

# MANAGING ATMOSPHERIC COMMONS

**OLIVER TICKELL examines different proposals for managing the atmospheric commons with regard to the threat of climate change, and outlines his own proposal, Kyoto2.**

The atmosphere is a “global commons” — a resource that is the common property of humanity, and for that matter of non-human life forms whose needs we also need to recognize and respect. Our present situation is that of a “tragedy of the commons”, to borrow the title of biologist Garrett Hardin’s famous essay — or, as he later modified his resonant phrase, “the tragedy of the unregulated commons”.

The example set out by Hardin was that of graziers sharing a pasture, each receiving a marginal personal benefit by increasing the size of their herd, but all losing as a result, as the productivity of the overgrazed pasture diminishes:

“The rational herdsman concludes that the only sensible course for him to pursue is to add another animal to his herd . . . But this is the conclusion reached by each and every rational herdsman sharing a commons. Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit — in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all.”<sup>1</sup>

The situation he describes does not perfectly fit actual grazing commons, which are typically managed cooperatively and where precise rights and limitations apply. As George Monbiot writes:

“Hardin’s paper had one critical flaw. He had assumed that individuals can be as selfish as they like in a commons, because there is no one to stop them. In reality, traditional commons are closely regulated by the people who live there. In a true commons, everyone watches everyone else, for they know that anyone over-exploiting a resource is exploiting them.”<sup>2</sup>

Hardin’s analysis, however, applies well to the atmospheric commons and its pollution with greenhouse gases. Each country, company or individual benefits in some way from their individual production of greenhouse gases, but the global good suffers from the resulting climate change. And indeed, Hardin himself extended his discussion to the ‘negative commons’ of pollution:

“In a reverse way, the tragedy of the commons reappears in problems of pollution. Here it is not a question of taking something out of the commons, but of putting something in - sewage, or chemical, radioactive, and heat wastes into water; noxious and dangerous fumes into the air, and distracting and unpleasant advertising signs into the line of sight . . . The rational man finds that his share of the cost of the wastes he discharges into the commons is less than the cost of purifying his wastes before releasing them.

The tragedy of the commons as a food basket is averted by private property, or something formally like it. But the air and waters surrounding us cannot readily be fenced, and so

the tragedy of the commons as a cesspool must be prevented by different means, by coercive laws or taxing devices that make it cheaper for the polluter to treat his pollutants than to discharge them untreated.”

Or, as Margaret Thatcher put it: ‘You cannot divide the atmosphere into segments and say: “All right! We will look after our bit and you look after yours!”’

There are, however, (as Hardin failed to appreciate) diverse ways of managing commonly owned land, some of which assign temporary property rights, while other don’t. For example, rights to land use can be attached to specific houses; or allocated on an annual basis to commoners through random lot, auction or licenses; or rented; or limited to the amount of stock a farmer can over-winter on their own land. Other commons may remain open to all comers provided they conform to restrictions: for example limitations on the size of fishing net or crab pot used, or on the size of boat or engine, or on the area or season in which hunting can take place.

Similarly, there are many possible ways to manage the atmospheric commons, and we have to find a way that is effective in preventing climate change, and does not enclose it by delivering property rights over it into the hands of a relatively few, unaccountable owners. We shall only be able to do this through a giant international effort in which we all cooperate.

## The Kyoto Protocol

So far, that international co-operation has led to the 1997 Kyoto Protocol, which came into force in 2005. This was almost certainly the best that could be agreed at the time, but it has failed. It is a “cap and trade” system — designed to limit global carbon emissions, and privatize the right to emit. Unfortunately it remains without an overall cap, leaving only the “trade” element.

It has given rise to a multi-billion dollar carbon trading system, based around a substantial assortment of permits and credits related to reductions in greenhouse gas emissions; but some of these reductions are entirely notional and in the worst cases greenhouse gas emissions are actually being stimulated by the Kyoto Protocol. Total world emissions of greenhouse gases have remained on a steep upwards trajectory. In creating the global carbon trading business, the Kyoto Protocol has spawned a powerful institutional vested interest in the continuance of the fundamentally flawed approach that it represents.

