

# Carbon Trading

a critical conversation  
on climate change,  
privatisation and power

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next

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This issue of *Development Dialogue* is the second in a series of *What Next* project publications. It also forms part of a new phase in the journal's history. *Development Dialogue* has been given a fresh look – a new cover design and a new layout. At the same time we are introducing a new and simpler numbering system, consisting of a running number along with month and year of publication. This issue is No. 48 in the series of issues published since 1972. The length of *Development Dialogue* issues may vary more than before. We hope the new design of the journal will meet with readers' approval.

*Development Dialogue* will continue to provide a space for pioneering ideas, and the essential character of the journal will remain unchanged.

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# Editorial Note

It is now accepted worldwide that the globe is warming to such an extent that the livelihoods of large swathes of the world's population are under serious threat. Violent and frequent storms wreck people's habitats; unpredictable weather drastically changes conditions for agriculture; new health threats emerge. As a result, awareness of global warming is increasingly influencing thinking in both the South and the North.

The irony is, however, that some of the responses to the global threat of climate change are likely to cause new and severe problems, which, in a worst-case scenario, could actually increase global warming. As this special report shows, this seems to be the case with carbon trading – a grandiose market scheme set up as the world's primary response to the crisis of climate change.

The main cause of global warming is rapidly increasing carbon dioxide emissions – primarily the result of burning fossil fuels – despite international agreements to reduce such emissions. The trouble is that despite being aware of the serious situation, very few decision-makers are ready to tackle the problem at its roots. Instead of reducing the extraction of fossil fuels and searching for other solutions, current carbon-trading policies, in practice, favour the further exploitation of these fuels. Furthermore, new tree plantations, which are claimed as a means of mitigating the consequences of increased carbon dioxide pollution, often drive people out of their traditional living grounds and destroy biological diversity.

This special report forms part of the Dag Hammarskjöld Foundation's *What Next* project. It focuses on carbon trading and is intended to influence current climate politics. In the debate on the Kyoto Protocol few actors have expressed a critical view. It is high time, for the purposes of debate and policy-making, to put the spotlight on the core problem – fossil fuel extraction and consumption.

This publication, therefore, takes a broad look at several dimensions of carbon trading. It analyses the problems arising from the emerging global carbon market pertaining to the environment, social justice and human rights, and investigates climate mitigation alternatives. It provides a short history of carbon trading and discusses a number of 'lessons unlearned'. Nine case studies from different parts of the world provide examples of the outcomes – on the ground – of various carbon 'offset' schemes.

The publication project has matured over time. It was first discussed in connection with an early Dag Hammarskjöld *What Next* seminar in July 2001 on 'Addressing Nanotechnology and Other Emerging Technologies in the ETC Century'.

The editor and main author, Larry Lohmann, who works with The Corner House – a small research and solidarity organisation located

in Dorset, UK – pointed the Foundation to the increasing concern about carbon trading and the need for consolidation of critical perspectives. As a result, the Dag Hammarskjöld Foundation, in collaboration with several other civil society organisations, organised an international seminar in South Africa in October 2004. The seminar led to the ‘Durban Declaration on Climate Justice’ and gave rise to the Durban Group for Climate Justice, which is now playing an increasingly important role in climate politics. The meeting was also the starting point for the writing of this report. At various times in 2005 and 2006, Larry Lohmann worked on the project at the Dag Hammarskjöld Foundation as a Scholar-in-Residence.

Members of the Durban Group have played an important role in the process by contributing to and commenting on the text. An international network of independent organisations, individuals and people’s movements, the Durban Group is committed to helping build a global grassroots movement for climate justice, mobilising communities around the world and pledging solidarity with people opposing carbon trading on the ground.

This special report is a thorough, well-documented work, the purpose of which is to inspire critical and far-reaching discussion. Although the topic is complex, it is our hope that the wealth of information the report contains and the dialogue form in which it is written will contribute to broader understanding of the problem and deeper engagement in one of the most important issues of our time.

