13

Climate Change: The Greatest Example of Market Failure?

13.1. The Most Serious Issue of Our Time

It is the nature of science to be an area of contention and disgreement. Through challenging existing hypotheses and paradigms young scientists make careers. They are, by nature, critical and contentious. It is striking, therefore, how little disagreement there is over the question of whether climate change is really happening and whether it is human activities that are the cause. While a few scientific heretics maintain a range of bizarre theories in opposition to the mainstream view, the overwhelming weight of scientific evidence and opinion is that climate change is real, it is with us now, and that it is the way we behave as a species that has caused and is exacerbating it. The only reason that the sceptics are given so much attention is that it gives support to those who find the scientific conclusions so shocking that their only resort is denial.

Climate change is, quite simply, the most serious issue of our time. From the perspective of the human species we might say that it is the most serious issue of all time since, if we do not take the necessary action to address it, we will not have a future as a species. This is a problem that is being caused by the economic habits of the industrialised nations whose emissions vastly outweigh those of the world's other countries. Table 13.1 gives data for emissions of greenhouse gases by the leading polluters in terms of per capita emissions. Figure 13.1. indicates the rapid and significant divergence in the levels of CO_2 in the atmosphere if we follow a business-as-usual path, compared with one that makes significant and rapid attempts to cut CO_2 emissions to stay within the 2^{o} C warming scenario.

Although the overwhelming majority of the world's scientists are convinced that anthropogenic (i.e. man-made) climate change is a reality, publics in various countries are responding to this unpalatable message with the psychological response of denial—and as the evidence accumulates as to the seriousness of the problem, the level of denial is growing. A poll published in the UK *Times* on 14 November 2009,[1] just a month before the Copenhagen negotiations, reported that only 41% of British people stated a belief that climate change is an established scientific fact; 32% believed the link unproven, 8 believed that warming was real but it was not caused by human activity, and 15% believed that the earth is not warming at all.

Table 13.1. The Leading Polluters: Global Roll-Call of Shame

Country	$MTCO_2$ per	Rank	Total	Rank

	capita		$MTCO_2$	
Luxembourg	27.9	1	12.7	36
Australia	25.8	2	525.4	10
USA	24.4	3	7,241.5	1
Canada	23.1	4	746.9	6
New Zealand	18.7	5	77.2	22
Ireland	16.8	6	69.9	25
Estonia	15.3	7	20.7	34
Russian Federation	14.9	8	2,132.5	3
Czech Republic	14.2	9	145.6	16
Belgium	13.7	10	143.8	17
Germany	12.1	15	1,001.5	5
United Kingdom	10.9	19	657.4	7
Japan	10.6	21	1,359.9	4
France	9.2	26	558.4	9

Note: Data are for total greenhouse gas emissions, reported as equivalent to the impact of CO_2. Gases included are: CO2, CH4, N2O, PFCs, HFCs, SF6.
Source: World Resources Institute, Washington DC: http://cait.wri.org.

—Figure 13.1. Business as Usual is not an Option—

Climate change is a problem that, although it has been a central concern for environmentalists for three decades, has only reached the economics community in the past few years. Section 13.2 details the findings of an economist who was asked to provide a policy framework for tackling climate change, and how this was greeted by his peers. The favoured response amongst economists was to attempt to introduce a price for carbon into the global market system. This thinking and its limitations are outlined in Section 13.3. Finally, Section 13.4 gives space for the critics of market solutions to climate change, while Section 13.5 compares two policy proposals that seek to achieve fundamental structural change to the global economy as a necessary part of dealing with climate change.

13.2. *The Stern Review: An Economist Encounters the Environment*

To those with a sceptical view of the relationship between the economy and the environment it comes as no surprise that, once the UK government accepted the seriousness of the problem of climate change and required policy to address it, it turned to an economist rather than an environmental scientist. Sir Nicholas Stern, for he it was, was quite happy to admit his recent

acquaintance with the problem of climate change when he was called upon to produce the most important international report into the issue in 2005. Unless we are to assume that Sir Nicholas was chosen on the basis that his name would convey the appropriate message about the seriousness of the subject of study, I think we might be forgiven for thinking that the government's mind was already made up that it was going to define climate change as an economic rather than a political, social, cultural or even spiritual problem.