## Contraction And Convergence

Several alternative proposals have been made for tackling the problems of global heating which recognize the atmosphere as a global commons. The best known of these is Contraction and Convergence (C&C), so named by its principal advocate, Aubrey Meyer of the Global Commons Institute. He and

Nicholas Hildyard elegantly frame the parameters we need to bear in mind.

“Equity and everybody’s rights to equal ecological space, however, are surely the starting points. No individual should be denied the possibility of surviving climatic change because of their poverty, race, class, gender, religion or geographical location. Likewise, any ‘solution’ that denies people in the South the resources and technologies that they may seek to build (or rebuild) sustainable livelihoods in a rapidly warming world, whilst permitting the use . . . of those resources and technologies in the North, would be profoundly hypocritical . . . The developing countries are not the ones which have created the problem of global warming - and expecting them to forgo development options in order to correct a problem caused mainly by others is patently unfair.”<sup>3</sup>

But rather than setting out the many possible approaches to managing the atmospheric commons to achieve their declared objectives, they leap immediately to their solution:

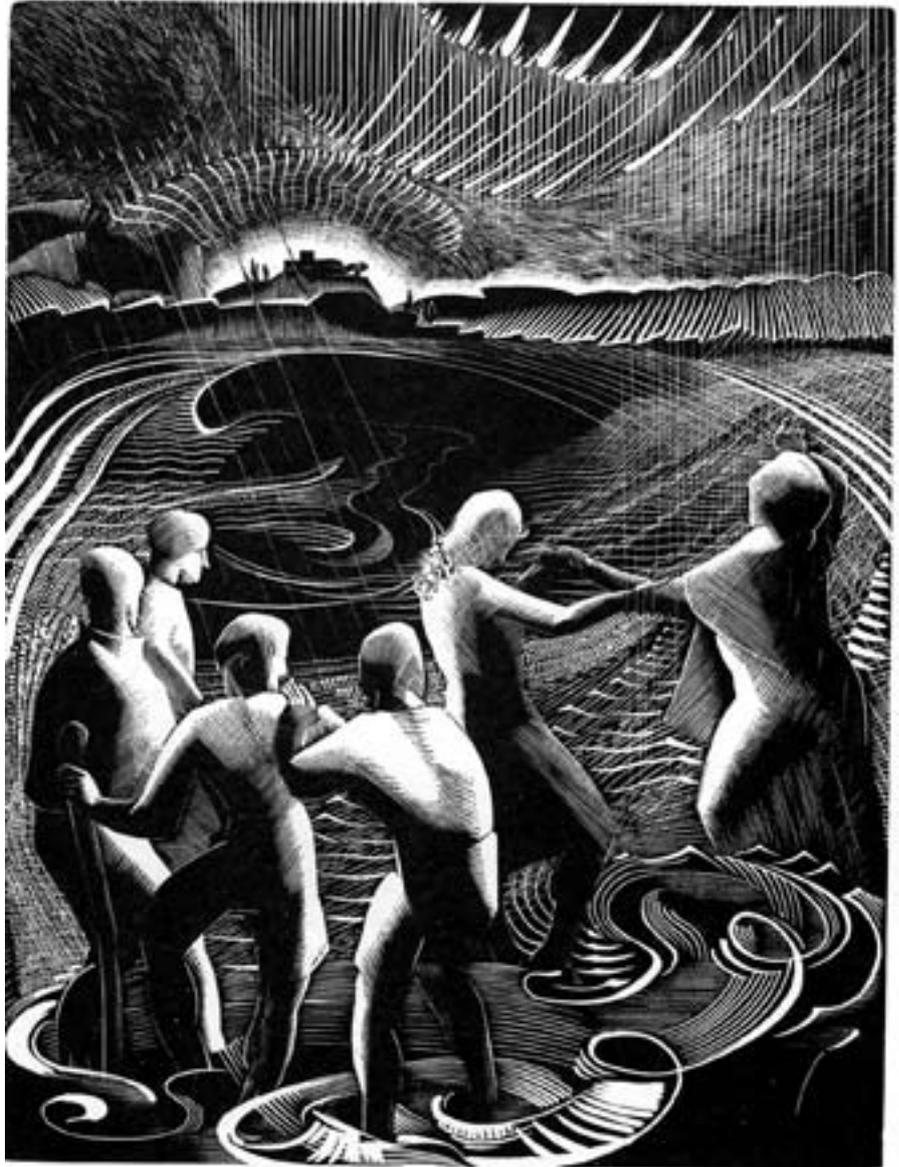
“Many Southern countries argue for emission targets to be set on a per capita basis, rather than merely a percentage increase or reduction over 1990 levels. The aim would be for per capita emissions globally to converge, allowing developing countries to increase their per capita emissions upwards, while those of developed countries would contract to meet them. This jointly-agreed pattern of carbon use would take place under an agreed carbon ceiling.”

