ratify. At the time of writing, Japan is wavering, implying that a Protocol without the USA is unworkable. In this paper we briefly review why Kyoto appears to have failed, and then ask a more difficult question: do we actually need an international agreement? In this latter respect we explore the idea that social and attitudinal change is occurring on such a scale that we will not need Kyoto. Essentially, so the argument goes, forces of social and ethical responsibility will bring about reductions in greenhouse gas emissions independently of any international agreement. If this is true, and if the reductions are comparable to what would have been achieved with an agreement, then we could have a new

formulation of the standard game theoretic perspective on agreements. The game perspective compares co-operative and non-co-operative solutions as if they are exclusive. In the non-co-operative case, it is business as usual - the baseline trajectory of emissions is what would have happened anyway. The success of the co-operative case is measured by the difference between this baseline and some policy-induced trajectory. The potentially new trajectory arises when non-co-operation produces incentives to act unilaterally but in concert. Unilateral national action comes about because individual nations decide to act independently of others, but each nation shares a common perception of the need for unilateral action. Moreover, the unilateral action may be only partly induced by national government. The real agents of change turn out to be corporations, employees, investors, consumers and non-governmental organisations. In turn, the backdrop to this new, third outcome - what we might call 'non-co-operative agreement' - reflects a change in the regulatory stance of nations, away from direct regulation towards a 'new regulation' in which moral pressure is exerted on economic actors to behave responsibly but without the full force of the law.

What follows is exploratory. If there is a 'third way' in which we avoid the need for international negotiations, it is surely very fragile. It is also easy to mistake any initial signs of progress for sustained activity. Nonetheless, it seems more than worthwhile to raise the question. We do so in the context of climate change, but it may well be that what we have to say applies more generally.

Has Kyoto failed?

As with any political event, there are optimists and pessimists on the future of climate change agreements. The starting point is the new US position, set out by President Bush in his letter to Senators Hagel, Helms, Craig and Roberts in March 2001, declaring the Kyoto Protocol to be 'unfair and ineffective', and which, while promising action on other pollutants, exempted carbon dioxide from control. The motives for such a move are open to speculation. Genuine doubts about the science are cited by Bush, but this appears lame in light of IPCC's renewed and reinforced statement about the risks, and the President's own scientific advice. The costs of control appear far more likely as a source of worry. Bush's statement carefully avoids reference to the macroeconomic costs of complying with Kyoto, or to lifestyle change in the USA, focusing on impacts on the coal industry, and using the so-called California 'energy crisis' as the evidence for impending energy shortages. Conspiracy theorists believe that Bush is simply repaying those who funded his election, plus his Texan isolationism. Whatever the true motive, it seems clear that the USA will not back Kyoto without radical change in the terms of the Protocol.

An optimist might argue along the following lines. First, there is sufficient political will among European nations, and perhaps others, to ratify what would be a truncated Protocol. This may not achieve the 55% emissions share requirement of the existing Protocol but presumably there is nothing to prevent willing nations to change the Protocol so it reflects the more probable emissions share. Second, once this agreement comes about, the USA will appear even more isolated than it does now. President Bush is unlikely to have a second term, and the, albeit new and marginal, Democratic majority in the Senate will add to pressure. Bush's successor will surely sign the Protocol or an amended Protocol. Third, international agreements are not one-shot games but repeated games. What the USA gains by delay now, a delay that others see as intransigence, it will lose in the international arena, whether it is on free trade, military co-operation or something else. President Bush is not renowned for his international experience.

Again, the pressure on the USA will increase to the point where it will sign some form of agreement. Finally, some have even argued that the failure of COP-6 and the stance of the USA gives a chance for a far more honest appraisal of future agreement, one that lacks the last-minute chaos at Kyoto and the setting of ambitious targets designed to meet false expectations (Buchner, 2001). Out of failure comes hope and renewed effort.

A pessimist would make the following points. The US response has shown that compliance costs are the key feature of the Protocol. Compliance costs are a function of several things. Apart from the state of technology, which itself is a policy variable, important cost determinants are (a) the extent of global participation in the emission reduction programme, (b) the extent of any emissions trading, (c) the extent to which the Protocol will itself have to be tightened over time, as was the case with the Montreal Protocol, and (d) the scale of political acceptance of cost increases by economic agents, notably corporations and the public. We address each point in turn.

