Carbon Trading: Solution or Obstacle?

forthcoming in *The Impact of Climate Change on India*

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Introduction

The headlines tell the story. "European Union's efforts to tackle climate change a failure."[1] "UN effort to curtail emissions in turmoil."[2] "Truth about Kyoto: huge profits, little carbon saved".[3] "It isn't working . . . $3 billion to some of the worst carbon polluters in the developing world."[4] "Critics say offsets may slow the changes needed to cope with global warming".[5] "Rich states failing to lead on emissions".[6] "Carry on polluting."[7] In the last two years, investigative journalists have highlighted a story of growing failure in all the most high-profile official efforts to address climate change – the Kyoto Protocol, the European Union Emissions Trading Scheme (EUETS), and many regional programmes – and in the "carbon market" framework they all share.

At the same time they recognize the profits that can be made off the new schemes, many prominent business figures are also sounding the alarm. "The EUETS has done nothing to curb emissions," notes Peter Atherton of Citigroup Global Markets. It benefits utilities, hedge funds and energy traders while constituting "a highly regressive tax falling mostly on poor people" and other consumers. Coal plants, observes Deutsche Bank, ironically "receive more allowances than eco-friendlier" fuels.[8] According to a consultant to the British government, "by 2015, the UK's electricity system will look remarkably similar regardless of . . . how the EUETS plays out."[9] "The cap and trade system of emissions trading is . . . pretty much breaking down," judges George Soros, adding that carbon offset projects "are not effective . . . It is precisely because I am a market practitioner that I know the flaws in the system."[10] The Kyoto market is "a risible disaster," agrees Nick Pitts-Tucker of Sumitomo Bank. "This market has run into disasters . . . from which it can never recover."[11] While a lot of money can be made off carbon trading, a *Wall Street Journal* writer concludes, "don't believe for a minute that this charade would do much about global

warming."[12] Private consultancy Point Carbon complains that the new Regional Greenhouse Gas Initiative carbon-marketing scheme planned for the northeastern US states has hobbled itself before it has even got under way by allocating an oversupply of pollution rights to electricity generators.[13]

Although they have often been slow to catch up with events in the world of climate policy, independent scholars are also beginning to echo the judgement that the dominant "market approach" to global warming is ineffective. "The Kyoto Protocol was always the wrong tool for the nature of the job," write Steve Rayner of Oxford University and Gwyn Prins of the London School of Economics in *Nature*. "As an instrument for achieving emissions reductions, it has failed. It has produced no demonstrable reductions in emissions or even in anticipated emissions growth."[14] A market price for carbon, says Sussex University's Energy Group's Jim Watson, "is a very poor weapon in what is supposed to be a war to save humanity." "The price of carbon has had virtually no effect on climate change," observes veteran Oxford energy economist Dieter Helm."[15] Emissions trading, Elmer Altvater of the Free University of Berlin points out, serves the financial industry, not the environment. The escape hatches for polluters that carbon markets leave open, his colleague Achim Brunnengraber adds, "can hardly be identified by the experts themselves, never mind by the broad public." Supported by powerful industries, Brunnengraber says, Kyoto climate policy "largely excludes alternative approaches to solving the problem, such as far-reaching structural change in energy production and use." Even orthodox economists with an otherwise uninhibited faith in "free markets", such as Harvard's Lawrence Summers and ex-US Federal Reserve Bank chair Alan Greenspan, have registered skepticism.[16] Putting a price on carbon emissions through tradable permits or even a carbon tax, argues Jeffrey Sachs of Columbia University in a recent *Scientific American*, will not deliver needed emissions reductions nor "lead to the necessary fundamental overhaul of energy systems"[17]

The growing recognition that carbon markets are not contributing to a climate solution is a heartening, though overdue, step toward a more constructive approach to the climate crisis. This chapter's approach will suggest that three further steps toward that goal are likely to be useful. First, more investigation and discussion are required of the ways that carbon markets are not only ineffective, but also damaging to solutions that *are* effective, and are steering societies away from the changes that are needed. Second, the question needs to be raised not only of whether carbon markets are working, but also of whether they ever could work, lest time be wasted trying to fix an unfixable approach. Third, it is crucial to probe the reasons why, if carbon trading is a failure in climatic terms, it has nevertheless been a success in political ones: unless the sources of its power are grasped,

attempts to turn things around are likely to be less fruitful than they could otherwise be. Only if carbon trading's failures are understood in the context of the complex reasons why it is still being pursued by political elites will it be possible to clear away the obstacles it presents to successful action on climate.

Solutions: The Existing Basis

There has never been a lack of materials or ingenuity for dealing with climate change. Like many other social problems, global warming is a crisis created by the actions of a minority of the world's peoples – what Ramachandra Guha and Madhav Gadgil have called the omnivores, the development-aided class of modern consumers.[18] For the world's majority, global warming remains a problem for which they already have the solution: forgoing excessive use of fossil fuels. The recent Western fashion for "distancing" responsibility for climate change both spatially and temporally by attributing it to future car-hungry Chinese or Indians is a diversion possible only under the assumption – although it is one shared by elites in North and South alike – that overconsumption is the universal human destiny.

But the contribution of the world's majority to climate solutions is not only passive. It is active. It includes not only historically significant and ongoing movements of resistance to the dispossession, pollution, debt and armed conflict that comes with fossil fuel extraction,[19] but also opposition to the environmentally hazardous policies and centralizations of power and infrastructure without which fossil fuel overuse would be impossible. It is a contribution evident no less among peoples contesting oil or coal extraction in the Ecuadorean Amazon, the Niger Delta, Jharkhand or Phulbari than among movements for peace, clean energy, local food, reduced air traffic, improved local transport, public control over water, or a healthy environment free from fossil fuel pollution in Chicago, London or Dar es Salaam. The experience of such movements reminds us that however brilliantly the world theorizes ways of getting carbon out of energy, it is also going to have to get energy companies out of fossil fuel deposits. Any serious efforts to address climate change, unlike those currently being pursued by the United Nations, will have to connect with such movements everywhere.