The environmental economist Michael Grubb, who, in 1990, was the first to set out the theory that became C&C:

“There is only one really solid basis for allocation. That is to recognize equal per capita entitlements to carbon emissions: and, consequently, initially to allocate carbon emission permits in proportion to national population. The moral principle is simple, namely that every human has an equal right to use the atmospheric resource. The economic principle follows directly - those who exceed their entitlement should pay for doing so. The practical effect is obvious: it would require the industrialized world, with high per capita energy consumption, to assist the developing world with efficient technology and technical services . . . The net effect is to achieve in concrete terms what most economists argue for in theory: the polluter pays the cost of exploiting the atmospheric resource.”<sup>4</sup>

The formulators of C&C skip over a host of assumptions without, apparently, even realizing that they are doing so. Here is my attempt to specify those underlying assumptions, together with the other defining characteristics of C&C:

- greenhouse gases should be regulated at the country level;
- based on the country in which a given emission takes place;
- a series of global caps on emissions should be set for given periods,



Gertrude Hermes, *The Slough of Despond*, 1928

- divided into tradable greenhouse gas emissions permits,
- to be allocated free of charge to national governments,
- on a per capita of adult population basis,
- as of a fixed date to avoid any perverse incentive for population increase.

Advocates of C&C assume that the allocation of per capita greenhouse gas emission rights arises spontaneously out of the recognition of the atmosphere as a global commons. Their approach is, however, in fact, quite the opposite: it is a proposal to “enclose” the atmospheric commons and make it the tradable property of national governments — the equivalent of the conversion of clan lands in the Scottish Highlands, originally owned by the chieftain in trust for the clan as a whole, into the chieftains’ private property. As Karl Marx explained in *The People’s Paper* in 1853:

“Every one of the usages and traditions of the Scottish Gaels reposes on the supposition that the members of the dan belong to one and the same family. The ‘great man’, the chieftain of the clan, is on the one hand quite as arbitrary, on the other quite as confined in his power, by consanguinity, etc, as every father of a family. To the clan, to the family, belonged the district in which it had established itself, exactly as in Russia, the land occupied by a community of peasants belongs, not to the individual peasants, but to the

community. Thus the district was the common property of the family.”<sup>5</sup>

The conversion of clan land into the chieftains’ private property began before the battle of Culloden in 1746 but greatly accelerated thereafter with the conversion of military service into money rent. This process later led to the infamous “Highland Clearances” which took place over the ensuing century or so.