(a) The need for global participation

As far as participation is concerned, the story is not a good one. The developing countries did not have voluntary targets under the Rio Framework Convention of 1992, nor do they have targets under the Kyoto Protocol. The US position has always been clear, even if the strength of voice about that position may have included some bargaining postures. The position is that no agreement will work unless the developing nations have targets too. The developing countries have been equally clear that they cannot afford to have targets, nor is climate change their fault. All kinds of political correctness were produced at Rio and Kyoto to justify this position, ranging from moral philosophy through to the evils of past imperialism. Developed countries were being blamed not just for climate change, but for underdevelopment as well. Unfortunately, surrender to this position at Rio carried over to Kyoto and negotiators had no degrees of freedom on the issue. Yet the US position was not, and is not irrational. Recall that greenhouse gases are stock pollutants - the damage they do is only marginally a function of current emissions. Damage is due to the accumulated stock, which in turn is a function of emissions over many previous decades. The idea that rich countries are *morally* responsible for the *current* stock of greenhouse gas concentrations is scarcely credible in terms of moral philosophy. It implies that nations and individuals are collectively responsible for harm that results from acts that were not known to be harmful until after the event. Essentially, making rich countries responsible and poor countries not responsible amounts to a redistribution of wealth. There are sound arguments for redistribution, but they do not include one that rests on the idea of *post hoc* responsibility. As Beckerman and Pasek (2001) note:

'...the current citizens of any country are hardly morally responsible for illegitimate actions of their predecessors' (p171),

to which we can add that this responsibility is even less if our predecessors did not know, and had no reason to know, that what they were doing would cause future harm.

Not only is the moral position of differentiated responsibility weak, but the economic case is weak also. As Barrett (1998) points out, global compliance costs are higher the fewer participants there are to the co-operative game. By leaving developing countries out of the agreement, at least in terms of targets, those who have targets face higher costs. To be fair to the Kyoto negotiators, they did at least recognise this by introducing the Clean Development Mechanism

as a partial means of lowering compliance costs¹. But the subsequent debate surrounding the CDM, and other 'flexibility' measures, suggests that they will all face formidable difficulties of implementation. Victor (2000) suggests that the global emissions trading mechanism, for example, amounts to a massive issue of tradable permits that would be 'the largest single invention of assets by voluntary treaty in world history' (p.1). But if compliance costs are higher than necessary, the incentive to ratify for any potential complying nation is reduced. As Barrett (1998) and others emphasise, participants must be better off in benefit-cost terms with co-operation than without it. Low participation entails high costs which then place this requirement in jeopardy.

A further reason for global participation lies in the simple fact of faster emission growth rates in the developing world than in the developed world - see table 1. The current ratio of Annex 1 to non-Annex 1 countries' emissions is 1:1.56². At growth rates witnessed in the 1990s, and assuming Kyoto was not implemented, non-Annex 1 countries would overtake the Annex 1 countries in terms of emissions within 15 years from now. Assuming Annex 1 countries, including the USA, actually did ratify Kyoto, then non-Annex 1 countries would overtake Annex 1 countries even earlier than this. The idea that developing countries can be left out of the Kyoto targets, even allowing for token voluntary targets, was therefore never a real option if the Protocol was to be efficient. President Bush's position, and that of the US Senate in telling President Clinton that no agreement would be ratified without developing country targets, was therefore a rational one, however unwelcome it may have been outside the USA.

Of course, the argument from the developing world is that future Protocols would embrace them, and that Kyoto was just the first step. But it is easy to envisage a scenario in which developing countries could justify repeated postponement of targets. After all, the negotiations for 'Koto II' would have to start within a few years. In that space of time the economic fortunes of the developing world will not have changed markedly from what they are now.

¹ The CDM allows 'joint implementation' between Annex 1 and non Annex 1 countries, i.e. between the developed and developing world. Joint implementation involves an agreement between two (or more) parties whereby emissions are reduced, or sequestered, in the developing country, paid for in part or whole by the sponsoring developed country, and with the emission reduction credit accruing partly or wholly to the sponsor. See Jackson et al. (2001).

² 13.4 billion tCO₂ versus 8.6 billion tCO₂.