Nor do the contributions of ordinary people to tackling global warming end there. Although the agricultural breakdowns, freshwater shortages, disease outbreaks and severer storms and floods that are expected to accompany global warming are conventionally classified as "natural" disasters, the

human suffering caused by such events will be due less to "nature" than to the inequalities that (for example) drive the poor to settle in vulnerable areas, allow the rich to annex wetlands, agricultural lands and water sources for profit, and entrench inflexible, high-input monocultures.[20] Once again, existing popular movements – in this case for more democratic systems of land rights and community planning, as well as for a more diverse, resilient agriculture – provide a substantial base for future climate solutions.

As a wealth of recent academic and technical work has made clear, there is no lack of technical materials for transforming even the most overconsuming societies.[21] As before, the difficulty is less a dearth of "alternatives" than with linking existing political forces in a way that can bring the available resources to bear. Nor is there any shortage of well-tried policy measures capable of underpinning the types of change required. Subsidy shifting, public investment in infrastructure, support for existing local initiatives and for open public debate are examples of policies that are familiar from hundreds of years of political experience; newer measures such as feed-in tariffs and renewable standard portfolios also show promise.

What has stymied effective climate action so far, in short, is not lack of ideas, inspiration, alternatives, initiative, knowledge or experience. It is rather the way political and social power is organized, and the way large numbers of people, and especially the middle classes on whose passive consent many political elites are dependent, have been made forgetful about what they already know, ignorant about what already exists, and divided from the movements and processes that are already working toward transformation.[22] For a more concrete understanding of one of the most fundamental ways in which constructive action on global warming is being blocked in practice, it is necessary to look at carbon trading in some detail.

Carbon Trading and Its Contradictions

Like all new markets, carbon markets strive both to establish property rights and to make a range of different things equivalent so that they can be exchanged.[23] This is true of both aspects of carbon markets: cap and trade (or emissions trading) on the one hand, and offset trading (or trading in project-based carbon credits) on the other.

Cap and Trade

The theory of cap and trade is based on the equation in Figure 1. A government imposes a cap on overall emissions (represented by the circle). One conventional way of achieving that cap is to dictate limits to how much each industrial installation covered by the scheme (represented by A and B)

is allowed to pollute. If the overall cap on a sector's emissions is 100 tonnes annually, for example, the government might require A and B to limit their emissions to 50 tonnes a year each.

Emissions trading, however, promises to make achieving the overall cap cheaper for both A and B, and thus, so the theory goes, for society as a whole. Suppose, for example, that before the cap represented by either circle in Fig. 1 was imposed, A and B each produced 100 tonnes of pollution a year. Suppose further that it is expensive for A to reduce its emissions to 50 tonnes but cheap for B to do so. Suppose, in fact, that it is cheaper for B to reduce its emissions to zero than it is for A to reduce its emissions at all. In that case, why not allow B to make A's reductions for A? That is, why not allow A to continue pollution as usual provided that it pays B to reduce B's emissions to zero? Assuming that the price B charges for the necessary pollution permits is more than B's cost of reducing emissions to zero, yet less than A's cost of reducing emissions to 50 tonnes, B makes money off the deal at the same time that A saves money. Both come out ahead – yet the same environmental goal of limiting overall pollution to 100 tonnes a year is met. No matter what size the circle that government regulation draws, the cost of keeping pollution within that circle will be lowered by emissions trading. Governments will thus be able to ratchet down the emissions cap (that is, draw smaller and smaller circles) each year, secure in the knowledge that they are doing so in the cheapest way possible.

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Cap and Trade

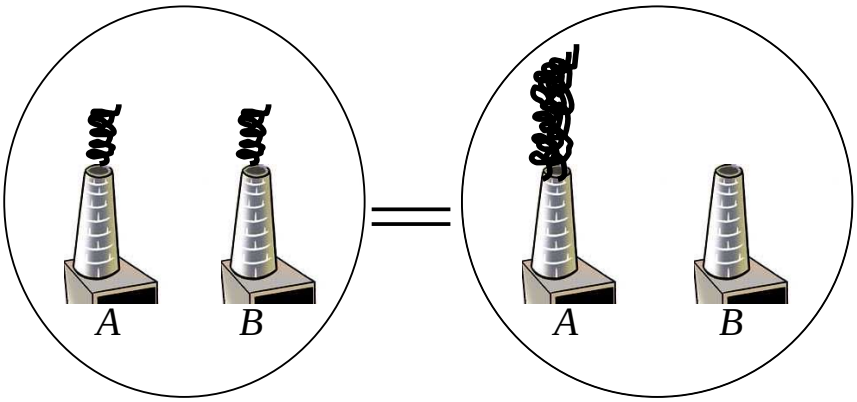

Fig. 1

The theory of cap and trade has a seductive elegance when laid out in this way in the economics classroom. But ask any lay audience if they can spot the problems and the answers are usually immediate.

First, the theory pays no attention to what kind of industries A and B are. This indifference is dangerous to any attempt to deal with the global warming problem. The "A" industries – the big carbon permit buyers – are likely to be the companies most locked into fossil fuel use and therefore also the ones where change is most necessary and most urgent. Major electricity generators, for instance, are among the world's most important producers of greenhouse gases and a prime target for early action on climate change. They tend to have billions of dollars tied up in fossil fuel plant whose lifetime is measured in decades. That makes it particularly important that a start be made on greening the sector now rather than later. Once a fossil-fuelled plant is up and running, it becomes enormously expensive for it to switch to renewable generation. Cap and trade, however, is designed precisely in a way that gives such industries reasons for delaying structural change, not only because it provides them with the get-out clause of buying pollution permits, but also because of the uncertainty of long-term price signals. In that way it helps keep the wheels on the fossil fuel industry. Rather than incentives for investment in systematic change in energy systems, it provides incentives for business as usual.

Aviation presents a related example. Short of switching to fleets of helium-filled dirigibles, the airline industry is not likely to be able to maintain the volume of its current core business while eliminating or even drastically cutting its use of oil. Again, carbon pollution permits are a license to postpone hard decisions about long-term changes in direction. Such delays will increase pain over the long term. Given a target of 80 per cent reductions in greenhouse gas emissions by 2050, for instance, putting off action just four years doubles the yearly rate of change required, from two to four per cent. Keeping the world's largest addicts of fossil fuels locked into coal, oil and gas for the foreseeable future – whether it is power generators or the cement, chemicals, oil and gas, pulp and paper or iron and steel industries – is exactly the opposite of the course that needs to be taken.