This historical precedent indicates that there are potential dangers in the approach advocated by C&C. For example, oppressive governments might keep their people in a state of deliberate “carbon poverty” in order to maintain a supply of surplus emissions rights for “export” — much as subsistence Highland agriculture was cleared away in favour of an export-oriented economy supplying buoyant English markets for wool, mutton, beef, kelp, whisky, fish and timber. This possibility is explored by William Nordhaus, Sterling Professor of Economics at Yale University, who argues that such a system:

“in essence prints money for those in control of the permits. Such wealth creation is potentially dangerous because the value of the permits can be used for non-environmental purposes by the country’s leadership rather than to reduce

emissions. It would probably become common practice for dictators and corrupt administrators to sell part of their permits, pocket the proceeds, and enjoy first-growths and song along the Riviera.”<sup>6</sup>

And as Charlie Kronick, climate campaigner at Greenpeace UK, observes:

“Both the contraction and convergence targets are negotiable, not fixed and leave the delivery to trading a global commodity — in this case carbon — in a market over which the poorest have little control. It is hard to cite an example of a single trade in a global commodity — oil, tin, coffee, soya beans, timber, etc, etc — that has resulted in a measurable increase in wealth for most communities in the developing world or improvement in levels of livelihood.”<sup>7</sup>

C&C would also rule out more cooperative international approaches to manage the atmosphere for the common good, and thus represents an enormous opportunity cost. We need to raise substantial sums of money every year to pay for adaptation to climate change, the development of low-carbon technologies, projects that conserve soils, forests and other ecosystems and research into possible geo-engineering solutions.

## Upstream or Downstream?

### Who Should Be Accountable: Corporations, Countries or Consumers?

Carbon reduction targets set by the Climate Convention are allocated to countries, an approach inherited by the Kyoto Protocol and by implication the Bali Roadmap. The whole idea of territorial accounting is hard to justify, however. It has rather just been assumed that this is how it should be done. This may simply be because the parties to international agreements are governments, and governments have a natural tendency to see themselves as key players.

In fact there are many good reasons for abandoning this approach. “Embodied carbon” is freely traded across national boundaries in energy, products, electricity, manufactured goods, and services from telecoms to tourism. As Richard Wing asks in a letter to *New Scientist*: “If a Japanese company owns a factory in China which is making goods to sell to customers in the US, then whose emissions are they?” Adding to the complexity of the problem, the factory might be burning Australian coal, and Iranian oil, produced by corporations domiciled in Europe or Singapore, owned by shareholders scattered across the globe. Under the UN Framework Convention on Climate Change, Wing’s question has a clear answer, if not a fair one: the emissions belong to China.

This approach has unhelpful consequences. For example it has encouraged rich countries to deindustrialize and shift their manufacturing base to developing countries. Most of the incentive for this has probably come from labour costs, but the avoidance of controls on greenhouse gas emissions has also played a part. Thus, in theory, UK greenhouse gas emissions have fallen by 15 per cent since 1990; but an assessment based on levels of consumption, including imports, suggests that there has been a rise of 19 per cent over the same period.

One solution would be to create a more sophisticated system of territorial accounting, in which the emissions associated with a product or service are transferred with the product from country to country until accounted in the territory of consumption. To do this, however would involve an enormous carbon audit and accounting exercise which would be both error prone and highly costly.

There are two main alternatives to holding national governments accountable: either target the companies that

command the business processes giving rise to greenhouse gas emissions, or else the individual consumers.

One economic theory to apply here is the Coase Theorem, which holds that it does not really matter which party in such a situation carries the initial cost — if companies are targeted they will pass the cost on to consumers; while if consumers are targeted and have to pay more they will buy less from the companies. What matters is the transaction costs, how easy and cheap the whole accounting system is. This clearly points towards holding companies responsible, as they are smaller in number and easier to regulate.

The solution proposed by Kyoto2 is therefore to do away with territorial accounting altogether, and replace it with “upstream accounting” based on the production of fossil fuels and of other industrial non-fossil fuel greenhouse gases, for example from cement production, aviation, industrial processes and nitrate fertilizer.

This would require companies at or close to the source of these emissions to surrender permits based on the greenhouse gas pollution implicit in their output. In the case of fossil fuels, this would be at the points where flows are concentrated and easily measured, such as the oil refinery, coal washing station, gas pipeline or gas tanker.