★ ★ ★

The Foundation’s *What Next* project, of which this special report is part, aims to contribute to the discussion of crucial development issues in the next few decades. A diverse group of concerned people has come together to engage in intense dialogue. The project is a sequel to the Foundation’s *What Now: Another Development* initiative of 1975.

The *What Next* deliberations are being compiled in several publications. In addition to this special report, there will be a number of volumes of *What Next* papers. The first, entitled *Setting the Context*, was published in July 2006. Volume II and III will follow. *The What Next Report 2005-2035*, to be published before the end of 2006, draws on the major debates of the *What Next* process. It presents a number of possible scenarios for the next three decades, and includes concerns about various ‘solutions’ to climate change such as large-scale ‘geo-engineering’ schemes as technological fixes to the problem.

*Olle Nordberg, Niclas Hällström, Robert Österbergh*



# Chapter 1

## Introduction

### A new fossil fuel crisis



*In which the growing climate crisis is traced mainly to the mining of coal, oil and gas; the dangers to survival and livelihood are outlined; the political nature and implications of the problem explored; and reasonable and unreasonable solutions sketched.*

*We've all heard about climate change. But is it really something we need to be worried about?*

Yes. The climatic stability that humans have grown used to over the last few centuries may be ending sooner than we think. The results are likely to include intensified droughts and floods, changed weather patterns, agricultural breakdown, ecosystem disruption, rising sea levels, epidemics, and social breakdowns that ultimately threaten the lives or livelihoods of hundreds of millions of people.

*What's the cause?*

Like many other social problems, climate change is closely tied to the burning of oil, coal and gas. Fossil carbon is being taken out of the ground, run through combustion chambers, and transferred to a more active and rapidly circulating carbon pool in the air, oceans, vegetation and soil. Some of this active carbon builds up in the atmosphere in the form of carbon dioxide, trapping more of the sun's heat, warming the earth and destabilising the climate. The carbon build-up – up to 90 per cent of which has come from the North – has been made worse, especially over the last century, by unchecked land clearance and the spread of industrial agriculture.<sup>1</sup>

The difficulty is that fossil carbon is a lot easier to burn than it is to make. It took millions of years for plants to extract the carbon from the atmosphere that makes up today's coal, oil and gas deposits. It's taking only a few centuries to burn it. Today, the world combusts 400 years' worth of this accumulated, compressed biological matter every year,<sup>2</sup> three to four times more than in 1950. This carbon will not be able to lock itself safely up underground again as coal, oil or gas for many, many millennia.

*Aren't there any other ways that the earth can reabsorb this carbon?*

Yes, but they take even longer. The weathering of silicate rocks – aided by water and the activity of plants – removes some carbon dioxide from the atmosphere. Carbonates accumulating on the sea floor through weathering, runoff or the accumulation of carbon in the shells of living organisms are eventually pushed under continental plates at ocean edges, finding their way to the atmosphere again in volcanic activity. This process, taking millions of years, isn't going to solve the current crisis.

*So the carbon that comes out of the ground stays out of the ground.*

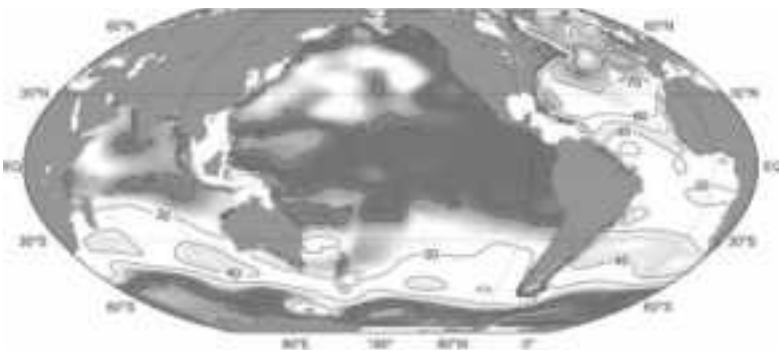
For a very long time. And once it makes its way to the surface in big enough quantities, there's no way of stopping it from building up in the atmosphere. Before the industrial revolution began there were only around 580 billion tonnes of carbon in the atmosphere. Today the figure is closer to 750 billion tonnes – the highest in hundreds of thousands of years.

