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Politicians and economists are accustomed to measuring performance by it. In these circumstances, the environmentalists reason, merely proposing a new, separate indicator will not have the desired effect of dethroning GNP. It has to be replaced directly, by saying not merely that it is inadequate, but that it is inadequate by such-and-such an amount, which they have calculated and can then subtract from it. GNP has to be shown to be wrong, not merely insufficient.

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Market Mechanisms, Ecological Sustainability and Equity

Sharon Beder

Economists are commonly asked for advice on environmental policy. In Australia, for example, it was economist Ross Garnaut who was asked to prepare the major report on climate change policy. Not surprisingly, economists tend to advocate market mechanisms to achieve environmental protection. But can market mechanisms achieve ecological sustainability and maintain social equity? In most cases market mechanisms aim to maximise economic efficiency rather than environmental effectiveness or equity.

The use of emissions trading to reduce greenhouse gases in the atmosphere is a typical policy advocated by mainstream economists. Tradeable pollution rights were originally developed in the USA to cut costs to industry and enable economic growth to continue in highly polluted areas. Emissions trading allows firms to trade the right to emit specific quantities of greenhouse gases. It aims to achieve a given level of environmental protection at less cost to industry rather than maximising environmental gains. Indeed, past experience has shown that the environmental gains from emissions trading are far from guaranteed.

Ecological Sustainability

Emissions trading is based on the idea some firms can reduce their emissions more cheaply than others. Therefore, it is more cost effective to allow the market to decide where emission reductions will be made than for governments to require uniform reductions across an industry. Firms that find it expensive to reduce emissions are able to buy up emission permits instead. Those that can reduce emissions cheaply can sell on their unwanted permits.

This might be acceptable if only limited pollution reductions are required – that is, if reductions can be limited to what can be done cheaply. However, it makes little sense if substantial reductions are required. If more expensive reductions have to be made then there is little point in setting up markets that enable some firms to avoid making those expensive reductions so as to minimise overall costs.

This became evident when the German government considered implementing an acid rain emissions programme. The aim of the German programme was a 90 percent reduction in SO₂ between 1983 and 1998. In comparison, the aim of the US emissions trading program was only a

50 percent reduction by 2010. This meant that in the US there was much more scope for power stations to find cheaper ways to reduce their emissions, whereas in Germany every power station had little choice but to retrofit their plants with flue gas desulphurisation and selective catalytic reduction for nitrogen oxides. This meant that there was no scope for trading in Germany (Schärer 1999: 144-5).

The US Acid Rain Cap and Trade scheme is consistently cited as a success because it achieved emissions reductions at minimal cost, but how do those reductions compare with what can be achieved with traditional regulation? The UK Environmental Agency (2003: 8) noted that sulphur emissions in the US exceeded those from the EU Member States by 150 percent.

Even proponents of trading admit that there will inevitably be a conflict and an implicit trade-off between the goals of reducing costs and improving environmental quality (Hahn and Hester 1989: 147, Atkinson and Tietenberg 1991: 20-26). This conflict can be seen in the setting of a cap for tradeable emissions programmes. The cap is the total amount of emissions for which permits are issued. There are various reasons for choosing a particular cap. They include (Moore 2004: 2):

- environmental and health protection;
- technical feasibility – available technology;
- economics – balancing costs;
- politics – influence of vested interests and political acceptability.

In practice, caps tend to be based on economics and politics rather than on what is technically feasible to protect the environment and human health. This is evident in Garnaut's recommendations for emissions trading. His report recommended two levels of reductions for Australia – a 20 percent reduction if a post-Kyoto international agreement is achieved, but, if not, only a 5 percent reduction in Australian greenhouse gases from 2000 levels by 2010. In other words the cap should reflect political and economic reality, not what is best for the environment (Garnaut 2008: 3).

The Garnaut Review claimed that, even if an international agreement is reached, the aim would only be to stabilise at 550 ppm (compared to current emissions of 455 ppm) of greenhouse gases. This is likely to result in 44-87 percent mortality of coral, 8-39 percent species at risk of extinction, and 12-77 percent likelihood of irreversible melting of the Greenland ice sheet (Garnaut 2008: 33). Even the more ambitious target of ten percent reduction by 2020 is conditional on an international agreement that will not prevent disastrous environmental consequences.

What is good for the environment is not necessarily good for encouraging trade in a market. If the cap is set too low and too few permits are issued then there will be little trading because firms will not have spare permits. Yet such a low cap may be necessary to protect the environment.