Of course, cap and trade also provides plentiful incentives for many "B" industries – including those that may be dirty now but have the comparative advantage of being less structurally addicted to fossil fuels – to develop lower-carbon ways of doing business. It also gives independent businesses reasons to develop new low-carbon technologies to sell to the "A"s, the industries heavily addicted to fossil fuels. The argument goes that the increasing availability of superior technologies incentivized in this way just

might make up for the incentives for delay that are also built into cap and trade.

Sound business sense, however, virtually guarantees that the norm for cap and trade in the short term will be delay *without* social or technological innovation of the types required by the global warming problem. Smart businesses that attempt to profit from selling carbon pollution rights will concentrate on realizing the cheapest opportunities for emissions reductions first, regardless of whether they lead to long-term structural change away from fossil fuels. Cap and trade's goal of reaching modest numerical emissions targets cheaply is simply not the same as the goal of mitigating global warming, which entails taking immediate steps to break the deeply rooted dependence industrialized societies have on fossil fuels. In economic jargon, cap and trade is indifferent to path dependence and the need to go beyond economic "optimisation" in addressing structural problems such as global warming.[24] The US's pioneering cap and trade system for achieving cost savings in reducing sulphur dioxide – which was the model for the Kyoto Protocol and subsequent carbon trading systems – can offer policymakers an important lesson in this respect. The sulphur dioxide trade may or may not have saved money in attaining limited reduction goals, but one thing it did not do was foster technological innovation. "The weight of evidence," observes Margaret Taylor of the University of California at Berkeley, "does not support the superiority of the 1990 Clean Air Act . . . as an inducement for environmental technological innovation, as compared with the effects of traditional environmental policy approaches."[25] The EU ETS, too, as Tony Ward of Ernst & Young notes, "has not encouraged meaningful investment in carbon-reducing technologies." That a choice has to be made between cap and trade and climate effectiveness became increasingly clear in 2007, when leaked documents suggested that the British government is reluctant to subsidize renewable energy partly because it views it as a "more expensive way of reducing carbon emissions than the European Emissions Trading Scheme."[26] The subtext was that going through with plans to support renewable energy could depress the carbon price and undermine the burgeoning London carbon exchanges as well as the nuclear industry. In sum, a well-implemented cap and trade system might possibly help make a fossil fuel-dependent system a bit more efficient around the edges, but it is not an appropriate instrument for incentivizing the fresh industrial path that the global warming problem requires.

Cap and trade's neglect of the importance of *how* cuts are made (as long as they are made as cheaply as possible) is not the only obstacle it is putting in the way of constructive climate action. Cap and trade is also designed to abstract from *where* those cuts are made. The idea of redistributing pollution around the landscape to "maximize cost-effectiveness" is embedded in its

very design. But this "virtue" is also a vice: it strengthens environmental racism and other forms of discrimination, since the industries most firmly locked into fossil fuel exploitation or use, and most likely to be carbon permit buyers, tend disproportionately to affect poorer and disadvantaged communities. As Bobby Peek of the South African environmental justice organization Groundwork, notes, "companies that are able to avoid reducing greenhouse gases through carbon trading are also not going to be reducing the other pollution that causes harm to local communities next to these industries." Again, the US sulphur dioxide cap and trade programme should have provided cautionary lessons. Although national sulphur dioxide emissions from power plants decreased by 10 per cent from 1995 to 2003 under the scheme, more than half of the US's dirtiest power plants increased their annual soot-forming SO_2 emissions over the period. As a result, "communities living in the shadows and downwind of these polluting power plants are actually breathing dirtier air."[27] Cap and trade's in-built insensitivity to the different ecological effects that pollution can have in different biomes creates additional environmental and social problems.

It is often argued that reliance on a generally counterproductive mechanism is the price that has to be paid for the "political practicability" of cap and trade. Mobilizing political support for even such modest alternative policies as a carbon tax (another price mechanism) has traditionally been held to be more difficult than rallying stakeholders behind cap and trade. Garnering political backing for regulatory or subsidy policies that would address structural dependence on fossil fuels and support communities preserving or developing low-carbon ways of life is held to be even harder. One lesson of the past decade, however, is that there are no political short cuts to effective climate action. If support for conventional regulation or taxation is hard to muster, making cap and trade work according to plan is no less difficult. For one thing, cap and trade sets up a dynamic of rent-seeking which has so far made it impossible to set significant emissions caps. If (as has never happened) the bulk of pollution rights under a cap and trade system were auctioned instead of being given away free, then the biggest businesses and speculators would strive to get those assets into its hands at the lowest cost. In all actually-existing cap and trade systems, the situation is even worse. In a "polluter earns" arrangement, the lion's share of pollution rights is simply given away free to the biggest private-sector emitters. (This is how the Kyoto Protocol and EU ETS work, along with the US sulphur dioxide system, raising awkward political questions of rich-poor and North-South equity.) Not surprisingly, business will fight to get and keep as big a chunk of this windfall as possible. In the first phase of the EU ETS, for example, the largest industrial greenhouse gas emitters in Europe were granted, free of charge, more rights to emit greenhouse gases than they were already emitting. Even though the price of carbon subsequently crashed as a

result, big electricity generators were able to make windfall profits by passing on to consumers the nominal "opportunity cost" of withholding their free carbon assets from the market. It is estimated that in five European countries, windfall profits for power generators from cap and trade will reach US$112 billion by 2012.[28] Much of this revenue will be invested in fossil fuels, exacerbating the climate crisis.

Environmental groups' howls of protest at the EU ETS's gift of excess pollution rights to Europe's worst greenhouse offenders have proved no match for industrial lobbies, and years after the start of the scheme, caps remain ludicrously inadequate. Worse, "holes" in Europe's caps have been opened which allow in a flood of extra carbon credits from abroad, in effect loosening, not tightening, the cap (see below), and provisions to bank permits for future use have made it still easier to avoid change. In short, cap and trade has not, contrary to hype, enabled environmentalists to avoid the hard work of large-scale political organizing. Indeed, it has made that necessary work more difficult by shrouding the politics of climate change in a blizzard of numbers, acronyms and financial-market jargon that even environmentalists and specialist journalists typically cannot penetrate.