Table 1 CO₂ emission growth rates 1990-1998 (fossil fuel combustion only)

Region or country	Growth rate
Annex 1 countries, of which	- 3.2%
OECD North America	+ 11.8%
OECD Europe	+ 2.2%
OECD Pacific	+ 10.4%
EITs	- 33.0%
Non-Annex 1, of which	+ 26.3%
Africa	+ 21.7%
Middle-East	+ 54.0%
Non-OECD Europe	- 33.6%
Other former USSR	- 42.0%
Latin America	+ 32.6%
Asia excluding China	+ 50.0%
China	+ 21.1%
WORLD	+ 6.7%

Source: IEA (2000)

(b) Emissions trading

One feature of the Kyoto Protocol that did reveal a greater maturity in understanding incentive structures to comply was the inclusion of the so-called 'flexibility mechanisms'. Here at least was a significant gesture towards the arguments that economists had put forward for some decades concerning procedures for minimising the compliance costs of an agreement³. Arguably, minimising costs need not be a dominant feature of agreements if the costs are modest and other goals are more important. In the case of carbon, however, this is not the case. Regulating carbon is really quite different to regulating, say, the trade in endangered species or even CFCs. The difference lies in the fact that carbon is pervasive to the working of all economies. It would therefore be surprising in the extreme if other than modest emission reduction targets could be achieved without some fairly significant impacts on the economic system. The best way to capture this is to recognise that the Kyoto targets were expressed in terms of percentage changes on 1990 emissions as a base year, but that the 'business as usual' growth of economies would mean that the actual reductions around 2010 were likely to be significant. Zhang (2000) estimates that the reduction from 2010 projected levels would be some 22% for the USA, but less than 3% for the European Union. The startling difference in these numbers serves to underline the US position. It also explains why Japan is wavering since its reduction amounts to 18% on projected emissions. The only other countries with comparable burdens are Australia and Canada with 15-16% - see table 2. It is no surprise therefore that countries with the biggest adjustments have been the countries with most concerns about Kyoto. A cynic might also

³ While subject to very few analytical studies, the later Protocols to the Convention on the Long Range Transport of Air Pollution (LRTAP), which deal with 'acid rain' in the wider Europe, are based on the notion of minimising aggregate compliance costs. The early Protocols shared burdens 'equally' by imposing common percentage emission reduction targets. It is far from clear that the Kyoto targets conform to a cost minimising solution, and even less clear that they would pass a cost-benefit test.

suggest that it is easy to take a high moral tone, as some EU countries did in Kyoto and in COP-6, when little personal suffering is involved.

Table 2 Emission reduction targets (all GHGs)

Country	2010 projection MtC	Kyoto target MtC	Difference Kyoto - Projection MtC	Difference as % of 2010 projection	CO ₂ Efficiency = CO ₂ /GDP Kg/\$
USA	1943.9	1520.0	-423.9	-21.8	0.77
Canada	182.4	153.2	- 29.2	-16.0	0.72
Japan	388.2	317.0	- 71.2	-18.3	0.34
Australia	144.1	122.4	- 21.7	-15.1	0.81
European Union	1095.9	1068.0	- 27.9	- 2.5	0.41

Source: Zhang (2000) and IEA (2000).

The obvious response to this view of comparative burdens is that those countries bearing the highest de facto burdens of the Kyoto targets are those who can most afford to achieve the burdens. Table 2 provides a simple indicator of this capability by computing ratios of CO₂ emissions to GDP. It is seen that, indeed, Canada, Australia and the USA are 'carbon inefficient' relative to Japan and Europe. But the position of Japan is a clear anomaly in that it is the most carbon efficient economy, but its Kyoto target involves a carbon reduction of nearly one-fifth when measured against the projected baseline. Thus suggests that Japan may have negotiated badly at Kyoto - perhaps because, as hosts, it was an honourable thing to do - and why it may be looking for ways out of ratifying Kyoto now.