*Why can't trees absorb enough carbon dioxide to keep it out of the air?*

Trees can absorb some of it. So can the world's oceans, grass, soil and fresh water. But they can't absorb enough of it, fast enough, to keep it from accumulating in the atmosphere. Nor can they hold onto it for very long. Once above ground, carbon constantly flows back and forth among vegetation, water, soils and air.

The oceans, for instance, can take up just so much of the new carbon pouring up from underground. They have already absorbed a third of their ultimate potential, and the new carbon dioxide dissolving in them is turning them more acid.<sup>3</sup>

Figure 1. Human-caused CO<sub>2</sub> build-up in the oceans is concentrated in the North Atlantic.



Source: US National Oceanic and Atmospheric Administration.



Plants and soil are an even more limited receptacle for fossil carbon than the oceans. Their storage potential is far less than the carbon content of the coal, oil and gas still underground (see Table 1). Living and dead biomass hold on the order of 2,000 billion tonnes of carbon, while fossil fuel companies are still planning to transfer around twice as much fossil carbon to the surface. In addition, plants and soil can only hold onto carbon for a short while before releasing it again to the air, water or soil. Finally, how much carbon land vegetation will absorb or emit in the future is highly uncertain.<sup>4</sup>

Table 1. The Earth's Carbon Pools (billion tonnes)

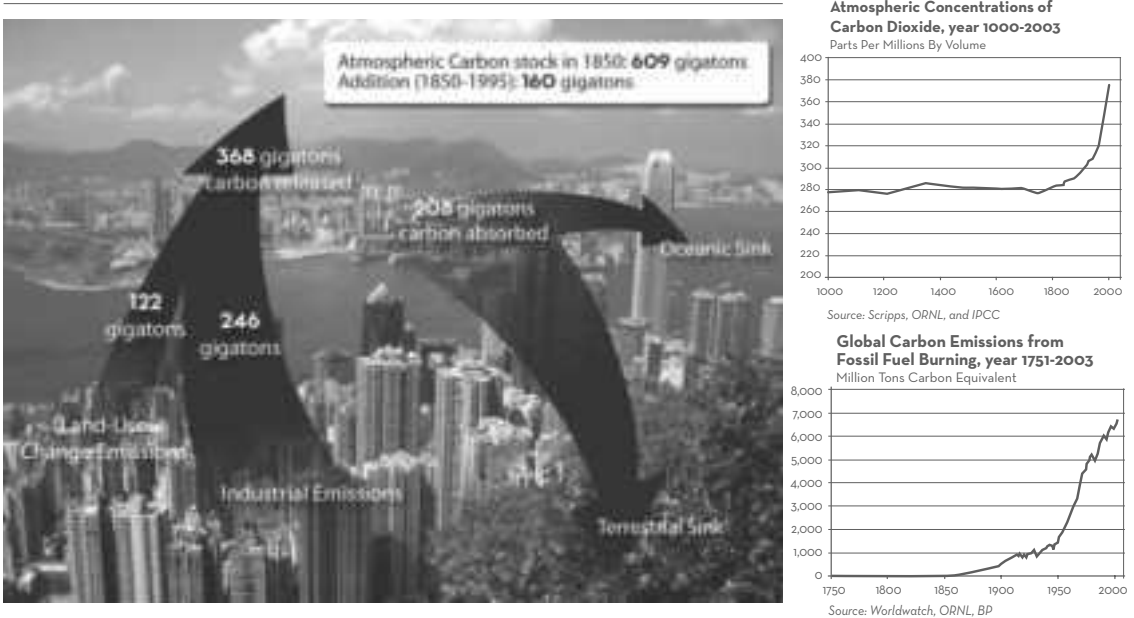
Atmosphere	720-760
Oceans	38,400-40,000
Rock (mainly underground)	75,000,000
<i>Land biosphere</i>	
living biomass	600-1,000
dead biomass	1,200
Fresh water	1-2
<i>Fossil fuels</i>	
coal	3,510
oil	230
gas	140
other	250
Annual transfer of fossil carbon to above ground carbon pools	7+