The logic of capping carbon at these points is well summed up by Peter Barnes:

“Carbon dioxide doesn’t trickle from a few smokestacks, it gushes from virtually everywhere. That makes it hard to cap where it enters the atmosphere. Fortunately, there’s a much easier place to cap carbon: where it enters the economy. Think of carbon as flowing through the economy the way water flows through a garden sprinkler. To reduce the flow of water, you wouldn’t plug holes in the sprinklers; you’d turn a valve at the spigot. In like manner, to reduce the flow of carbon, we can crank down a valve where carbon enters the economy.”

The tap that can turn off the flow of carbon is in the hands of a comparatively small number of large companies.

Oliver Tickell

The only apparent source for these funds, capable of delivering them on the required scale, is the sale of greenhouse gas production permits. Give the permits away, and the opportunity is lost. Hence the Kyoto2 approach is to sell the permits to the polluters and to reinvest the funds so raised.

By contrast C&C would transfer large sums of money from governments of countries such as the USA, EU nations and Japan, which would need to buy permits, to governments of (mainly populous) countries with relatively low greenhouse gas emissions. This money would then be theirs to spend as they wished.

It is easy to see why the beneficiary governments would favour this arrangement, but hard to see how donor governments would justify the transfers of tens or hundreds of billions of taxpayers' funds to electorates clamouring (as electorates always will) for tax cuts and higher spending on health, education, pensions and housing - all the more so as these vast intergovernmental transfers would do nothing in themselves to mitigate or adapt to climate change.

### Cap and Share

The Cap and Share (C&S) approach has been developed by a group of economists, green intellectuals and other free-thinkers, among them Richard Douthwaite in Ireland and Molly Scott Cato in the UK.<sup>8</sup> It is in effect a variant of C&C, and proposes that, each year:

- an independent trust sets a cap for the year based on scientific advice;
- production authorization permits (PAPs) are distributed equally to all global citizens;
- people can then sell their PAPs, give them away or withdraw them to reduce the effective cap;
- primary fossil fuel producers have to buy PAPs to the volume of their production;

5 inspectors enforce the cap by comparing companies' fossil fuel production to the number of PAPs submitted.

This system represents a significant improvement on C&C in that:

- it is a genuine system for allocating rights to the atmospheric commons, with the rights going directly to individuals and communities rather than governments.
- it avoids the focus on countries and governments which is key to C&C;
- emissions are regulated "upstream" at or close to the point of production of fossil fuels, not at the points of emission; (see box)
- while its ultimate aim is to become global, the system could initially be adopted by individual countries and groups of countries.

The plan (as it is now), however, has some drawbacks, including the following :

- In distributing the rights equally to all global citizens, the benefits are distributed per capita rather than according to need, and the benefits offered by Kyoto2 of a fund of around 1 trillion per year to spend on addressing the causes and the consequences of climate change are forgone.
- Emissions from deforestation, agriculture and other land-based sources would not be addressed by the cap (which applies to fossil fuels only) or by spending measures (since there are none).

The latest discussion version (5) of C&S does, however, allow for up to 5 per cent of greenhouse PAPs to be sold for the benefit of a Transition Fund to finance capital projects related to climate change. This moves C&S significantly closer to the Kyoto2 model the difference being one of how much money should be put into the Transition Fund, which is broadly equivalent to Kyoto2's Climate Change Fund. The gap between the two approaches, such as it is, may yet be bridged.

C&S does now seem to be gaining significant traction: in particular Ireland is reportedly considering adoption of C&S as a means of achieving its domestic targets to reduce greenhouse gas emissions.<sup>9</sup>

### Carbon Rationing with Tradable Quotas

A variant of this general approach, independently conceived by economist David Fleming and social innovator Mayer Hillman, calls for a system of carbon rationing with tradable "personal carbon quotas" or "domestic tradable quotas" (DTQs), to be allocated equally to citizens within a country or indeed the world to "spend" on fossil fuels and fossil-fuel-intensive services, such as electricity, flights and heating and automotive fuels. Each citizen's quota would be paid into an account similar to a bank account. When purchasing an energy product such as gas, petrol or coal, they would have to pay the associated number of

### What If Climate Scientists Are Wrong?

What if it turns out that the world is not really warming up after all? Then Kyoto2 would be a huge waste of time, effort and money, wouldn't it?