When the EU emissions trading system was introduced in 2005 analysts believed that many governments had been too generous in allocating permits to local firms because they feared their local industries would be at a competitive disadvantage if they had to buy extra permits. A study by Ilex Energy Consulting for WWF, examining six EU countries, found that none of them had set caps that went beyond 'business as usual' and would meet their agreed Kyoto obligations (ILEX Energy Consulting 2005). Because allowances were not in great demand, the market opened at 8 euros per tonne and settled around 23 euros a few months later, far less than necessary to provide an incentive to reduce emissions (Pearce 1997: 6). Yet Garnaut recommended permits be sold in Australia in 2010 for only A\$20 per tonne, rising each year by only 4 percent (Garnaut 2008: 2).

Emissions trading has the potential to enable phoney reductions. The most obvious example is the trading of emissions permits with Russia and other eastern European countries that are in

economic decline. This has meant that some countries in Eastern Europe are already emitting 30-45 percent less carbon dioxide than in 1990 because of lowered production, yet they can sell to other nations their rights to emissions they were not going to make, in return for hard currency, with no net benefit to the planet (Pearce 1997: 22, Corporate Europe Observatory 2000: 13). The reductions that would have occurred *without* emissions trading are now available to affluent countries to avoid their own emissions reductions. They are referred to as ‘hot air’ or ‘phantom’ emissions reductions.

In NSW the Greenhouse Abatement Scheme issued certificates to those who reduced greenhouse gas emissions that could then be sold to electricity retailers who had to meet mandatory emissions reductions. However, a study by researchers at the University of NSW found that 95 percent of the certificates issued in the 18 months leading up to June 2004 were for projects established before the introduction of the scheme and more than 70 percent were awarded for emissions reductions that would have occurred anyway (Frew 2005: 1).

Even Australia’s oldest and most polluting electricity generators, based in Victoria, were awarded certificates worth millions of dollars. A government spokesman defended the scheme, which is predicted to cost rate payers some \$2 billion over 9 years, saying: ‘It is not possible to distinguish between production or investment decisions made as a result of the scheme and those that would have been made anyway’ (Frew 2005: 11).

It is often argued by economists that markets are more efficient than centralised government decision-making because they automatically gather information and ensure that supply and demand are balanced and resources allocated efficiently. However, this sort of argument cannot be applied to artificial markets such as those created for pollution rights, since the need for monitoring and enforcement remains and is arguably even greater. For emissions trading to work properly, the regulator needs to know what emissions a company is making so as to check that it has sufficient permits. Too often inspection and verification does not happen.

In the Australian scheme, according to the government’s green paper, firms would estimate their own emissions and very large emitters would have to have their reported emissions audited by a third party (Department of Climate Change 2008: 42). Elsewhere, this is often done by transnational corporations such as PricewaterhouseCoopers that are also consultants and accountants to the companies whose emissions they are auditing. Critics say: “This can only lead to a severe conflict of interests, resulting in fraud and ultimately little guarantee of actual emissions reductions” (Bachram *et al.* 2003: 37).

There is even more scope for cooking the books when it comes to carbon sinks, such as tree plantations, because of the lack of accepted methods for calculating how much carbon is temporarily taken up by growing trees. Such trees may release their carbon early as a result of fires, disease or illegal logging, so plantations need to be monitored throughout their life cycles to ensure the carbon credits earned by planting them are deserved, but governments are only concerned with meeting targets in a comparatively short compliance period (Kill 2001: 10). Emissions trading also tends to protect very polluting or dirty industries by allowing them to buy emission permits rather than meet environmental standards. In this way, trading can reduce the pressure on companies to change production processes and introduce other measures to reduce their emissions.

An emissions trading scheme will see the price of electricity and manufactured goods rise but that is no guarantee that market participants will invest in alternatives, especially if polluters can pass on the extra cost to consumers, buy up environmentally dubious offsets, or be compensated for extra costs that might damage their international competitiveness.

Take the example of electricity generation. Currently electricity generators offer quantities of electricity into the National Electricity Market for a particular price for each time period the next day. If they have to pay for emission permits, their offer price will presumably be higher. The

system operator chooses the cheapest electricity for supplying the predicted demand for the next day. It only chooses electricity generated by renewable energy if it is cheaper or if there is not enough other electricity available. For any significant switch to renewable energy, carbon credits have to be expensive enough to make coal and gas-based electricity more expensive than renewable energy. This is not going to happen, given the proposed compensation for coal power generators having to buy permits and the proposed low set price for permits.

The oil and fossil fuel dependent companies who want to continue expanding their businesses are the very ones that are promoting emissions trading in the knowledge that it will enable them to continue to do this. A price of \$20 per ton of emissions is likely to increase the price of petrol by only 1 or 2 cents per litre, which is tiny compared with daily market fluctuations in oil prices, and anyway, will be counteracted by a reduction in the government fuel levy.