In addition to being an inappropriate instrument for use in tackling global warming, cap and trade cannot be implemented effectively even in its own terms. It requires a far more sensitive, centralized and powerful system for measurement and enforcement than is needed for conventional regulation.[29] This is at present lacking. Even in most industrialized countries, the emissions measurements needed to underpin trading, or even to detect compliance with Kyoto targets, are not being made,[30] throwing the very existence of the carbon emissions commodity into doubt. As will be explained below, the situation with respect to carbon "offset" trading is even worse. There, measurements cannot be carried out even in principle, making carbon markets that mix the two types of pollution rights (emissions permits and offset credits) impossible in formal terms.

Carbon Offsets

The second component of carbon trading, carbon offsets, was devised to provide an additional source of pollution rights enabling wealthy industries and states to delay efforts to reduce their own emissions. Like cap and trade, it is justified by an innovative equation (Fig. 2).

Carbon Offsets

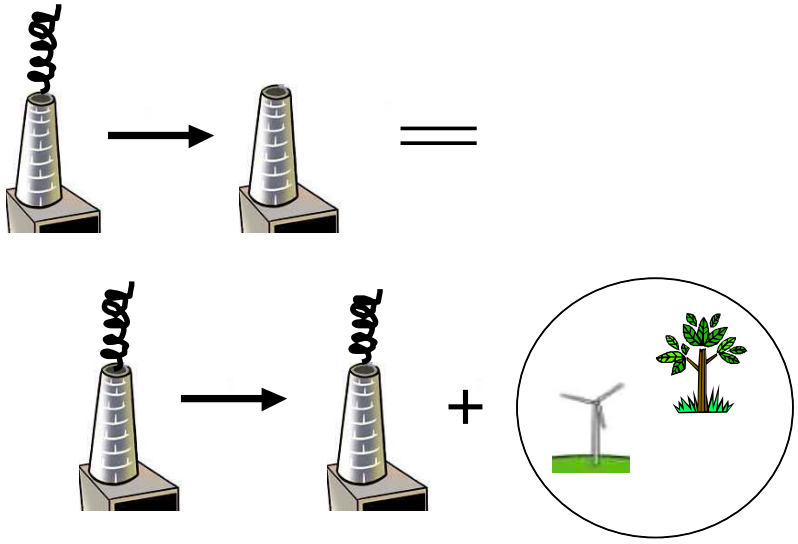

Fig. 2

Instead of cutting their emissions (top), industries, nations or individuals finance purportedly "carbon-saving" projects elsewhere (bottom right), which are generally cheaper to implement. Examples include tree plantation or ocean-fertilization projects (which are supposed to absorb carbon dioxide emissions) as well as hydroelectric dams, wind farms, efficiency schemes, and other projects that "displace" fossil energy or are argued to result in less greenhouse gases being released to the atmosphere than would otherwise be the case.

Just as cap and trade commodifies the earth's carbon-cycling capacity before parcelling it out to polluting industries, so offsets tend to commodify land, water, air, genes and community futures in new ways in order to "expand" that global capacity to allow more use of fossil fuels. Most sites for this new form of commodification are in the global South, particularly countries such as China, India, Korea and Brazil. As a result, carbon trading affects less-industrialised countries like India not only indirectly, by hastening climate change, but also directly, by encouraging the development of "offset" projects designed to compensate for industrialised countries' emissions.

Take, for example, the principal strategy of German-based energy company RWE for meeting its pollution targets under the EU ETS. Instead of cutting its emissions significantly, RWE plans to invest in UN-backed "offset" projects destroying N_2O (a powerful greenhouse gas) at factories in Egypt and South Korea and HFC-23 (an even more powerful climate-forcing gas)

at chemical plants in China. The company is also exploring the possibility of buying carbon credits from projects that would capture and burn methane (yet another harmful greenhouse gas) from landfills and coal mines in China and Russia, and another 90 million tonnes of CO_2 emission rights from a range of projects in India.[31]

Overall, the European Union has proposed that member states be able to use offset credits to meet up to 25 per cent of their national emission reduction targets in the period leading up to 2020.[32] Through 2012, as energy consultants Wood MacKenzie point out, UN offset credits "will easily exceed the shortage of carbon emissions permits within Europe, making it cheap for European firms to avoid cutting their own emissions at all."[33] This pattern was already familiar from earlier experience of carbon trading, for example the internal cap and trade system instituted by the oil company BP Amoco in 2000. Eager to demonstrate that it was serious about addressing climate change, the firm committed its business units collectively to shaving 10 per cent off their 1990s greenhouse gas emissions by 2010. The first third of the cuts were easy to make. They were mostly in obvious areas like process efficiencies – finding and shutting down spare turbine generators, minimising downtime by cleaning machinery without shutting it down, steam and power cogeneration, and so forth. But instead of making the rest of the cuts promised, the company looked to offsets like tree plantations. By 2002, the company expected half of its so-called "emissions reductions" to come from credits bought in from outside. At no point was there any move toward genuinely innovative technology.[34] Nor were any reductions made in emissions resulting from sales of hydrocarbons BP extracts and refines – which of course dwarf the firm's in-house releases.

Even more obviously than cap and trade, then, offsets are designed in a way that helps entrench or even increase dependence on fossil fuels in the industrialised North. This is one reason that they are opposed, for example, by many Northern renewable energy developers and environmentalists seeking emissions reductions at home. California's environmental justice movements, for example, see carbon trading as a "charade to continue business as usual."[35] Carbon trading, they note, is threatening promising efforts to prevent the state from building 21 planned fossil-fuelled generating plants – all to be located in poorer, predominantly nonwhite communities – and embark on a path to a greener economy. The California groups argue that carbon trading would channel funding into out-of-state carbon offsets at a time when it should go instead toward renewable energy programmes that would make many green jobs possible for underprivileged communities. If the state government decides to back carbon trading, wrote one state senator, "it could very well harm low income residents, make

fewer funds available for energy efficiency investments and renewables, and undermine Los Angeles' ability to reach its goals."[36]

Despite offsets' regressive role in climate change mitigation, they are often defended as a way of helping to finance the South's efforts to embark on a "greener" development path, and perhaps also provide a stimulus to Northern exporters to develop innovative renewable energy technologies. Yet the evidence indicates that, far from promoting greener energy paths in poorer countries, the bulk of offsets set up under the UN's carbon market reinforce fossil-dependent industries there as well. Most Kyoto Protocol carbon offset credits are generated not by renewable energy but by projects that contribute nothing to the transition to a green economy. (See Table 1.) Many credits are produced by doing nothing more than bolting extra machinery onto existing factories in order to capture and destroy potent greenhouse gases such as HFC-23 or nitrous oxide, which are by-products of manufacturing processes. Many offset projects in the works would directly support fossil fuel industries, such as schemes to burn off methane from coal mines or use carbon dioxide to pump out the remaining sticky oil at the bottom of nearly-exhausted wells. The "offset" market, it turns out, is propping up fossil fuel dependence in the South as well as the North.