Sources: P. Falkowski et al., 'The Global Carbon Cycle: A Test of Our Knowledge of Earth as System', *Science* 290, 13 October 2000; US Energy Information Administration. Estimates of the amount of unmined fossil fuels are all highly controversial. Much higher estimates for oil (670 billion tonnes) and gas (503 billion tonnes) are given, for example, by Hans-Holger Rogner.<sup>5</sup> The US Geological Survey estimates about 360 billion tonnes of carbon to lie in 'recoverable' oil.<sup>6</sup>

*So the above-ground carbon pool in the oceans, vegetation and soil is like a bathtub with the drain plugged. As long as the tap stays on, the water just keeps overflowing.*

Yes. Or to make what might be a slightly better comparison, you might look at the earth's above-ground carbon-cycling capacity, minus the atmosphere, as a dumping ground that has the ability to recycle a certain amount of the waste that is put into it, but no more. According to one estimate, between 1850 and 1995, a total of 368 billion tonnes of carbon were released globally into the atmosphere through human activities. Some 208 billion tonnes were absorbed into the oceans and into vegetation and soils, leaving an extra 160 billion tonnes in the atmosphere.<sup>7</sup>

Figure 2. Atmospheric carbon



Source: World Resources Institute

The current rate of accumulation in the atmosphere is over 1.6 extra billion tonnes of carbon every year. And on current trends, many times more fossil carbon will be added to the atmosphere over this century than has been added since the industrial era began.

*What would have to be done to stop the overflow?*

Well, there’s already far more carbon dioxide in the atmosphere than there has been at any other time in the last half million years – 380 parts per million, as compared to pre-industrial levels of 280 parts per million.<sup>8</sup> So a lot of damage has already been done.

According to the Intergovernmental Panel on Climate Change (IPCC) in 1990, in order to stabilise atmospheric concentrations at a level less than double that of preindustrial times, greenhouse gas emissions would have to be reduced by 60–80 per cent.

*So at present we’re acting as if we have something like two and a half to five times the amount of carbon dump space than we really have.*

Well, it’s probably not possible to estimate with any certainty the earth’s capacity to recycle transfers of fossil carbon with no remainder. But there’s no question that the current rate of overflow is huge.

*And this is definitely the main cause of climate change?*

The United Nations' Intergovernmental Panel on Climate Change, perhaps the most prestigious body of climate scientists ever assembled, concludes that most of the observed warming of the last 50 years is likely to be due to the increase in greenhouse gas concentrations due to human activities.

*But isn't there a lot of controversy about that?*

Not much. The IPCC's judgement is now supported by the US's National Academy of Sciences, Brazil's Academia de Ciencias, China's Academy of Sciences, the UK's Royal Society, France's Académie des Sciences, Germany's Akademie der Naturforscher Leopoldina, India's National Science Academy, the Science Council of Japan, the Russian Academy of Sciences, Italy's Accademia Nazionale dei Lincei, the American Meteorological Society, the American Geophysical Union, Canada's Royal Society and the American Association for the Advancement of Science.<sup>9</sup> There's no dissent from it in any of 928 peer-reviewed scientific essays on global climate change published between 1993 and 2003.<sup>10</sup> And the few remaining contrary bits of evidence have been pretty much explained away over the last couple of years. For example, the oceans have warmed in a way that virtually rules out cyclic variations in solar energy as an explanation.<sup>11</sup>

*OK, give me the bad news. What happens if the world's above-ground carbon dump goes on overflowing into the atmosphere?*

At some point the buildup of carbon dioxide and other greenhouse gases in the atmosphere will change the climate catastrophically. As biologist Tim Flannery notes, 'There is so much carbon buried in the world's coal seams [alone] that, should it find its way back to the surface, it would make the planet hostile to life as we know it'.<sup>12</sup> Combustion of even a substantial fraction of remaining fossil fuels – even a few more hundred billion tonnes – could be disastrous.<sup>13</sup>