The figures in table 2 also explain the importance of the various flexibility mechanisms. Without them, compliance costs would be substantially higher than with them, as numerous studies have shown. Victor (2001) suggests that without trading US costs of compliance would be around \$1000 per household per annum, but that with trading these costs would fall to a 'more palatable' \$100. Europe's position on trading has been ambivalent and the religious and cultural backgrounds of nations should not be disregarded in this respect. There is a Northern European perspective that believes that environmental sins must be expunged through personal suffering. The burden of reducing emissions should therefore fall on the citizens of those countries responsible for global warming - the rich nations. Americans should therefore suffer, just as Europeans should. Trading appears to be a moral escape, a way of shifting the adjustment on to poor nations. This view is hard to believe in terms of logic, but it is powerful in terms of emotion. It is hard to see what virtue there is in personal suffering if it raises the cost of compliance and reduces the chances of the further agreements that are necessary if Kyoto is to have any discernible effect on rates of warming (see below). But the notion of personal suffering lies behind Europe's original proposals for 'concrete ceilings' and for what was (and is) often very half-hearted support for the flexibility mechanisms in the Protocol. Notable features of this limited support include the debate over 'sinks' as suitable offsets in the flexibility mechanisms,

and the usual bureaucratic desire to surround any trading scheme with endless rules and caveats, thus weakening the whole purpose of trading⁴.

The relevance of the trading debate to the pessimistic case is that pessimists do not believe that trading will take place on the scale required for the US to accept Kyoto. Victor (2001) is prominent among this group. He argues that the Kyoto 'agreement' was secured only by putting to one side all the difficult questions. In essence, the agreement was an illusion, a bubble that would be burst as soon as the Conference of Parties tried to grapple with issues like the rules for trading, the role of carbon sinks, verification and monitoring issues, 'hot air' and what would, in effect, be the creation of a massive international financial asset - a carbon permit. His prediction (since the book was written before the US election) was correct and few seem hopeful that COP-6 can resolve the difficulties. If the US sensed that large scale trading was not going to take place, then their opposition to domestic energy adjustments would be reinforced since those adjustments would be greater than with trading. Moreover, the Clinton Administration had already signalled that it expected one or more of the trading mechanisms to account for around two-thirds of the US emission reduction commitment.

On the pessimistic view, then, the very means whereby the US could come 'on board' with Kyoto - carbon trading - was increasingly looking less and less likely as negotiations proceeded. Arguably, European negotiators in particular totally misread the trading issue, underestimating its importance to the USA but also underestimating the complexities of developing robust trading rules.

(c) **The effect of Kyoto on global warming**

The Montreal Protocol on the ozone layer was repeatedly revised, with targets becoming stricter and stricter over time and with 'new' chemicals being embraced. It would appear that the negotiators did not envisage this process, but left themselves the flexibility to respond to new scientific information. Moreover, since the costs of compliance are modest, the incremental costs of tightening standards were also modest. In contrast, though not widely reported as such in the media, Kyoto was never anything more than a modest start on what would have to be a long term process of 'decarbonising' not just a few economies, but the world as a whole. The easiest way to see this is to ask just what difference Kyoto, had it secured full compliance, would make to global warming. Wigley (1998) assesses three scenarios based on Kyoto compliance by 2010: (i) a scenario in which Annex B emissions rise at the 'no agreement' baseline level after 2010; (ii) one where Annex B emissions are constant after 2010, and (iii) a decline in Annex B emissions at 1% per annum 2010-2100. The range of effects on concentrations is 20-80 ppmv by 2100, a modest change. The effects on temperature change is, at best, a reduction of less than 0.2°C compared to just over 2°C by 2100 for the baseline scenario. As far as Kyoto itself is concerned (i.e. scenario (i) above), the effect is almost imperceptible. These calculations underline the 'first steps' nature of Kyoto. There is no possibility of achieving meaningful reductions in damage without further Protocols involving substantial emission reductions.

If the perception of some (at least) of the participants is that Kyoto is expensive, then one wonders what those same participants would make of further substantial cuts in emissions brought about by further agreements. It is arguable that, far from the rising marginal costs of reduction envisaged in the IPCC analyses and most of the literature on abatement costs, future

⁴ An interesting example in another context, the Second Sulphur Protocol of 1994 under the LRTAP Convention, is the fact that, while the Protocol 'enables' sulphur emissions trading across Europe, the conditions required to achieve an acceptable trade are so strict that none will occur.

costs might actually be less because of the chances of developing now the technological changes that would bring large emission reductions about. Such technological optimism does not seem pervasive, however, and the prevailing view is that participants expect either to be on a rising cost curve, or to have to worry about future costs as the issue arises. The reality is that anyone looking well into the future is more likely to see ever escalating cost burdens than an technological opportunity decarbonise the world economy. If so, it would be rational not to sign up now to what appears to be the first rung on a very expensive ladder.