Table 1
CDM projects by type, November 2007

Project type	***Credits issued***	***Number of credited projects***	***Number of projects in the pipeline***
HFCs	42m	11	19
N_2O	16m	4	44
Biomass	7m	74	462
Energy efficiency (own generation)	6m	13	235
Hydropower	3m	41	612
Landfill gas	2m	11	177
Wind	2m	33	311
Agriculture	2m	29	177
Geothermal	0.1m	2	10
Solar	0	0	8
Tidal	0	0	1
TOTAL	**83m**	**247**	**2551**
2020 TOTAL (proj.)	*4.067b*		*5390*

It is sometimes claimed that once the market has picked "low-hanging fruit" such as HFC-23 projects from the offset orchard, it will seek out more difficult, expensive and useful schemes. However, this is to misunderstand the structure of the incentive that offset trading provides, which favours ingenuity in coming up with ever-new ways of producing cheap pollution rights, but not ingenuity in finding paths to a non-fossil economy. As Guy Turner of New Carbon Finance remarked at a European Commission meeting in June 2007, "CDM is not like peak oil. We will not run out of cheap CDM options any time soon. People may think we will, but we won't."

The Kyoto offset market's structural bias in favour of fossil fuels is reinforced by the reality that the companies best equipped to navigate its complicated regulatory apparatus are larger, often fossil-dependent corporations with government connections and the money to hire carbon consultants and accountants. While it is no surprise that the biggest Northern buyers of carbon credits include such large-scale corporate greenhouse gas producers as Shell, BHP-Billiton, EDF, Endesa, Mitsubishi, Cargill, Nippon Steel, ABN Amro and Chevron, the roster of major carbon credit *sellers* comprises corporations of a strikingly similar bent in the South. These range from top Indian corporations such as the Tata Group, ITC, Birla, Reliance, Jindal, and so on to Korea's Hu-Chems Fine Chemical, Brazil's Votorantim and South Africa's Mondi and Sasol.[37] Such well-financed companies use the carbon offset market not as a way of propelling their countries into a new green economy, but generally as a means for topping up finance for environmentally-damaging projects to which they are already committed. As a top official at the Asian Development Bank, which itself has attempted to use the carbon market as a slush fund to help support unsustainable projects,[38] admits,

"When the CDM was introduced 10 years ago, there was much expectation from the developing countries that it would provide the necessary upfront financial and technical support for new sustainable development projects that would reduce greenhouse gas emissions. Today . . . it is mostly functioning to provide additional cash flow to projects that are already able to move forward with its [sic] own financing."[39]

By contrast, community-based carbon-saving or renewable energy projects are poorly positioned to obtain finance from Northern credit buyers and their contractors and suppliers, who are looking for large blocks of low-cost, easy to obtain pollution licenses and are reluctant to involve themselves in projects involving sustainability and local sensitivities. As one Rabobank official puts it, "few in this market can deal with communities." "The carbon

market doesn't care about sustainable development," confirms Jack Cogen of Natsource, a leading credit buyer. "All it cares about is the carbon price."[40] As Louis Redshaw of the Emissions Trading Department of Barclays Capital explains, "we buy credits from many, many sources . . . We look at the market price. We don't look at any particular technology."[41] Organizations hoping to harness carbon finance for climate-friendly community work are frequently disappointed. As one veteran renewables activist and specialist in Africa put it, "When the company for which I worked for 10 years got into carbon trading, I became increasingly distraught. It was no longer about 'sustainable development', it was about tonnes of CO_2 on make-believe spread sheets."

The offset market is proving to be counterproductive in other ways as well. For example, the Indian company SRF plans to take a US$600 million profit from selling UN carbon pollution licenses to Western companies and invest it in a new plant producing a gas 1,300 times more climatically damaging than carbon dioxide, HFC-134a. SRF earned the $600 million profit by making a £1.4 million investment in its existing plant that enabled it to furn off HFC-23. Because one tonne of HFC-23 has been stipulated to have the same climate-warming impact as 11,700 tons of carbon dioxide, SRF has been able to claim it is "cutting" the equivalent of 3.8 million tones of carbon emissions every year. Buyers for the pollution credits include Shell International Trading, Barclays Capital and Icecap, a London-based emissions trading company. Meanwhile, residents of the area near the SRF installation have complained about chemical leaks which they claim have affected crops and water. Suresh Yadav, a local landowner, said: "Fifty per cent of my crops are damaged by the chemicals. Our eyes are pouring, we can't breathe, and when the gas comes, the effects last for several days."[42] Elsewhere, the UN carbon offset market is providing incentives to government officials not to promulgate or enforce environmental laws. If their countries are allowed to remain "dirty" today, the reasoning goes, they will be able to make money by cleaning up tomorrow.[43]

One reason that the carbon offset market is so vulnerable to scams is that the quantity of climate benefits or disbenefits associated with offsets are scientifically unverifiable. The carbon "savings" of an offset project can only be calculated by showing how much less greenhouse gas is entering the atmosphere as a result of its presence than would have been the case otherwise. That entails identifying a single, unique business-as-usual storyline to contrast with the storyline that contains the project. The market dictates, in other words, that without the offset, only a single world is possible – a claim that would come as a surprise to participants in the World Social Forum, whose slogan is "another world is possible" and in fact has no scientific basis. As many offset proponents themselves frankly

acknowledge, a project baseline is something which "cannot be measured"[44] and is founded merely on a "value judgement".[45] As Lambert Schneider of Germany's Oko Institute puts it, "If you are a good storyteller you get your project approved. If you are not a good storyteller you don't get your project through."[46] Even World Bank officials, accounting firms, financial analysts, brokers, and carbon consultants themselves often admit privately that no ways exist to demonstrate that carbon finance is what made a project possible.[47] Researcher Dan Welch sums up the difficulty: "Offsets are an imaginary commodity created by deducting what you hope happens from what you guess would have happened."[48] This unverifiability makes it relatively easy for a skillful and well-paid carbon accountant whose work is largely shielded from public scrutiny to help fabricate huge numbers of pollution rights for sale to Northern fossil fuel polluters. At the same time, it makes impossible any distinction between fraud and non-fraud, rendering any attempt at reform ultimately pointless.[49]

