

Economic Solutions to Environmental Problems

07970617

Fri, 6th March 2009

Here I consider some proposed economic solutions to mankind's most pressing environmental problem - climate change (Solomon et al., 2007). The possible solutions mentioned here all give weight to the "tragedy of the commons" (Hardin, 1968) as a primary cause of environmental problems. I have described three commonly proposed and sometimes enacted solutions: one harnessing the power of the market under government supervision (emissions trading); one removing pollution from the market and controlling it punitively (green taxes); and one allowing the free markets to naturally regulate the issue (privatisation of the commons).

1 Cap-and-trade

In emissions trading, or cap-and-trade schemes, a limit is governmentally imposed on the total amount of a pollutant that can be emitted. Permits are distributed to companies and other entities, each representing the right to emit a specified quantity of the pollutant. Entities must hold a number of permits equivalent to their pollution output. Permits can be traded between entities, resulting in polluters paying for their emissions whilst non-polluters are rewarded through sale of their unused

permits.

Emissions trading aims to produce the largest reduction in pollution at the lowest possible cost, internalizing previously external environmental costs (Tietenberg, 2006). Technological innovations are driven by the high cost of polluting and the rewards of selling unused allowances (Tietenberg, 2006; Stern, 2006). Ideally these innovations provide cleaner technology which pollutes less (Woerdman, 2000).

Many emissions trading schemes are already in place at regional and national levels (Hansjurgens, 2005), with some international schemes such as the EU ETS working towards a global carbon trading scheme (Ellerman and Buchner, 2007). The linking of regional, national and international schemes has potential to help prevent a climate catastrophe (Stern, 2006). Resistance from some key nations such as the U.S.A. (Stavins, 2008) and China (Zhang, 2003) has prevented the goal of global cooperation, although the latest U.S. budget describes looks forward to a carbon trade scheme (Whitehouse, 2009). A key benefit of emissions trading schemes is the potential to implement them in the very near future, without the need for a very gradual transition.

Problems have been highlighted regarding how to distribute the initial allowances (Freeman and Kolstad, 2006). It has also been suggested that the expense of regulating a global emissions market could be extremely high (Woerdman, 2000), although Stern (2006) conclude that the cost of not implementing such a system would be far greater.

2 Green Tax

Green tax involves directly taxing pollution and the use of land and non-renewable resources. Green taxes can be applied at both production and con-

sumption levels: taxes are levied on production of pollutants and on products containing them. The purpose is to create a strong incentive to avoid pollutants by rewarding the use of less environmentally damaging alternatives. It is commonly proposed that green taxes should replace income tax (e.g. Harper, 2007; Tindale and Holtham, 1996), with taxation based primarily upon environmental impact rather than income.

The movement to green taxes should be revenue neutral, although large scale investment in greener technologies would be required by government in order to facilitate the transition to a cleaner economy (Koskela et al., 2001). By contrast to emissions trading schemes, movement to a fully green taxation system must be a gradual process - businesses, individuals and infrastructures need time to adjust. If the requisite acclimatisation was not catered for, “economic and social chaos” (Harper, 2007) would inevitably result.

Green taxes are already implemented in varying measures by many countries including the UK and Germany, especially via taxes on petrol (ONS, 2008), but to date there has been no commitment by any nation to make a full transition to a green taxed economy (Brown, 2003). Where green taxes have been implemented, they have been shown to punish households to a greater extent than businesses (Svendsen et al., 2001; JRF, 2004). Solutions have been suggested, including using revenue from green taxes to compensate individuals (Tindale and Holtham, 1996). A more prohibitive problem is that the lobbying powers currently wielded by many industries could present a barrier to truly effective green taxes on businesses (Carraro and Metcalf, 2001).

3 Privatisation of the commons

Free-market environmentalists would argue that governmental interference in the markets can never be the solution to environmental problems. Instead, the markets could seek to solve the problem of externalities such as the commons by bringing them under private control. In this way, private entities would be responsible for the maintenance of resources. Over-exploitation would be detrimental to the interests of the owner, who should therefore restrict the use of the resource in a sustainable fashion (Hahnel, 2005). Organisations such as the Nature Conservancy have taken a full privatisation approach to the commons problem by buying vast areas of wilderness around the globe and calling a halt to any use by industry (Goldman, 1998).

Rothbardian economic thinkers argue that assigning Lockean property rights to the commons maximises social utility provided there are no limits governmentally imposed on the system (Anderson and Leal, 2001). Even so, implementing such a system on a global scale would involve deconstructing the entire global economy to rebuilt it from first principles - layered governmental economic controls and a long history of protectionism in international markets have ensured this (Kahn, 1988).

In practice, it may be impossible to assign property rights to the numerous forms of commons. This is especially true of the air and water which circulate in global currents (Anderson and Leal, 2001). In a fully privatised world it is unlikely that the conservation of those species with little economic value would be effective - commercially uninteresting nature would be driven out by the value of alternative land use (Brown, 2003). However, the example of the Nature Conservancy shows that conservation organisations might successfully enter the markets on the side of these species.