*How bad is the situation now?*

It's hard to tell what the ultimate effects will be, because the extra greenhouse gas already in the air will have long-term effects, not all of which are evident today. Global average temperatures have increased by only 0.7 degrees Centigrade since the mid-1800s. To be sure, some changes often attributed to global warming are already noticeable. For example, rainfall in mid- to high latitudes has increased, Arctic communities are increasingly threatened by coastal erosion and damaged hunting territories, Arctic sea ice and

permafrost is dwindling, and stress is growing on plant and animal species ranging from polar bears to butterflies and boreal forest trees.<sup>14</sup> The proportion of the global population affected by weather-related disasters doubled between 1975 and 2001.<sup>15</sup> But such changes are nothing compared to what's on the way. In its Third Assessment report in 2001, the IPCC projected that, on current trends, the planet would warm up by between 1.4 and 5.8 degrees Centigrade by 2100. Many researchers now believe that the warming could be far more severe.<sup>16</sup> Whichever estimates are used, it is likely that by the end of the century the earth will be hotter than at any other time in the last two million years.

*Two million years! Will human beings be ready for that?*

Little will have prepared them for it. At that point, climatic conditions will probably be not only outside the historical experience of present-day humans, but outside their ancestors' physical and ecological experience as well.<sup>17</sup>

*What are the changes that are expected?*

Among the likely manifestations of climate change in this century will be:

- Less agricultural productivity, especially in hotter places.<sup>18</sup>
- More frequent heat waves and less frequent cold spells.
- Bigger storms, higher winds and more weather-related damage like that associated with Hurricane Katrina in 2005 and Hurricane Catarina in 2004, the first recorded hurricane in the South Atlantic.<sup>19</sup>
- More intense floods and, in mid-latitude continental interiors, droughts.
- Water crises associated with disappearing glaciers and snowpacks and other events.<sup>20</sup>
- Movement of farming to other regions, especially higher latitudes.
- Faster disease transmission and other health impacts.<sup>21</sup> The World Health Organization estimates that the warming and precipitation trends due to anthropogenic climate change of the past 30 years already claim over 150,000 lives annually.<sup>22</sup>
- Rising sea levels. Melting of the West Antarctic and Greenland ice sheets, once started, would likely become self-reinforcing (such ice masses could not form in today's climate).<sup>23</sup> Combined with the thermal expansion of the warmed oceans, this would ultimately cause a sea-level rise in excess of 10 metres, flooding coastal cities

and prime agricultural areas. Glaciers within the West Antarctic ice sheet are already starting to disappear, and collapse of the sheet within this century cannot be ruled out.<sup>24</sup>

- Species extinction and biodiversity loss.
- Increased numbers of environmental refugees.<sup>25</sup>

*How fast is all this happening?*

No one can be sure how quickly these problems will unfold, and how severe they will be. One thing scientists are increasingly concerned about is possible feedback reactions that could accelerate global warming. According to the IPCC, such effects are far more likely to make global warming worse than to mediate it.

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*'Humanity is performing a "great geophysical experiment", not in a laboratory, not in a computer, but on our own planet.'*

*Roger Revelle and  
Hans Suess, 1956*

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For example, melting of ice caps in the Arctic,<sup>26</sup> where the climate is changing faster than elsewhere, could lead to redoubled warming, as a highly reflective white surface gives way to a darker, more heat-absorptive ocean surface.<sup>27</sup> As temperatures rise, more carbon is also being lost from soils due to more rapid decomposition of organic material, creating another feedback effect.<sup>28</sup>

In August 2005, scientists reported that the world's largest expanse of frozen peat bog in western Siberia, spanning a million square kilometres, was undergoing 'unprecedented thawing' that could release into the atmosphere billions of tonnes of methane – a greenhouse gas 20 times more powerful in forcing global warming than carbon dioxide.<sup>29</sup> Some scientists fear that if the oceans are warmed beyond a certain degree, there may also be sudden, catastrophic releases of methane from methane hydrates on the sea floor previously kept quiescent through high pressures and low temperatures.<sup>30</sup>