The risk that profiteering will be rife in offset trading without any climate gain is exacerbated by the pattern of conflict of interest that runs through the market and its regulatory apparatus from top to bottom. The World Bank, for example, plays both sides of the street, benefiting from financing fossil fuel development at the same time it takes a cut from carbon market transactions that are meant to help clean up the resulting mess.[50] Lex de Jonge, head of the carbon offset purchase programme of the Dutch government, is also the vice chair of the Clean Development Mechanism Executive Board, charged with regulating the UN carbon offset market.[51] Back in 2000, the UN scientific panel responsible for setting out the basics of calculating how many carbon credits could be produced by trees was populated partly by experts whose business ventures were in a position to profit from the findings, or who went on to found such businesses.[52] More recently, the chair of the crucial Ad Hoc Working Group at the April 2008 UN climate conference in Bangkok was Harald Dovland, senior adviser since September 2007 to Econ Pöyry, a private firm involved in carbon markets as well as a subsidiary of a company providing technical and professional services for pulp and paper mills contributing directly to deforestation.[53] The head of the Indonesian branch of EcoSecurities, a carbon firm that has helped put together one in ten of all Southern-based offset projects approved so far by the UN, was appointed as a special adviser to the president of the 2007 UN climate conference, whose deliberations would materially affect the profitability of the firm. The private sector carbon auditors approved by the UN, meanwhile, due to their strong interest in gaining future contracts from the companies that hire them to review their offset schemes, are unlikely to be unduly critical; the head of the board responsible for the UN's offset programme confirms that there is a "clear and perceived risk of collusion" between the two. Not surprisingly,

between the start of the market and the end of 2006, auditors passed over 92 per cent of the South-based projects that were proposed to them.[54] In 2006, the UN's Clean Development Mechanism Board approved 96 per cent of the projects proposed to it and 91 per cent in 2007.

Within the cosy community of carbon marketeers, experts are constantly passing through revolving doors between private carbon consultancies, government, the UN, the World Bank, environmental organizations, official panels, trade associations and energy corporations. For example, James Cameron, an environmental lawyer who helped negotiate the Kyoto Protocol, now benefits from the market he helped create in his position as Vice Chairman of Climate Change Capital, a boutique merchant bank, which Kate Hampton, former climate chief at Friends of the Earth and Ken Newcombe, who set up the World Bank's carbon finance business, have also joined. Henry Derwent, a former director of international climate change at the UK's Department for Environment, Food and Rural Affairs, who was responsible for domestic and European climate change policies, is now president and chief executive of the International Emissions Trading Association, an industry alliance. Sir Nicholas Stern, author of the British government's Stern Report on Climate Change, joined IDEAcarbon, another private firm in the carbon trade, in August 2007, and Axel Michaelowa, who has a long history of working with the CDM Executive Board, helped form the firm Perspectives GmbH, another consultancy. When not only buyers, sellers, consultants and brokers, but also many putative market watchdogs, have an interest in maintaining or increasing the number of carbon credits in circulation, the possibility of meaningful checks and balances, already marginal due to the scientific unverifiability of carbon crediting, virtually disappears.

Even carbon businesses are beginning to wonder if this state of affairs is sustainable. "I guess in some ways it's akin to subprime," admitted multimillionaire Marc Stuart of EcoSecurities recently, in the wake of his firm's stock crash in spring 2008. "You keep layering on crap until you say, 'We can't do this anymore.'" EcoSecurities had suffered when the UN tightened its rules, requiring carbon offset projects trapping and burning methane from animal manure to measure the amount of gas they were capturing rather than only estimating the number through a formula. That reduced the number of credits animal-waste projects could sell, making them uneconomic. EcoSecurities suddenly lost about US $100 million in potential profit.[55] "Beware the carbon cowboys," cautioned an April 2007 *Financial Times* series on the voluntary offset market.

The carbon boom is not merely a financial game and a distraction from genuine climate action, however. It has also had severe negative effects on

the ground in countries such as India, which already boasts hundreds of offset projects contributing to the appropriation of local land, water and air. In the flat farmland outside Raipur, for example, factories producing sponge iron for export to China pumps out smoke that dims the sun and blackens trees, soil and workers' faces alike. Yet in return for documents claiming that they are making part of their operations more energy-efficient, many of the owners are selling carbon pollution licenses to the North through the UN. Local activists are concerned: with or without efficiency improvements, Chhattisgarh's largely coal-fired iron works will continue to spoil farmland and crops, usurp local groundwater, displace villagers, and damage the health of local residents. Farmers that are displaced are rarely hired to work in the factories, which are staffed mostly by labourers brought in from outside. Many displaced women are forced into prostitution. Closure orders were slapped on several of the plants for pollution violations in December 2006. To the activists, the firms' carbon schemes look like little more than opportunism on the part of a dirty and exploitative industry. Twenty kilometers away from the biggest complex of factories, many residents of Chauranga village would agree: they resorted to vigilante action to keep a nearby factory from operating for fear their livelihoods would be lost.

Sponge iron plants north of Raipur, Chhatisgarh.

In Maharashtra, meanwhile, the Sayadhri Range of the Western Ghats has been profoundly affected by wind energy development at the hands of Suzlon, Bharat Forge and other companies. As the plateau has become cluttered with wind energy generators, power lines and fences, the villages

below have found themselves barred from the common lands they once used for grazing and gathering, and much wildlife has disappeared. As investigations by Nishant Mate have revealed, when one village, Kadve Kurd, where villagers hold documents dating back to colonial times attesting to their land rights, tried to stop generators from going up on the plateau, they were intimidated by police.[56] The wind generating company involved tried to force one villager to sell his land to the project for Rs. 50,000, then made death threats, compelling him to leave his village for two months, and also tried to derail his attempts to use the courts to hold on to his land; company agents burned village records he was using as evidence of possession. Several companies involved in the wind developments have requested carbon finance from the UN's Clean Development Mechanism, including Tata Auto, Bajaj Auto, ENERCON and Bharat Forge. One local activist noted that "the windmills protect the polluting companies" by boosting their green credentials. Villagers are not supplied with electricity from the windmills.