However, the review panel sifted the evidence they received from scientists and reached a conclusion that has not been popular with economists: the market system is failing and climate change is evidence of this. In discussion of climate change the phrase 'business as usual' is frequently used (and abbreviated to BAU). This means continuing along the same economic path, with economic growth bought at the cost of greater use of fossil fuels, a scenario which Stern judged to be unacceptable. BAU would result in a certain increase in global tempreatures of 2 degrees C by the end of this century and there is a 50% chance that the increase would be by as much as 5^{o}. Major change in the organisation of our economic life is thus unavoidable and the sooner that change occurs the cheaper it will be to achieve it. This is because the damage climate change will bring with it will cost an increasing amount to rectify (we can think of damage caused to infrastructure like roads and power-lines as a result of more powerful storms or floods, for example). Stern predicts that this could cost as much as 5% of GDP if you include only market impacts and as much as 11% if you include the negative impacts on health and the environment which will also have to be repaired or healed. The conclusion of the Review is that the sooner we start reducing CO_2 emissions the less of this costly damage we will experience. Box 13.1 summarises the most important findings of the Stern Review.

Box 13.1. Major Conclusions of the Stern Review

- CO2 emissions are caused by economic growth but policy to tackle climate change is not incompatible with economic growth;
- Favours the transition to a 'low carbon economy' which will 'bring challenges to competitiveness but also opportunities for growth';
- 'Policy to reduce emissions should be based on three essential elements: carbon pricing, technology policy, and removal of barriers to behavioural change';
- Argues for the pricing of carbon through trading, taxation or regulation;
- Need for government support for low-carbon and energy-efficient technologies
- What we do now can have only a limited effect on the climate over the next 40 or 50 years; what we do in the next 10 or 20 years can have a

profound effect on the climate in the second half of this century and in the next.

- By investing 1% of GDP now (the next 10-20 years) we will avoid losing 20% of GDP later (40-50 years)
- Markets for low-carbon energy products are likely to be worth at least $500bn per year by 2050, and perhaps much more. Individual companies and countries should position themselves to take advantage of these opportunities.

When Nicholas Stern described climate change as a 'the greatest market failure of all time' he was being true to his disciplinary inheritance in suggesting that if the globalised production and distribution market had functioned efficiently the problem would not have arisen. But what sort of market failure did he have in mind? One source of market failure is the problem of public goods, where the market price of a good that has been produced does not include the social benefits that arise from its production. We could see climate change fitting into this definition, since we all share the benefits of the environment but do not pay for them. Since the use of the global atmosphere is not costed, this 'free good' is over-used as a result of the emissions of carbon dioxide in production and transport. Dealing with this public-goods aspect of the problem may be possible through the sorts of international negotiations that took place in Copenhagen in December 2009. Internalising the externality, although complex, is probably more straightforward and involves putting a price on carbon.

We saw in Chapter 3 that neoclassical economics describes the negative consequences of economic activity that occur outside the production unit as 'externalities' and this is one way we might conceive of climate change. Considering the climate-change consequences of CO_2 emissions as an 'externality' helps to illustrate the problem such a theory has with placing the economy, since while climate change might be external for the purposes of any particular factory, we are all observing more signs every year that it is very much an internal problem in terms of our environment. Policies may be developed to 'internalise' the externality by making it expensive to produce CO_2 and thus including its production in the cost curve of the firm. This will be achieved by creating a price for carbon: 'Carbon prices must be raised to transmit the social costs of greenhouse gases to the everyday decisions of billions of firms and people' (Nordhaus, 2007: 689).

The most contentious conclusion of the Stern Report—at least as far as neoclassical economists were concerned—was the choice of discount rate. After publication the report was immediately challenged for suggesting that the costs as time went by would increase very rapidly, making it essential to introduce pro-climate policies as rapidly as possible. In making this estimate the members of the Review team had to base it on some assumption about

how costs would change over time, by using the standard orthodox procedure of introducing a 'discount rate'. As we saw in Chapter 3, working out the costs and benefits of any policy depends on the discount rate that is applied: the higher the discount rate, the lower the future cost of actions taken today. The Stern Review's conclusion that we need to act rapidly to tackle climate change resulted from his setting a very low discount rate.