(d) The political cost of Kyoto

The final issue is whether Kyoto can be 'sold' to the citizens of the emission-reducing countries. Table 2 suggests that the biggest problems would occur in North America and Japan. Europe's reductions are modest against the baseline and probably easy to achieve. The US and Japanese situations have already been reviewed. Perhaps more worrying still is the problems that will be faced by Europe in achieving its own modest reductions.

First, it is as well to note that the voluntary targets agreed in 1992 in Rio and which relate to the year 2000 are not likely to have been met by European countries. Table 3 projects likely compliance or non-compliance for Europe, USA and Japan (data for 2000 are currently not available from IEA). The first point to note is that only four developed countries - the UK,

Table 3 Extent of compliance with the Rio (1992) CO₂ targets for 2000

Country	1990 emissions 10 ⁶ tCO ₂	1998 emissions 10 ⁶ tCO ₂	Probable 2000 emissions 10 ⁶ tCO ₂	Exceedance (+) or shortfall (-) on target (% in brackets)	
USA	4844	5410	5628	- 784	(-16%)
Canada	421	477	490	- 69	(-16%)
Japan	1048	1128	1149	- 101	(-10%)
UK	572	550	500	+ 72	(+13%)
France	369	376	391	- 22	(- 6%)
Germany	967	857	831	+ 136	+ 14%
Netherlands	157	171	175	- 18	(- 11%)
Sweden	52	54	55	- 3	(- 6%)
Norway	29	34	35	- 4	(- 14%)
Switzerland	41	41	41	0	(0%)
Luxembourg	11	7	6	+ 5	(+ 45%)
Denmark	51	57	59	- 8	(- 16%)

Source: adapted from IEA (2000)

Germany, Switzerland and Luxembourg (shown in bold) will meet their Rio targets. (All of the EIT countries excluding Slovenia, show reduced emissions 1990-1998). Second, countries which have prominent international political environmental profiles - Sweden, Norway, Denmark, Netherlands - will fail to reach their targets. Third, all other countries with Rio targets and not listed in Table 3 (other than EITs) also will fail to meet their targets. Fourth, ignoring the EITs, those that do meet their targets, account for only 7% of world emissions, and under 12% of Annex 1 emissions.

The implications are disturbing for those who take an optimistic view of Kyoto. It can legitimately be asked what the prospects are for Kyoto, quite independently of the US position, when the previous Rio targets have been more honoured in the breach, particularly by those countries that have been vocal in their call for international action on global warming.

The second issue relates to the public acceptability of the policies that will be needed for global warming control. The US has not needed to test these policies in practice, but Europe has sought to put some policies in place. What climate-oriented policies there have been should not be exaggerated. German's over-achievement of its Rio target is very much a function of the reunion of East and West Germany, not of climate policies. In the same vein, the UK has achieved over-compliance with Rio through separate legislative measures that have not been motivated by climate concerns at all. Thus, the privatisation of electricity generation in the UK freed generators from most of their obligations to buy UK coal, and to switch into natural gas. The consequent fall in CO₂ emissions was fortuitous, not a result of policy.

The UK experience with what have been its climate targeted policies is salutary however. A notable feature of the policies, quite rightly, has been efforts to raise energy prices. For industry, the main measure is the Climate Change Levy (CCL), a sort of energy tax which curiously not differentiated by the carbon content of fuels. As it has only just been introduced, it is too early to gauge the reaction to and success of the levy. It has met with industrial lobbying but nothing of major significance, and the relatively low profile is probably due to its novelty and the fact that it is revenue-neutral, with proceeds being recycled to industry in reductions in labour taxes. But one other measure has been tested and, significantly, it has been withdrawn. The Fuel Duty Escalator (FDE) was originally introduced under the Conservative Administration as a 'perpetual' surcharge on gasoline and diesel fuels, originally at 3% over the inflation (1993), then 5% (late 1993), then 6% (1997). In November 1999 it was cancelled as an *automatic* annual price increase, becoming not only discretionary but with future increases having the revenues hypothecated to improvements in public transport and the road network. In March 2000 all *real* increase in the FDE was cancelled and in November 2000 any increase at all (i.e. tantamount to a real price decrease) was cancelled. The political background to these changes of intent included early pressure from the freight transport sector against rising diesel prices and, ultimately, illegal direct action by an unofficial clique of lorry drivers, supported by a smaller clique of farmers⁵. Many factors contributed to the success of the protest, but one important one was the failure of the labour Government to make it clear why FDE existed.