A third example is from the Bhilangana river in Uttaranchal, near the village of Sarona. There, Swasti Power Engineering Ltd. is benefiting from Clean Development Mechanism money in its development of a 22.5 megawatt run-of-the-river hydroelectric project that would devastate local farmers' finely-tuned customary terraced irrigation system that provides them with rice, wheat, mustard, fruits and vegetables. A survey for the project conducted over ten years ago reported that there were no villages near the project; Sarona residents were never consulted and first learned about the project only in 2003, when construction machines arrived. Older women in the village led the first actions of opposition, and in March 2005, 120 villagers were jailed for four days, and another 79 arrested in July. In November 2006, at least 29 people were arrested and forced to sign a document that they would cease resistance. One village woman told Tamra Gilbertson of Carbon Trade Watch, "The children were at school and they took us all to jail. I was so worried for the children being alone for so long, but the older children cared for the younger ones and they made food together." In police raids since, people have had their clothes torn off and been beaten, and women in the village have been assaulted, dragged by their hair and tortured. Yet the villagers continue to embrace nonviolent tactics. One villager stated, "We did not put sand in the petrol tanks – we are non-violent, and want an honest fight." In the mountainous river valleys of Uttaranchal, some 146 such dam projects are proposed or underway, and hundreds of hydroelectric schemes in India are seeking carbon finance. Soumitra Ghosh of the National Forum of Forest Peoples and Forest Workers sums up the story so far:

"In India, people see their land taken away and destroyed both for big and 'sustainable' developments, for large dams and small hydros (Uttaranchal), new carbon sinks (Andhra Pradesh), environment-friendly wind mills (Maharashra), and liquid and gaseous filth from 'clean and green' companies poison their soils, rivers and air. Beyond boundaries of their everyday lives and knowledge, climate games go on with baselines, business as usual, 'additionality' and Certified Emissions Reduction vintages. The Himalayan glaciers meanwhile continue to melt, cloudbursts and flash floods wipe away whole villages, prolonged droughts and extremes of temperature create havoc with agriculture, and cyclones devastate fisherfolk villages. The real and perceptible danger of climate change is offset by the illusion of the most absurd and impossible market human civilization has ever seen."[57]

Conclusion

Some two decades ago, carbon trading seemed to the small clique of US traders, economists and non-governmental organisations that had begun developing the idea[58] to have considerable potential to recruit industry to the cause of fighting global warming, since it was designed to save costs for fossil fuel-intensive corporations and give them breathing space before they would have to cut their emissions.[59] In Kyoto in 1997, the idea was successfully pushed onto UN climate negotiators by the US delegation, and a cluster of world carbon markets still constitutes the major international response to global warming.

Events since Kyoto, however, have proved that carbon trading was an idea ill-suited to the climate change problem. It has only reinforced richer societies' addiction to fossil fuels, while undermining innovation and constructive action and helping to redistribute more of the world's goods from poor to rich. While turning climate politics around is not going to be easy, the task is urgent. As Oxford's Steve Rayner and LSE's Gwyn Prins have argued,

". . . we acknowledge that those advocating the Kyoto regime will be reluctant to embrace alternatives because it means admitting that their chosen climate policy has and will continue to fail. But the rational thing to do in the face of a bad investment is to cut your losses and try something different."[60]

That conclusion may soon be repeated in even more emphatic terms by the many who are being made to suffer as a result of a "solution" to a crisis they did nothing to bring about.[61]

[1] *Channel 4 Evening News*, London, lead story, 7 March 2007.
[2] Jeffrey Ball, "UN Effort to Curtail Emissions in Turmoil," *Wall Street* Journal, 12 April 2008, p. A1.
[3] Nick Davies, "Truth about Kyoto: Huge Profits, Little Carbon Saved," *The Guardian* (London), 2 June 2007, p. 1.
[4] Emily Flynn Vencat, "The Carbon Folly," *Newsweek*, 12 March 2007.
[5] James Kanter, "'Carbon footprint' offsets: False sense of satisfaction?", *International Herald Tribune*, 19 February 2007, p. 1.
[6] David Adam and John Vidal, "Rich States Failing to Lead on Emissions, Says UN Climate Chief", *The Guardian*, 14 April 2008, p. 1.
[7] Larry Lohmann, "Carry on Polluting", *New Scientist* 192, Issue 2580, 2 December 2006, p. 18.
[8] *Deutsche Bank Research*, 6 March 2007.
[9] IPA Energy Consulting, "Implications of the EU Emissions Trading Scheme for the UK Power Generation Sector", report to the UK Department of Trade and Industry, 11 November 2005, p. 19.
[10] Hugh Wheelan, "Soros Slams Emissions Trading Systems: Market solution is 'ineffective' in fighting climate change", *Responsible Investor*, 18 October 2007.
[11] Presentation at Said Business School, Oxford University, September 2007.
[12] "Cap and Charade: The Political and Business Self-Interest behind Carbon Limits", *Wall Street Journal*, 3 March 2007.
[13] Point Carbon, "RGGI 2007 Emissions 7% below Cap: Report", *Carbon Market North America* 3 (7), 9 April 2008, p. 2.
[14] Steve Rayner and Gwyn Prins, "Time to Ditch Kyoto", *Nature* 449, 29 October 2007, p. 973-75.
[15] Jeremy Lovell, "Carbon Price is Poor Weapon against Climate Change", Reuters, 25 September 2007.
[16] Lawrence Summers, "We Need to Bring Climate Idealism down to Earth", *Financial Times*, 30 April 2007; Alan Greenspan, *The Age of Turbulence: Adventures in a New World*, London: Allen Lane, 2007.
[17] Jeffrey Sachs, "Technological Keys to Climate Protection", *Scientific American*, March 2008. Sachs writes that the necessary change can only come about through means that "generate large-scale research" and "develop, demonstrate and deploy breakthrough technologies."
[18] Ramachandra Guha and Madhav Gadgil, *Ecology and Equity*, London: Penguin, 1995.
[19] Larry Lohmann, ed., *Carbon Trading: A Critical Conversation on Climate Change, Privatisation and Power*, Uppsala: Dag Hammarskjold Foundation, 2006, available at www.dhf.uu.se and www.thecornerhouse.org.uk/subject/climate. See also www.oilwatch.org.
[20] Daniel Sarewitz and Roger Pielke, Jr., "The Steps not yet Taken", ms., 2007.
[21] See, e.g., Gar Lipow, *Cooling It: No Hair Shirt Solutions to Global Warming*, www.nohairshirts.org; Arjun Makhijani, *Carbon Free and Nuclear Free: A Roadmap for US Energy Policy*, Washington, DC: RDR Books, 2007; Richard Lance Christie, "The Renewable Deal: A Political Policy Program to Obtain a Sustainable, Ecologically Restorative, Just and Comfortable Future", http://www.earthrestoration.net/index.htm; George Monbiot, *Heat: How to Stop the Planet Burning*, London: Allen Lane, 2006.
[22] Larry Lohmann, "Activism, Expertise, Commons", *Development Dialogue*, June 2006, pp. 139-72, available at www.dhf.uu.se/pdffiler/DD2006_47_vol_1/DD2006_47_6.pdf.
[23] Lohmann, op. cit. *supra* note 19.
[24] For path dependence, see Brian Arthur, *Increasing Returns and Path Dependence in the Economy*, Cambridge: Cambridge University Press, 1999.
[25] Margaret Taylor *et al.*, 'Regulation as the Mother of Invention: The Case of SO2 Control', *Law and Policy* 27, 2005, pp. 348–78.
[26] *The Guardian*, 13 August 2007.
[27] US Public Interest Research Group, *Pollution on the Rise: Local Trends in Power Plant Pollution*, US PIRG, Washington, DC, 2005, p. 5.
[28] "Polluting EU Power Firms to Reap Billions of Euros in Windfall Profits: WWF", *Point Carbon*, 7 April 2008.
[29] Lohmann, op. cit. *supra* note 19.
[30] Ibid.
[31] Robin Lancaster, "Mitigating Circumstances", *Trading Carbon*, December 2007, pp. 36-37.