The geological and ice-core record shows that climatic discontinuities caused by such phenomena have been rife in the past.<sup>31</sup> At times they may have driven up average global temperatures by as much as eight degrees Centigrade in the space of a human lifetime.<sup>32</sup>

Similarly, if dry seasons become long enough, a desiccated Amazon could burn, releasing huge biotic stores of carbon into the atmosphere all at once. If other forests followed suit, that could drive the temperature another two degrees Centigrade higher or more.<sup>33</sup>

Still other abrupt, nonlinear 'flips' of the climate to new equilibria are also possible. For instance, influxes of fresh water from melting ice around the North Atlantic, together with increased flow of Russian rivers into the Arctic Ocean, are capable of slowing or even stopping the 'thermohaline conveyor-belt' of the Gulf Stream. Already, a study

### *'Tipping Points' and 'Angry Beasts'*

The climate doesn't always change gently and gradually. More and more climate scientists are pointing to the possibility that, due to global warming, the earth's climate could suddenly shift to a radically different – and radically less hospitable – state, as has often happened in the past (see main text).

Geophysicist Donald Perovich likens the climate system to a rowing boat that is rocked from side to side more and more violently, until it finally takes in water and

suddenly capsizes. 'You can tip and then you'll just go back. You can tip it and just go back. And then you tip it and you get to the other stable state, which is upside down.'<sup>36</sup>

Veteran paleoclimatologist Wallace Broecker of Columbia University uses a different comparison: 'The earth's climate system has proven itself to be an angry beast. When nudged, it is capable of a violent response.'<sup>37</sup>

of ocean circulation in the North Atlantic has found a 30 per cent reduction in the warm currents that carry water north from the Gulf Stream.<sup>34</sup> A shutdown of the Stream would reduce the flow of Caribbean heat northwards, dropping European temperatures drastically while drying out the climate in regions such as Central and Western Asia.<sup>35</sup> When the current stopped about 12,700 years ago – possibly due to a sudden surge of fresh water into the North Atlantic triggered by the melting of glaciers that had dammed up an ancient lake in North America – it was for more than 1,000 years; another event lasting 100 years occurred about 8,200 years ago.

The climate, in other words, is likely to change in nonlinear and non-uniform ways. Yet even if it were possible to predict exactly how it might shift in every region, it would still be virtually impossible to track or estimate in advance the effects on living things and human societies with much confidence.

As ecosystems confront shock after shock, a raft of difficult-to-anticipate effects will radiate through communities of living things as fish, insects, microorganisms and trees shift their ranges or growth patterns or die off.<sup>38</sup>

The unpredictability can only increase as these shocks reverberate through social systems. Water, heating, transport, health care, insurance, legal and policing systems will all have to adapt to changes far outside their historical experience.<sup>39</sup>

Strange weather  
ahead: global  
warming will  
increase storm  
intensity.



*Is climate change already irreversible?*

It depends what you mean, and for whom. For many people, for example in some regions of the far north, it is not only irreversible but has already overturned the lives of, for example, hunters who rely on winter ice. For some bird species or coral species it is already too late. In other, broader senses, things can be turned around, even though at this stage they are bound to get worse before they get better, no matter what policies are adopted now.

*If everything's so uncertain, why should we do anything? Wouldn't it be better to wait until we're sure what's going to happen?*

There will always be uncertainty about the details and the timing. But what is certain is that the world is on course for severe shocks, that these will become more severe the more fossil carbon is transferred to the atmosphere, that they will threaten many millions of people, that there will continue to be surprises, and that these surprises will mostly be unpleasant.<sup>40</sup> That's enough to demand immediate action.