Conventional economists were shocked by the consequences for the economy and challenged this level of discount rate on the basis that it had exaggerated the effects of climate change in the distant future. Stern was basing all his conclusions on statistical models about the probably of events occurring. The possibility that the planet might cease to exist would clearly have a major impact on people's 'time preference', i.e. their preference for consuming now rather than in a (possibly non-existent) tomorrow. As Ackermann explains, 'Stern observed that a natural or man-made disaster could destroy the human race; he arbitrarily assumed the probably of such a disaster to be 0.1 percent per year, and set pure time preference at that rate. That is, Stern assumed that we are only 99.9 percent sure that humanity will still be here next year, so we should consider the well-being of people next year to be 99.9 percent as important as people today.' (Ackerman, 2009: 86).

Nordhaus, a neoclassical economist, took issue with Stern's choice of this low level of discount rate on the basis that it is unrealistic and underestimates the ability of the economy to become more productive and to solve the climate-change problem through technological advance:

> The logic of the climate-policy ramp is straightforward. In a world where capital is productive, the highest-return investments today are primarily in tangible, technological, and human capital, including research and development on low-carbon technologies. In the coming decades, damages are predicted to rise relative to output. As that occurs, it becomes efficient to shift investments toward more intensive emissions reductions. The exact mix and timing of emissions reductions depend upon details of costs, damages, and the extent to which climate change and damages are nonlinear and irreversible. (Nordhaus, 2007: 687).

Others have argued, to the contrary, that this quantitative analysis underestimates altogether the seriousness of the problem (Spash, 2007). It is also noteworthy that the conventional economists have focused so much of their discussion around concern for the appropriate discount rate rather than considering how the essential structure of the economy and increasing levels of consumption might be a more significant source for concern.

13.3. *Pricing Carbon: Theory and Consequent Policies*

Climate change is a difficult area for policy-makers for a number of reasons.

1. *Uncertainty*: There is a high degree of uncertainty about the problem itself (how much temperature rise, over what time period, and what the consequences will be) and over the likely effectiveness of solutions in an area where there is no experience to base policy on.
2. *Credibility*: Policy-makers lack credibility, since citizens may well consider that their introduction of taxes, for example, is an attempt to raise revenue rather than to control climate change.
3. *Impracticality*: Effective policies to tackle climate change, such as the introduction of a scheme of personal emissions for the production of CO_2, are likely to be labour-intensive and thus costly on the public purse.
4. *Impersonality*: Whatever we do now, climate is likely to cause a deterioration in the situation we face for the rest of our lifetimes, undermining our incentive to take action in our own self-interest.

Orthodox economists have come up with a range of market-based solutions to the problem of climate change, which focus around creating a price for carbon so that pollution is no longer a free good. Creating a carbon price will be way of implementing the 'polluter pays' principle in the area of climate change—companies will no longer be able to treat the global atmosphere as a free dumping ground. Introducing such a cost would also create an incentive for polluting companies to invest in technologies that reduce their energy use and to switch to renewable forms of energy generation. So while there is widespread agreement with the Stern conclusion that 'Creating a transparent and comparable carbon price signal around the world is an urgent challenge for international collective action' (Stern, 2007: 530), there is considerable debate about the best way of creating that price, both in terms of efficiency and equity.

The first debate is about where the policy is implemented—this is the so-called upstream vs. downstream debate. Upstream we have the producers, so we might impose a tax on them, for example, when they extract fossil fuels from the ground. At the other end of the chain—downstream—we have consumers, whose emissions might be controlled through giving them a limited allowance per year, for example. Upstream solutions tend to be cheaper, since there is a smaller number of producers, but how can we be sure that the costs will all be passed on to consumers? On the other hand, downstream solutions, involving millions of consumers, are expensive to administer but they do place the responsibility on citizens to change their individual behaviour.

Beyond that, the decision that needs to be made is fundamentally between a regulatory system, limiting and taxing CO_2 emissions, and a market solution which again imposes a limit but then permits those who

produce emissions to trade between themselves the right to do so. Those who support a system of emissions trading argue that it is efficient, since it ensures that those who make the reductions will be those who can do so most cheaply and they will then sell their emissions rights to others, for whom that is a cheaper solution than reducing their own emissions. Such a scheme would also have the advantage that it would follow naturally from fixed caps negotiated internationally, and would provide a simple mechanism for governments to implement these caps nationally within fixed aggregate limits. However, following the failure of the Copenhagen negotiations, few would be sanguine about the likelihood of such binding international agreements being reached.