[32] Point Carbon, *CDM and JI Monitor* 6 1, 9 January 2008. See also Daniel Tanuro, "Fundamental Inadequacies of Carbon Trading for the Struggle against Climate Change", March 2008, available at http://climateandcapitalism.com/?p=377.
[33] Gerard Wynn, "Glut of European Carbon Permits Likely", Reuters, 26 September 2007.
[34] "BP's Credibility Gap over Carbon Emissions", *ENDS Report* 326, March 2002, p. 4; Shaun Harley, 'Outback to the Future', *Shield* (BP Magazine) 1, 2000, p. 38 In 2001, just the one-year growth increment in emissions from the products BP sold by itself amounted to double the greenhouse gas emissions from the company's own operations. BP's oil and gas production has only increased since 1990 ('BP – Annual data – reported basis', http://www.investis.com/bp_acc_ia/ar/htdocs/reports/report_17.html). BP estimated that its products emitted nearly 1.3 billion tonnes of greenhouse gases, equivalent to 5 per cent of the total 24 billion tonnes emitted each year from fossil fuel consumption.
[35] *Lost Angeles Times*, 20 February 2008.
[36] State Senator Alex Padilla, letter to Commissioner Timothy Simon, California Public Utilities Commission, 19 February 2008.
[37] See http://unfccc.int/kyoto_protocol/mechanisms/clean_development_mechanism/items/2718.php.
[38] Lohmann, op. cit. *supra* note 19.
[39] Ursula Schäfer-Preuss, Vice President, Knowledge Management and Sustainable Development, Asian Development Bank, http://www.adb.org/Documents/Speeches/2008/ms2008014.asp.
[40] Lohmann, op. cit. *supra* note 19.
[41] SRF article
[42] "Indians Make Cool £300m in Carbon Farce", *Sunday Times* (London), 22 April 2007.
[43] Lohmann, op. cit. *supra* note 19.
[44] Carolyn Fischer, "Project-Based Mechanisms for Emissions Reductions: Balancing Trade-Offs with Baselines", *Energy Policy* 33, 2005, p. 1807.
[45] Kai-Uwe Barani Schmidt, the chair of the UN carbon offset regulatory panel, quoted in Jeffrey Ball, "Up In Smoke: Two Carbon-Market Millionaires Take a Hit as U.N. Clamps Down – EcoSecurities Sees Shares Slide 70 per cent", *Wall Street Journal*, 14 April 2008.
[46] Presentation at conference on Review of the EU ETS, Brussels, 15 June 2007. As one carbon banker complains, carbon offset accounting forces investors to lie: "They have to tell their financial backers that the projects are going to make lots of money, but . . . tell the [UN] that they wouldn't be financially viable" without carbon subsidies (*Financial Times*, 16 February 2005).
[47] Larry Lohmann, "Marketing and Making Carbon Dumps: Commodification, Calculation and Counterfactuals in Climate Change Mitigation", *Science as Culture* 14, 3, September 2005, pp. 203-235.
[48] Dan Welch, "A Buyer's Guide to Offsets". *Ethical Consumer* 106, May/June 2007.
[49] Larry Lohmann, "Toward a Different Debate in Enviornmental Accounting: The Cases of Carbon and Cost-Benefit", forthcoming 2009 in *Accounting, Organisations and Society.*
[50] Janet Redman, *World Bank: Climate Profiteer*, Washington, DC: Institute for Policy Studies, 2008.
[51] See "CDM Market in Good Shape: Official", *Point Carbon*, 2 April 2008.
[52] Larry Lohmann, "Democracy or carbocracy? Carbon Trading and the Future of the Climate Debate", Sturminster Newton: The Corner House, 2001, available at www.thecornerhouse.org.uk/subject/climate.
[53] See http://www.econ.no/modules/module_123/proxy.asp?I=2648&C=13&D=2 &mnusel=a185a253a; http://chrislang.org/2003/10/01/company-profile-jaakko-poyry/.
[54] Jeffrey Ball, op. cit. *supra* note 2.
[55] Ball, op. cit. *supra* note 47.
[56] Soumitra Ghosh and Jutta Kill, *The Carbon Market in India*, Kolkata: National Forum of Forest Peoples and Forest Workers, forthcoming.
[57] Ibid.
[58] Lohmann, op. cit. *supra* note 19.
[59] Ibid.
[60] Rayner and Prins, op. cit. supra note 14.
[61] Thanks for helpful comments to Soumitra Ghosh, Kevin Smith, Jutta Kill and Tamra Gilbertson.