4 Conclusions

It is clear that in order to tackle climate change a synthesis of ideas is required. As the Stern Report (Stern, 2006), the IPCC (Solomon et al., 2007) and GEO4 (UNEP, 2007) all conclude, we need to use every method at our disposal. Privatisation of the commons has its place, especially where the other methods fail to protect individual species which are already threatened by human interference. At the local level, land purchase might be the only option to prevent direct habitat destruction.

Nationally, green taxes as direct action can produce measurable effects (Koskela et al., 2001), but the requisite transitional period means that they cannot work alone. Individual taxes on energy and pollution could complement trading schemes and speed up the delivery of sustainable technology if the revenue is properly invested in research and development (Brown, 2003).

In terms of implementing an international system, carbon trading programmes are expected to yield significant results even without the cooperation of China and others (Ellerman and Buchner, 2007; Convery, 2009). If China do take part, this method alone could avert the worst effects of climate change (Stern, 2006).

(1057 words)

References

- Anderson, T. and Leal, D. (2001), *Free market environmentalism*, Palgrave Macmillan.
- Brown, L. R. (2003), *Eco-Economy*, Earthscan.
- Carraro, C. and Metcalf, G. E. (2001), *Behavioral and Distributional Effects of Environmental Policy*.

Convery, F. J. (2009), 'Reflections-the emerging literature on emissions trading in europe', *Rev Environ Econ Policy* **3**(1), 121–137.

URL: <http://reep.oxfordjournals.org/cgi/content/abstract/3/1/121>

Ellerman, A. D. and Buchner, B. K. (2007), 'The european union emissions trading scheme: Origins, allocation, and early results', *Rev Environ Econ Policy* **1**(1), 66–87.

URL: <http://reep.oxfordjournals.org/cgi/content/abstract/1/1/66>

Freeman, J. and Kolstad, C. D. (2006), *Moving to Markets in Environmental Regulation: Lessons from Twenty Years of Experience*, Oxford University Press, USA.

Goldman, M. (1998), *Privatizing nature: Political struggles for the global commons*, Pluto Press.

Hahnel, R. (2005), *Economic justice and democracy: from competition to cooperation*, Routledge.

Hansjurgens, B. (2005), *Emissions trading for climate policy: US and European perspectives*, Cambridge University Press.

Hardin, G. (1968), 'The tragedy of the commons', *Science* .

URL: <http://www.sciencemag.org/cgi/content/abstract/162/3859/1243>

Harper, C. (2007), *Environment and society: human perspectives on environmental issues*, Prentice Hall.

JRF (2004), *Reducing the impact of 'green' taxes and charges on low-income households*, Joseph Rowntree Foundation.

URL: www.jrf.org.uk/node/1231

Kahn, A. (1988), *The economics of regulation*, MIT Press Cambridge, Mass.

-
- Koskela, E., Sinn, H.-W. and Ronnie, S. (2001), ‘Green tax reform and competitiveness’, *German Economic Review* **2**, 19–30.
- ONS (2008), *Environmental Accounts: Autumn 2008*, Office of National Statistics: Her Majesty’s Stationery Office.
URL: http://www.statistics.gov.uk/downloads/theme_environment/EADec2008.pdf
(accessed 07/03/09)
- Solomon, S., Qin, D., Manning, M., Chen, Z., Marquis, M., Averyt, K., Tignor, M. and Miller, H. (2007), *Climate Change 2007: The Physical Science Basis, Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
- Stavins, R. N. (2008), ‘Addressing climate change with a comprehensive u.s. cap-and-trade system’, *Oxf Rev Econ Policy* **24**(2), 298–321.
URL: <http://oxrep.oxfordjournals.org/cgi/content/abstract/24/2/298>
- Stern (2006), *Stern Review on the economics of climate change*, HM treasury London.
- Svendsen, G. T., Daugbjerg, C., Hjellund, L. and Pedersen, A. B. (2001), ‘Consumers, industrialists and the political economy of green taxation: Co2 taxation in oecd’, *Energy Policy* **29**(6), 489–497.
- Tietenberg, T. (2006), *Emissions trading: principles and practice*, Resources for the Future.
- Tindale, S. and Holtham, G. (1996), *Green Tax Reform: pollution payments and labour tax cuts*, Institute for Public Policy Research.
- UNEP (2007), ‘Global environment outlook: Environment for development’.
URL: <http://www.unep.org/geo/geo4/media/>

Whitehouse (2009), ‘The budget of the united states of america for 2010: A new era of responsibility’.

URL: <http://www.gpoaccess.gov/usbudget/fy10/pdf/fy10-newera.pdf> (accessed 06/03/09)

Woerdman, E. (2000), ‘Implementing the kyoto protocol: why ji and cdm show more promise than international emissions trading’, *Energy Policy* **28**(1), 29–38.

Zhang, Z. (2003), ‘Why has china not embraced a global cap-and-trade regime?’, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1008592.

URL: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1008592 (accessed 01/03/09)