Clearly such a case is most popular amongst more mainstream economists and businesspeople. The latter will see an economic advantage, since the rights to produce CO_2 that they will receive will constitute the creation of something of real value which they can sell, potentially increasing their profits. From a market perspective, trading will also be naturally self-balancing and will adjust in response to external price shocks, whereas taxes would remain fixed whatever might happen to, for example, the price of oil.

The other main policy proposal for pricing carbon is to introduce a form of carbon taxation. While carbon trading has gained more media attention and rhetorical support, the initial and most obvious policy to reduce CO_2 emissions is to tax them. The most popular proposal is for a tax that is applied as a fuel tax, based on the amount of fuel sold. When the fossil fuel is burnt CO_2 is released and the quantity is directly related to the amount of fossil fuel consumed. The tax could be imposed in a number of different ways. The simplest would be an upstream tax, imposed on oil and coal companies when they extract the fuel from the ground. This would ensure that the total quantity of fuel were taxed and would be simple and cheap to administer. It would then be the responsibility of the fuel companies to pass the cost on to intermediate producers who would then in turn pass the cost on to consumers.

The immediate appeal of a system of taxation is that it would address all polluters, not just the businesses who would become part of a carbon trading system. Although taxation systems are costly to establish and to monitor, they do not involve the transaction and negotiation costs that are present with any trading system. The advantage of a market system is that it would be self-adjusting, i.e. the price of a CO_2 permit would rise or fall according to demand. However, this could also be a significant disadvantage for businesses, who would not be able to have a fixed idea about the cost of their emissions when producing business plans. There might be a high degree of volatility in the price of CO_2 emissions which could make planning difficult. A taxation system, by contrast, would be clear and it might be fixed on a gently rising trend so that businesses could plan for the cost of fossil fuels to

rise gradually over time, and they could factor this in to their planning. Although such a cost would be unwelcome it would at least be foreseen.

Perhaps the most attractive aspect of a taxation proposal is that it is a type of policy which is already familiar to both taxpayers and policy-makers. Creating carbon markets, by contrast, is an innovative and highly complex process. As is clear from the first experiment with such a policy—the European ETS scheme described in Box 13.2—inexperience can lead to unexpected outcomes that may work against the objective of the policy. A tax would also generate revenues, which could be reinvested in the infrastructure of a low-carbon economy: being made available as grants for home insulation or transition grants for businesses to install renewable energy systems, for example. This apparent 'benefit' is something of a double-edged sword, however, since the public is sceptical about pro-environment taxes, which they suspect may be introduced primarily to generate revenue rather than to tackle the environmental problem.

Box 13.2. *The EU Emissions Trading Scheme*

The EU Emissions Trading Scheme was a bold attempt to apply neoclassical methods to the most serious market failure of all: climate change. The scheme involved issuing a number of permits to emit carbon dioxide and giving them to 5,000 of the EU's biggest emitters, within a framework of the limits set by the Kyoto Treaty. The corporations that received the permits could then trade with each other so that those who could more cheaply reduce their emission sold the permits to those who found it more expensive to reduce theirs. It was estimated that the value of permits in the first round of trading was €170bn.: this is a huge value that can be created when the global atmosphere is rationed in this way and critics of the scheme have suggested that this value should have been widely shared, not allocated to a narrow range of corporations. In addition, firms have increased prices to reflect the pricing of CO2 emissions, although they were themselves given the right to produce the gas free of charge. The World Wildlife Fund estimated that German utility companies will make windfall profits of between €31 and €64 billion from the scheme by 2012. The scheme was also criticized because only 43% of EU emissions were included.

Any carbon trading scheme is designed and implemented by politicians and is therefore open to political influence at the national level—with Finland, Lithuania, Luxembourg and Slovakia all being allocated 25% more permits than their recent emissions would require—and at the local level, with powerful companies exerting influence on their governments to receive an unfair share of permits. Such a system is also based in the culture of business and corporations have played a major role in designing the ETS. For this reasons it reflects their interests and only mildly constrains their

activity. Perhaps most seriously of all, the ETS can encourage companies to keep polluting plants open since, if they do not, they will lose their share of permits. The weakness of the original version of the ETS became clear in 2006 when it was on the verge of collapse because governments had given away so many licences that no company was required to do more than it would have done if the scheme had not existed. Hence the price for the permits fell through the floor, incapacitating the market.