No. Fossil fuels are a valuable but finite resource that will run out sooner or later no matter what. Kyoto2 could extend their lifetime so that they last far longer, and are used to deliver far greater human benefits than from burning them all up as fast as we can. After they have taken hundreds of millions of years to form, can we really justify using them all up in a matter of a century or two? Remember too that fossil fuels are worth far more to industry than their energy value alone. So given that we are going to have to give up on fossil fuels anyway within (roughly speaking) the next hundred years, it makes sense to do it on our own terms and timetable, managing the rate at which fossil fuels are exploited and developing the alternative energy sources that will replace them. The alternative is an unstable and insecure world of energy shortages and punitive price hikes as fossil fuel production deficits hit energy markets, often unpredictably, without any alternatives in place.

The securing, production, transport and combustion of fossil fuels are also hugely damaging processes – as anyone who has witnessed opencast coal mines in Colombia, Australia, Bulgaria or Wales, mountaintop removal in Appalachia, oil-sodden rain-forest in Ecuador, flare-contaminated communities in Nigeria, Alaskan beaches buried in oil and tar, seabirds trapped in oil slicks, ash-filled lakes in Oxfordshire, petroleum smog in Mexico City or Los Angeles, the fume-ridden air of Beijing, medieval cathedrals in Poland corroded by sulphate from coal, dead forests in Germany killed by acid rain, New Mexico and Alberta landscapes devastated by tar sand and shale exploitation, political murders along oil pipelines in Colombia, the burning of Kuwait's oilfields in the first Gulf War, or the unspeakable aftermath of Operation Iraqi Liberation (OIL), will surely know. Reduce energy demand and move from fossil fuels to renewable energy sources, and all these environmental and human rights abuses will decline.

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DTQs, perhaps using a plastic swipe card. They could also sell surplus DTQs to others with a more profligate lifestyle.

The main disadvantage of a DTQ system is the huge associated accounting exercise. Most people already have trouble enough managing their money and find it hard to face up to tax returns, pension plans, debt problems, etc. To impose yet more administrative obligations on the public might — for all but enthusiasts — be a step too far. Author Mark Lynas is one long-term supporter of the principle of carbon rationing with DTQs, but he concedes that the system would “not be easy to implement”:

“Because carbon rations would have to be tradable in order to be economically efficient, the government would need to set up and police 48 million carbon accounts. This presents privacy as well as administrative problems. It also establishes carbon as a kind of parallel currency: People who are over their ration limit (or have already sold their share) would have to buy carbon at market prices in order to purchase fuel. We would, in effect, need to become a nation of carbon currency speculators — quite a tall order, when most people can barely even manage their mortgage.”<sup>10</sup>

It is conceivable that such a system might be created in countries such as Denmark that maintain accurate and up-to-date centralized records of their citizens and residents. It is harder to envisage in the UK, however, where government records are in a state of relative chaos and insecurity, and impossible to imagine in less developed countries, where the very existence of many citizens passes without official record.

## Kyoto 2

The Kyoto2 approach is to sell the permits to the polluters and to reinvest the funds so raised. This is achieved by the following measures.

1. The definition of a global cap on greenhouse gas emissions aimed at stabilizing their concentration at a level and on a timescale consistent with the Climate Convention's Objective.
2. There would be no national emissions allocated, and no need for the territorial accounting that characterizes the Kyoto Protocol. Greenhouse gas emissions would be regulated “up-stream” (see box on page 26).
3. The cap on emissions would be represented by transferable greenhouse gas permits, which would be sold by auction, with a preference for a sealed bid auction mechanism.
4. Auctions would be subject to
  - (a) a reserve or minimum price reflecting the social cost of carbon; no permits would be sold below this price, even if it meant less would be sold than the cap allowed; and
  - (b) a ceiling price, beyond which an unlimited number of per-

mits will be sold; if the number of bids higher than this ceiling price exceeds the number of permits offered, and hence the cap on emissions, these permits are “borrowed” from future years.