In a statement to the House of Commons in 1999, the Chancellor of the Exchequer said that the FDE was needed to reduce the £28 billion deficit inherited from the previous government. The remark caused confusion because the FDE was meant to be an environmental tax. Other statements referred to its environmental purposes. None made it clear that an environmental tax can be, and usually is, both environmentally oriented and a revenue raiser. Second, in the comparatively few public statements made about the autumn 2000 protests, Government argued that fuel duty could not be cut without sacrificing vital public expenditure. This statement was incontrovertibly correct. Every penny lost from fuel duty was a penny less available for public expenditure, or a penny that had to be made up somewhere else. One of the more remarkable features of the public and political debate during the 'crisis' was the denial of this fact. A kind of Alice-in-Wonderland economics grew up: views were expressed to the effect that the

⁵ The role of the farmers is interesting since they do not in fact pay fuel duty on on-farm transport.

Government was 'awash' with tax and other revenues and hence could 'afford' to cut fuel duty. They came perilously close to suggesting that the cost of reducing duty was zero⁶. Television stations ran public surveys asking respondents if they thought reductions in petrol prices were a good thing. Unsurprisingly, since no-one was reminded of the cost of reducing prices, substantial majorities declared that they were in favour of reducing prices!⁷ Government was weak in not rebutting these views more firmly. But they also generated confusion in arguing that the revenue was needed for general public expenditure rather than for environmental purposes. Again, technically, they were right. The FDE had never been ring-fenced. It was not a hypothecated tax in the true sense, though it would have become a partially hypothecated tax had it been allowed to continue. But the confusion gave the protesters an upper hand. If FDE was a general tax and general tax revenues were high, why not reduce FDE? If FDE was an environmental tax, why did the government not say so more forcefully? And why did they not play the hypothecation card, having already announced that future real rises in FDE would be hypothecated? It would have been a most apposite time to play that card: the railway system was being plunged into chaos and the need for more and quicker investment in public transport was never more evident. Instead, the lack of clarity gave ammunition to the anti-tax lobbies by making it look as if taxes explicitly introduced as environmental taxes were, in fact, simply revenue raisers. What was needed was a clear distinction between environmental taxes that also raise revenues, and hypothecated taxes that are environmental taxes that do not raise revenues. In its original form, the FDE was the former. In its announced November 1999 form it was partly the former and partly the latter. Perhaps it was judged too difficult to get the distinction across to the public, but it is hard to resist the view that Government did not know what the appropriate reaction to the protesters was.

While the labour government bears considerable responsibility for the demise of the FDE, there was however another element that raises the issue of whether raising energy prices, particularly in the energy sector, will ever secure public support. The fact is that, while the fuel protesters were a minority, they had at least passive public support. Fuel prices, it seems, were simply too high'. While politicians attempted to explain rising energy prices in terms of OPEC actions on oil supplies, the combination of high prices, for whatever reason, and escalating taxes was fatal for public perception (for more detail see Pearce, 2001).

Some interim conclusions

The previous section has set out the pessimistic case for Kyoto. Against the backdrop of a seemingly more isolationist America and an increasingly expansionary Europe, the prospects for Kyoto do not look good. The American concerns over the extent of global participation in the agreement are legitimate. The cost argument could be advanced either way, but it tends to be presented as if the relevant costs are those of complying with the Kyoto Protocol when the proper notion of cost is one that relates to compliance with ever-tightening standards in subsequent Protocols. By itself, Kyoto does little or nothing for global warming control: it is a 'first steps' Protocol. If the US, and some other nations, were ever to come on board, various forms of emission trading, as envisaged in the Protocol, would have to be implemented. Yet the

⁶ Indeed, the *Daily Mail* (July 3, 2000) managed the full transition. It declared that the Prime Minister's statement that 2 pence off petrol duty would be at the cost of schools and hospitals was 'bogus', whilst an RAC spokesman was quoted as saying that Mr Blair's statement that 2pence off petrol would cost £1 billion in lost revenues as 'disingenuous'!