13.4. *Taking the Problem in the Round*

For critics, the idea of market trading to reduce CO_2 emissions is a symptom of the economic ideology fashionable in the 20th century. This ideology suggested that markets were efficient problem-solving mechanisms and that government control and intervention were to be eschewed. This explains the response to a pollution problem being found in the realm of trading rather than legislation, as was the case with the 1956 Clean Air Act. Critics raise serious questions about the usefulness, fairness and practicality of a market solution to the problem of climate change.

How can we be sure that the market analogy will extend to a virtual good like the global atmosphere?

Rather than proposing some form of trading as a solution to climate change we might very well argue that climate change is evidence not of market failure, but of the weakness of the market as a basic distribution mechanism within the global economy. Rather than taking the market analogy into the field of climate change, perhaps we would do better to raise fundamental and critical questions about how the market economy functions and whether it is, in fact, the problem rather than the solution (Spash, 2010). The price system is a basic structure without which the market cannot function, but climate change means that the whole price system is in error: 'the problem lies with the whole economic process of business enterprise not some simple bilateral pollution problem which is a minor aberration of an otherwise perfect market system. Every product in the market place has embodied energy, is related to GHG emissions, and therefore has the "wrong" price.' (Spash, 2007: 709). Even if we are convinced that market solutions have something to offer, we have no experience of creating pseudo-markets for goods—like the right to produce carbon dioxide—that do not really exist. Our experience of creating pseudo-markets in the area of public services such as health-care, transport and electricity supply have been mixed at best. Since our very survival depends on finding the right policy we are taking a big gamble in assuming that we can create a functional market for CO_2 emissions.

Who establishes the market and sets the price?

As we saw above, the market for carbon is not like the market for carrots. There are not a multiplicity of potential producers who can find a patch of land and some seed and begin to grow the rather amorphous product that is being traded. The permits to produce carbon dioxide that were sold in the EU Emissions Trading Scheme were created artificially by a power-bloc of Western states. Their existence relies on a system of policing and control that is not guaranteed. If a company exceeds the ration for which it has 'bought' these permits who will know? The market system's claim to superiority relies on the neutral system of price-setting, and yet in a carbon market the price would arise as a result of political decisions about the supply of permits. Such a process would inevitably be subject to massive political pressure, undermining any claim to scientific neutrality.

Are we all equally powerful consumers?

A system of trading carbon permits would be fine in theory, so long as the cap on the total quantity of emissions permitted was a strict one and all those trading had equally power within the market. However, this is clearly not the case. The first implementation problem of such thinking is deciding how the permits will be allocated. As described in Box 13.2, the ETS proved how any such system would be subject to massive lobbying pressure from corporate interests.

Any such system must be set within a global framework for CO_2 reductions, but the experience of Copenhagen makes it clear how difficult it will be to put such a framework in place. Negotiations foundered because the more industrialized and richer countries, whose citizens enjoy a higher standard of living and produce more CO_2 as a consequence, argue that the share of emissions should be based on historical emissions levels (sometimes referred to as grandfathering). Others, such as the Global Commons Institute in London, argue that the total emissions that can be produced should be shared fairly amongst the world's citizens on a per capita basis (how this would look in practice is illustrated in Figure 14.2 in the following chapter). This, they argue, is the only just allocation, and the only one that is likely to result in an agreement. Figure 13.2 indicates how unfairly CO_2 emissions are shared currently. Any global trading system based on equal per-capita emissions would result in huge transfers of value (many have argued that energy-efficient technologies would be a good way of making this transfer) from richer countries to poorer ones.

—Figure 13.2. Carbon emissions per person on a global basis—

An additional problem with measuring emissions results from the fact that the countries that we need to find a way of allocating the emissions that were created to produce consumer goods—so-called 'embedded emissions'. Should these be included in the totals of the countries where the goods are produced or where they are consumed? Figure 13.3 indicates the extent of 'indirect' emissions, i.e. emissions embedded in export goods and produced when they are transported across the globe. It does not seem right for China to be held responsible for emissions created when they produce TV sets that will be watched by US or European citizens.