5. The funds raised at auction would be invested to tackle both the causes and consequences of climate change, with an emphasis on addressing the needs of the poor and those most adversely impacted, including:

- adaption to such climate change as is already inevitable;
- accelerating progress towards a clean, energy-efficient low-carbon economy;
- reform land use so as to conserve carbon within soils, peatlands, forests and other ecosystems
- research low-cost and environmentally benign geo-engineering options, that could in an emergency prevent a “runaway greenhouse effect” from taking hold.

6. Over time, improvements as a result of this investment would mean that less permits would need to be issued, and any permits “borrowed” in previous years could be paid back.

7. The market mechanism would be complemented by direct regulatory measures which would address market failures, and apply in areas where the costs of creating and administering a market would exceed the benefits. For example stringent energy efficiency standards would be set applying to all energy-consuming goods from cars to fridges to computers and industrial machinery; and most powerful industrial greenhouse gases (like HCFCs) would be phased out following the model of the highly successful Montreal Protocol. All such regulations would be backed up by spending through a Multilateral Fund to meet poor country costs.”

Unlike models which depend entirely on a carbon price — which would need to rise very high indeed in order to influence all areas of the economy and overcome market failures — the Kyoto2 model thus combines three components which work together: the market mechanism, direct regulation, and targeted spending benefiting mainly poor people and developing countries. In this way the objective can be achieved efficiently, and without the need for a painfully high carbon price — which would in any case prove unacceptable to civil society. Kyoto2 therefore represents a truly global solution which would be simultaneously effective, efficient and equitable.”

This article is drawn from chapter 3 and other parts of Oliver Tickell's book *Kyoto 2: How to Manage the Global Greenhouse*, Zed Books, 2008.



Gertrude Hermes, The Tree of Life, 1930

## The Land Responds to Kyoto2

The Kyoto 2 model has a lot of advantages, notably a firm (well almost firm) capping mechanism, upstream regulation of emissions, low transaction costs, and provision of funds for investment in zero-carbon technologies, forest protection, etc.

It seems to have two weaknesses, compared to some other schemes:

(1) The ability to borrow permits from future years once their price reaches a certain ceiling means that the cap can be breached;

(2) There is no mechanism for ensuring that all people of the world get equitable access to the global atmosphere commons – ie their share of carbon emissions.

Take number 1 first. The theory is that some of the money derived from (say) auctioning 2020 permits off for use in 2010 can be invested in measures to reduce carbon emissions, which means that we will be able to get by with fewer permits in 2020. If that happens all well and good. But what if something goes wrong, as projections into the future so often do? Where is the collateral for this loan, and where is the credit history? What if the money gets diverted or frittered away by corrupt or incompetent institutions? What if it gets invested in technologies that don't work, or that turn out to be reliant on more of the (borrowed) carbon emissions than at first appears? What if it is invested in technofixes or geo-engineering experiments or third world development projects that eventually prove to have side effects that are worse than the impacts of the carbon emissions they save? In all of these cases we will have gambled away carbon savings we could have made in 2010 on a losing horse, and the credibility of the entire scheme will be threatened.

Oliver Tickell's mechanism for borrowing permits from the future will, he assures us, guarantee that "any further [fossil fuel] price increases caused by Kyoto would be minor compared to fluctuations that have recently taken place." But these recent price fluctuations only resulted in a very modest reduction in the use of fossil fuels, because demand for them is inelastic. This suggests that fossil fuel producers will consistently bid above any ceiling price which allows them to borrow permits from the future, unless that price is set at a punitive level, far above that reached in the last few months.

The rationale for the borrowing mechanism is that if the price

of permits rise too high, then, fuel prices may rise to "socially and economically damaging levels". But Tickell doesn't explain what this damage consists of – or whether it could be mitigated by other means without breaching the carbon cap.

So what would happen if there were no borrowing from the future – if emissions remained firmly capped and the price of carbon permits rose to the market price that reflected the limited supply? The resulting high price of fossil fuels would have two principal effects.