⁷ This naivete in constructing questionnaires is shared by others, however. Many opinion polls and questionnaires ask people to say what is desirable without reminding them that their choices have opportunity costs.

Kyoto negotiators fatally pushed the issues of system design to one side in favour of agreeing on targets only. Subsequent discussions showed that the prospects for *international* trading will be limited because of the moral intransigence of some countries and arguments over the rents associated with the creation of new international financial assets. Also worrying is that all the focus has been on Kyoto without anyone looking back to see whether the prior targets, set at Rio in 1992, will be met. Those who have met them are few and they seem to have done so fortuitously. It hardly augurs well for Kyoto. Finally, it is difficult to envisage a climate policy that does not embrace changes in energy prices. Yet the few experiments we have in pursuing such measures suggest that some changes will be tolerated, at least in Europe, but continued changes will not.

If Kyoto is an example of a failed international agreement, the issue arises as to whether there are alternatives. Here we move more into the realms of speculation. If there are alternatives they cannot rely on international agreements. They are therefore far more difficult to identify and measure. They may also disappear as far as they have appeared. The next section briefly explores the idea.

Moral compliance

Economic science is often chided for setting up a 'straw man' - *homo oeconomicus* - whose actions are governed by stable preference sets that are selfish. In reality, the critics say, humans are socially conditioned - preferences are endogenous to the social customs and rules surrounding the individual and may also be manipulated and changed by policy, particularly policy that appeals to conscience, moral obligations, rights and duties. Since economics is uncomfortable with endogenous preferences, economic prescriptions are fatally flawed. Whatever the virtues of this debate - and economists have long acknowledged the role of 'moral constraints' in human behaviour - there is some evidence that forms of *self-regulation* are emerging. Self-regulation involves an economic agent taking action on, say, greenhouse gas emissions, without there being a legislative requirement to do so. There may be a threat of legislation, as with many of the 'negotiated agreements' that have developed, particularly in Europe. Here the idea is that government or a regulator negotiates with corporations to produce a self-regulatory plan. Once agreed, the corporation (or industry or confederation etc.) is left to implement the plan and report back to the regulator on compliance. Government are freed from the constraints surrounding legislative action - notably the time required to enact new measures. Those who favour the lighter touch welcome the avoidance of regulatory burdens. Corporations are content because they can influence the self-regulatory portfolio. There are numerous principal agent problems in such measures but these are arguably not worse than those which arise with direct regulation. The threat is always that non-compliance will trigger a tax or a command and control measure. Self-regulation pre-empts direct regulation which tends to impose far heavier costs on firms. Provided the 'baseline' issue is resolved, i.e. as long as firms accept that something will be done rather than the status quo being preserved (Pearce, 2001) - firms will be better off under self-regulation.

Self regulation may also come about without there being regulatory agencies involved. Maxwell et al. (1999) report the finding that US firms have reduced toxic releases partly in response to the rise in membership of conservation groups dedicated to resolving this issue. More generally, firms seem likely to respond to the growth of information about pollution and its sources. But the motives for self-regulation in these contexts is still a set of selfish preferences. A different form of self-regulation, usually termed corporate social responsibility (CSR), suggests that firms

may voluntarily undertake environmental obligations from a mix of social pressure and internal commitment. The social pressures are many but notably include the growth of ethical investment and green consumers.

What do these initiatives reflect? One suggestion is that they all emanate from a changing societal concern about income and profit. Various social surveys have found that income and happiness may be correlated only up to a point because income is seen as a means of securing a job, health care (in nations without social health services), a home and old-age security. Beyond this, income growth does not 'produce' happiness. Perhaps what is happening is that people recognise that increases in consumption are at the cost of reductions in social capital (sense of community, trust, social bonds), reductions in natural capital, and even reduced choices between work and leisure (Schor, 1995). A common feature of the 'richer is not happier' surveys is the relative deprivation concept. The idea is that individual wellbeing derives not from the absolute level of consumption by that individual, but from their level of consumption relative to those around them. The idea is that consumption is related in some way to sets of social norms. A wishes to consume X because B, C and D are also consuming X (the 'bandwagon effect'). A wishes to consume Y because B, C and D do not have Y (the 'snob effect'), and A wishes to consume Z because it demonstrates his or her special position relative to B, C, D (Leibenstein, 1950). It is then comparatively easy to see that as incomes and consumption levels rise, individual A may actually not be any happier because B, C and D are engaged in the same process, i.e. trying at least to imitate what A is doing and also trying to get ahead of him or her.