Social Equity

Market mechanisms impact social equity in various ways:

- through the impact of the higher prices that are supposed to provide the incentive to change to more environmental behaviour;
- because market mechanisms shift decision-making power about how the environment is protected from the realm of politics to the market, enabling those with most market power to have most say;
- because they prioritise economic considerations and their ineffectiveness is uncertain, which has consequences that are often felt more by disadvantaged people.

The inequitable impacts of higher prices caused by emissions trading has been recognised by the Australian government. It proposes to compensate poorer households for the expected increased costs. However, this will inevitably undermine the incentive provided by the scheme for change and highlights the inability of market mechanisms to effectively meet equity, environmental and economic concerns at once. Even with compensation, those on low incomes are less able to afford to buy new, more energy-efficient appliances such as fridges and cars and those on higher incomes will feel the higher prices less and may not have the incentive to become more energy efficient. Both tenants and landlords are less likely to spend money on energy saving measures, such as roof insulation or solar water heating, since then tenants cannot be sure of long-term returns in a house they do not own and landlords will not benefit from the energy savings themselves.

Also, higher prices will only work as an incentive to change behaviour if there are alternatives available. Otherwise they just serve to penalise some sectors of the community and are inequitable. For example, higher fuel prices have most impact on people who have to travel long distances to get to work and do not have access to public transport. Since it is often the poor who are forced to live in the outer suburbs, because that is where the cheapest housing can be found, such a measure would impose its greatest burden on those least able to pay. People in rural areas and on the outskirts of cities will be also worse off because of the longer distances they have to travel. And rural industries will also be badly hit because of the longer distances and the heavy fuel requirements of agricultural machinery.

Emissions trading puts the decisions about how emissions should be reduced into the hands of the market. For example, the Australian scheme allows limited use of offsets that are causing problems around the world. Those offering plantations as offsets look for the cheapest land to grow their trees, which is often in poor countries and often it is land that is not owned by individuals but rather occupied by indigenous people without formal property rights. Such

plantations can suck up ground water needed by local people for their own crops and the pesticides and fertilisers used on the plantations can pollute rivers, water sources and fish that may be a major source of food and livelihood for local people (Bachram 2004: 8). Corporations and foreign countries in the name of carbon offsets are also usurping existing forests. Critics point out that “projects in countries such as Uganda and Ecuador have already led to thousands of local communities dependant on forest areas being forced off their land as private Northern corporations backed by their governments, engage in a worldwide land-grab at wholesale prices” (Bachram *et al.* 2003: 16).

Within Australia, emission permits are likely to be bought up by the wealthiest companies and by market speculators, rather than by those producing products that the community values most highly and those that provide the best employment opportunities.

However, the greatest impact on social equity is likely to be the impact of global warming that will result from the ineffectiveness of emissions trading. The Dutch research institute RIVM calculates that, by allowing emissions trading, the actual reductions in greenhouse gases will be far less than one percent (Bachram 2004: 2). This failure to make significant reductions will have grave consequences for millions of people around the world. A study published in the prestigious science magazine *Nature* reports that climate change is causing a dramatic increase in deaths because it is causing increased malaria, malnutrition and diarrhoea in the poorest nations (Sample 2005: 12). The World Health Organisation (WHO) reported that, in 2000, “more than 150,000 premature deaths were attributed to various climate change impacts” as well as 5 million illnesses. It estimates that this annual toll will double by 2030 (cited in Vidal 2005, Sample 2005).

We know that low-lying island states are particularly at risk. UN scientists have also warned that the severe droughts experienced in 2005 could become a semi-permanent phenomenon as a result of climate change and that one in six countries are short of food as a result of these (Vidal and Radford 2005). The UN has also predicted that, as soon as 2010, there could be 50 million environmental refugees, that is people who have been displaced from their homes by problems such as drought, deforestation and soil degradation (Scheer 2005).

In light of these concerns it is necessary to ask whether governments should put so much faith in the market to solve environmental problems. Why is it assumed that increasing the cost of fossil fuel emissions will reduce their use rather than just increase everyone’s cost of living, something that has most impact on the poor and those on set incomes? Petrol prices have doubled in the past few years, causing much pain to individual and company budgets. Yet petrol usage has not declined significantly. There has been no mass shift to public transport, no major decline in car sales, no flood of affordable hybrid and electric cars onto the market. Why? Because the market has not been able to provide the alternatives required. Large-scale investment in public transport systems and cycleways, land-use planning, car emission standards, require government investment and intervention in the market.

We are fooling ourselves if we think there is a cheap solution to global warming. On the one hand we can pay through taxes for cooperative planned investment and suffer the higher prices that strong government regulation may result in. This way we will be paying directly for the changes we want. On the other hand we can pay higher prices in the hope that the market will come up with the right sort of investments and changes. In this case we are likely to be paying escalating prices as the price of carbon becomes a market commodity subject to financial speculation, but with minimal and uncertain environmental benefits.