First it would mean that consumers would buy less oil-based goods. Richer people would cut down on unnecessary, highly oil-intensive goods, which would be a good thing. Poor people might have to cut down on essentials, such as heating, or even food, which would indeed be "socially damaging".

Second, a high oil price would give low carbon alternatives a competitive advantage, creating an added incentive to invest in them which would not exist if the price of fossil fuels were kept lower by borrowing credits from the future. This too is a good thing, and if you believe in market forces, it is more reliable than simply subsidizing these technologies.

In short, there are advantages to be derived from allowing the price of capped carbon to rise to its market price (which is its real price if we take into account its environmental impacts) and the only obvious problem is how to ensure that poor people do not suffer. But this is not an insuperable problem because there is a surplus of money derived from the high price of the permits. It remains only to find a way of distributing a proportion of this money to those in need, either through a conventional "safety net" system, or else by allocating universal rights to a minimum level of carbon consumption.

Such universal rights would be similar to the "product authorization permits" (PAPS) advocated in the Cap and Share model. As Tickell acknowledges, the adoption of a "transition fund to finance capital projects related to climate change" would "move C&S significantly closer to the Kyoto2 model . . . The gap between the two approaches, such as it is, may yet be bridged." But in order to bridge it, the Kyoto2 model will have to drop its scheme for borrowing carbon from the future, and find a way of returning to the poor their fair share of access to global commons.

S. F.

## OLIVER TICKELL REPLIES

I am not arguing for a punitive price level, but trying to avoid that. Many sectors, like transport and domestic energy, react only very weakly to a carbon price. In order to have a high enough carbon price to affect these sectors, we will be causing huge pain in areas that can respond to a much lower price. The people who will be most severely punished are, for example, pensioners on fixed, low incomes, or poor bus travellers in third world cities. Ultimately a very high carbon price will be politically unacceptable and thus self defeating.

It is very hard to target the poor through social spending. For example in the UK you find that 50% of fuel poor are pensioners. So you say great, give pensioners extra cash. The trouble is, only 10% of pensioners are fuel poor. This kind of thing makes it very hard to reach the fuel poor. My concern is for human

suffering more than the economy — but bash the economy and it does cause suffering. So we want to use Kyoto2 to transit over time to a different kind of economy. You can do this without short term pain - so why cause it? Specially if it derails the whole project?

If fossil fuel producers consistently buy above ceiling price, that's fine because then you get far more money to invest in energy efficiency, conservation and renewables, on a large enough scale to be sure of being able to claw back. I would go for doubling up the benefit, so for every extra permit you release at ceiling price, you invest in reducing future demand by double that amount - giving you a safe margin. Of course, if you waste the money the model does not work, so you have to make sure it is spend effectively.

## REFERENCES

1. Garrett Hardin, "The Tragedy of the Commons", *Science* 13, Dec 1928.
2. George Monbiot, "The Tragedy of Enclosure", *Scientific American*, Jan 1994.
3. Aubrey Meyer and Nicholas Hildyard, *Climate and Equity After Kyoto*, Corner House briefing 3, 1997.
4. Michael Grubb, "The Greenhouse Effect: Negotiating Targets", *International Affairs* 66(1) Jan 1990, pp. 66-89.
5. Karl Marx, "The Duchess of Sutherland and Slavery", 1853, reprinted in *Articles on Britain*, Progress Publishers, Moscow, 1971.
6. William Nordhaus, *After Kyoto: Alternative Mechanisms to Control Global Warming*, paper prepared for the American Economic Association and the Association of Environmental and Resource Economists, Atlanta 4 Jan 2001.
7. Charles Kronick, pers com, 14 Dec 2007.
8. *Cap and Share: A Fair Way to Cut Greenhouse Emissions*, draft working paper, Feasta, Jan 2008.
9. Mark Lynas, "If the Cap Fits, Share It", *New Statesman*, 31 Jan 2008.
10. Ibid.