—Figure 13.3. Direct and Indirect Emissions – figures form the Carbon Trust—

13.5. *Changing the Climate or Changing our Lifestyle?*

The solutions that have been covered so far are at the level of nations or large corporations. After a global agreement is reached, how are the emissions that a country is permitted to be shared between the people living in that country? If they imposed on producers and only affect consumers via prices increases, then those with less disposable income will see a massive reduction in their standard of living. Two competing policies are being discussed which address this problem by allocating the right to produce CO_2 equally between citizens of a country. TEQs or 'tradable emissions quotas' operate like carbon rations, so that you would need to spend some as well as money if you were to buy anything that had carbon embedded in it. The other is a system called 'Cap and Share', which would allocate a permit representing the right to produce a share of carbon dioxide to each person. S/he could then decide whether to use it in burning up fossil fuel, sell it to somebody else, or destroy it. The designs and benefits and disadvantages of the two schemes are presented in Table 13.2. When comparing these sorts of schemes it can be concluded that a personal allowance scheme forces each consumer to think very carefully about how they spend their ration of CO_2 and thus brings about responsibility and education. However, such a scheme is hugely complex and difficult to administer.

By contrast, the cap-and-share system is easier to set up but it might be too abstract for people to grasp what it means to be given a carbon licence as an individual and they might not be able to understand its importance. Any scheme like this which creates an economic value through introducing a pseudo-market can benefit those who are frugal in their use of fossil fuels, since they can sell what they do not use to others and thus generate an income for themselves. Both schemes have the advantage of being fair and also of creating a pressure to change lifestyles directly, rather than relying on the indirect mechanism of the price system. Hence people will learn about how

their consumption decisions relate to climate change, rather than just finding prices constantly rising.

Beyond this sort of discussion we need to consider what it is about the way we live that is generating this vast amount of carbon dioxide. Do we really need to consume in the way that we do, and is it actually making us any happier. This is a whole discussion in itself and revolves around the issue of economic growth and whether it is a suitable aim for an economic system. Those arguments were presented in Chapter 10 and it is important to link that discussion to the solutions to climate change presented here.

Table 13.2. Carbon Quota or Cap-and-Share?

	Tradable Energy Quotas (TEQs)	Cap-and-Share
Basis of sharing	Equal per capita shares	Equal per capita shares
Where is the cap enforced?	Downstream: Individuals and companies would need to surrender TEQs units in order to purchase fossil energy	Upstream: Only companies importing or producing fossil fuels in the economy concerned would need to have permits.
Main advantages	1. The guarantee that the budgeted energy descent will be achieved. 2. The assured ration of energy for individuals at a time of scarcity 3. The long term budget, which gives time to plan ahead. 4. Specified in terms of energy (not money), so it involves everyone in energy-planning 5. Since TEQs (not money) are the *numéraire*, the system is resilient to the deep economic changes which are in prospect. 6. The system depends on local and individual ingenuity to develop solutions. 7. It generates a common purpose between all participants –individuals, industry, the government	1. C&S guarantees that any level of GHG emissions can be achieved by acting at the point at which fossil energy enters the economy 2. It shares the ownership of the atmospheric commons equitably and thus ensures that the burden of climate policy is also equitable 3. The poor are compensated for both the rise in their personal fuel purchases and for the rise in the cost of energy 4. A long term plan for tightening the cap gives a chance to plan ahead. 5. C&S works through the price mechanism and does not have a dual accounting system. 6. C&S could build up into a system that provided a framework for a global climate treaty based on per capita shares and transfers of value from over-polluting nations to the poorer nations

Source: The table is summarized from a briefing note prepared by the late Will Howard of Cap and Share based on information provided by FEASTA and David Fleming, originators of the two schemes.

Nothing could be more important than reducing our emissions of greenhouse gases. How we achieve this depends fundamentally on the way our economy is structured and whether the market system is part of the solution or the primary problem. The line being followed by Western governments was largely set by the Stern review, which attempted to sell solutions to climate change as another growth opportunity: 'Tackling climate change is the pro-growth strategy for the longer term, and it can be done in away that does not cap the aspirations for growth of rich or poor countries.' (Stern, 2006: viii). Green and ecological economists, in contrast, are highly critical of this approach. They would argue that changing our definition of prosperity and rethinking what a good life is for is a prerequisite to redesigning the global economy along sustainable lines. Such an economy would be radically different from the one we live with today.

Summary Questions

- How would you justify setting a zero discount rate for the damage caused by CO_2 emissions?
- If you were the CEO of an oil company would you rather have a policy of carbon taxes or emissions quotas?
- If you were a pensioner on a low income would you vote for a policy of Cap-and-Share or Tradable Emissions quotas?
- How should rich countries compensate poor ones for their past and current CO_2 emissions?

Note

1. A report of this poll can be found here: http://www.timesonline.co.uk/tol/news/environment/article6916648.ece

Further Reading

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