One suggestion, then, is that the 'social corporation' is simply a manifestation of the change in social preferences away from 'material' things towards communal and social goods. There is some evidence that there have been 'value shifts' towards more 'post-materialist' views of the world. Inglehart (1990) documents surveys of values in various European countries and makes comparisons over different age cohorts. The general thrust of this analysis is that there is a social trend towards 'post material' values. This might suggest that future prospects for environmental improvement are brighter because the value changes favour more social and environmental trends and less emphasis on material consumption. This should be true if social and political institutions are sensitive to such changes. There would then be only a limited case for engineering social change to bring environmental policies about - they will occur 'naturally' as post-material values grow to dominate material values. CSR would be a manifestation of this change. A second view observes that the changes in values have not been accompanied by changes in the ways economies are organised so that what does make people happy is what gets increasingly supplied. If post-materialism is a strong force, and CSR is one outcome of it, one would expect dramatically more evidence that CSR is emerging as a strong corporate response. This suggests that post-materialists have not surveyed the population correctly, have experienced difficulties in getting their views across, or simply lack the political power to influence social change. Certainly, some commentators believe that post-materialists lack power because there are vested interests in securing more economic growth, interests that have been enhanced by globalisation of the world economy (Schor, 1993). On this analysis, then, there is a constant struggle between those with goals of happiness and those with goals of increased consumption.

None of this should be exaggerated. There is something odd about the repeated findings concerning post-materialism and the lower placing of green issues on political agendas, for example. Post materialism does not seem to square with President Bush's anti-Kyoto stand nor with the virtual silence on environmental issues in the General Election in the UK in 2001. Nor is the 'social corporation' more than marginal at the moment. Consistent with this view, the New

Economics Foundation (2000) found half the business and finance journalists it consulted in the UK thought that CSR was 'PR gloss with little substance'. Moreover, whatever the widespread discussion of CSR, not that many corporations embrace it - the New Economics Foundation (2000) suggests that, at best, one per cent of corporations listed on the London and New York Stock Exchanges, report on social performance. Nonetheless, the possibility exists that CSR will bring about behavioural change in corporations. Whether there is likely to be a comparable 'value shift' in households appears to be an unresearched issue.

The potential rise of corporate social (and environmental) responsibility does not mean that regulation will stop. But there is evidence that CSR is being encouraged by being 'talked up' by governments, and that governments are already adopting new regulatory agendas that favour the notions of voluntary and negotiated agreements, and self imposed targets. Those who have responded to the initiatives could, cynically, be looking for first-mover advantage, currying favour with regulators and government. But there are also markets to be won through social responsibility. There is fairly significant evidence that profits and CSR are correlated (see, for example, Thomas, 2001), although the literature is weak in its statistical testing of causality since both profit performance and CSR could reflect other underlying factors such as dynamic management.

The prospect is therefore an intriguing one. Perhaps the 'failure' of Kyoto will direct attention away from the international arena towards domestic regulations and the encouragement of domestic corporate responsibility. Since direct domestic regulation is expensive, and since there is some evidence that energy prices cannot be raised without unacceptable political repercussions, any regulatory stance must be 'soft'. Encouraging CSR and voluntary agreements meet this requirement perfectly. Corporations become the agents of government environmental and social policy, but, with some exceptions, they do so willingly. Arguably, if corporations judge that government never could impose stringent regulatory policy, then they will resist these softer approaches as well, hoping to restore the baseline in which little or no action is taken. But that is a risky option given the other developments that appear to be documented in the social change literature - green and ethical investors, green consumers and governments still keen to be seen to be doing something, even if green issues are not high on the political agenda. It is not a strong argument, but it may be one that is given a spur by the debates over Kyoto. If we cannot trust the negotiators or the politicians, perhaps we have to trust ourselves.

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