*Give me the bottom line. If we don't do anything, what will climate change cost us?*

Again, that's a question no one is likely to be able to find a sensible answer to. First, nobody has any idea how to calculate or estimate with any confidence the extent and effects of climate change.<sup>41</sup> Nor can anyone predict very well the future costs of technologies that

have yet to be developed or deployed or social changes that are likely to have multiple effects.<sup>42</sup> Second, no one can reasonably assign a cost to improbable but irreversible or catastrophic events when what could trigger them is so poorly understood, and when discount rates are capable of making any future disaster ultimately inconsequential in money terms.<sup>43</sup> Third, those effects may nevertheless be so sweeping that they undermine many of the imagined constants on which cost estimates are based.<sup>44</sup> To take an extreme case, if there are no markets there will be no prices. Fourth, the civilizations and human life and livelihoods that are threatened by climate change are not generally held to be for sale. No one can imagine what markets they would be sold in if they were and what their price would be, and attempts to situate them in imaginary markets are endlessly disputed. The same is true of species extinction, health disasters that affect tens of millions of people, and many other of the possible effects of climate change.<sup>45</sup>

*But if we can't assign a price to all the possible future damage, how can we know how serious the threat is? And how will we know what level of action will be appropriate?*

As Ruth Greenspan Bell of Resources for the Future has pointed out, when a loved one has a potentially fatal disease, you don't perform a cost-benefit analysis when deciding what to do. Instead, you do what is within your power to help.

We can grasp how serious the threat of climate change is by looking at the trends, looking at the science, looking at the possible effects, and not pretending to possess a knowledge that we can't achieve. The situation is bad, but imagining we can quantify how bad it is interferes with clarity of thought and with good decision-making. Even worse is trying to compare some imaginary figure for future costs of climate change with imaginary numbers for, say, future economic gains or losses associated with a transition to a more sensible energy system.<sup>46</sup>

The effects of possible changes in climate, however horrifying they are, are not, strictly speaking, 'risks'. Risks can be calculated and probabilities assigned to them, allowing them to become the subject of economic calculations. For example, life insurance companies, extrapolating from history, can compile actuarial tables that will tell them the likely lifespans of people fitting various descriptions. Or, to take the classic example of champagne production used in 1921 by Frank Knight, one of the seminal thinkers about risk: 'Since in the operations of any producer a practically constant and known proportion of the bottles burst, it does not especially matter...whether the proportion is large or small. The loss becomes a fixed cost in the industry and is passed on to the consumer, like the outlays for labor or materials.'<sup>47</sup>



The climate system is not a statistical sample of champagne bottles.



Planning for climate change requires a different kind of thinking. The climate system is not a statistical sample of champagne bottles. Climatologists do not extrapolate statistically from past trends, as insurance companies and wine bottlers do, but construct simplified, future-focused computer circulation models that yield various different scenarios.<sup>48</sup> The probabilities of those outcomes that can be anticipated at all can be calculated only relative to some assortment of computer models. These models may or may not incorporate relevant factors,<sup>49</sup> and may or may not define the full range of possible future realities (see box on p. 16: Worlds inside Computers).

*So industrialised societies aren't going to be able just to keep on what they're doing, calculate their chances, and take out a little more insurance?*

No. Many of the likely outcomes of climate change are going to be uninsurable. Andrew Dlugolecki, an insurance specialist formerly with CGNU (now known as Aviva), the sixth largest insurance firm in the world, speculates that, as early as 2010, abrupt or chaotic climate change could force insurance companies to charge annual rates as high as 12 per cent of insured value, forcing most businesses and individuals to drop their coverage entirely.<sup>55</sup> Insurance losses because of extreme weather, Dlugolecki points out, are increasing by an annual 10 per cent while world economic growth is averaging 3 per cent a year: 'By 2065 the two growth graphs cross, the world economy can no longer sustain the losses, and collapse will follow.'<sup>56</sup>

It's often stressed that the South will suffer most from global warming. Southern countries are estimated to suffer 97 per cent of natural disaster-related deaths occurring each year, and also face much larger economic losses than Northern countries in terms of percentage of gross national product.<sup>57</sup> But it's important to realise that global warming will not spare industrialised societies, as the recent New Orleans disaster suggests.

Indeed, the locked-in dependence of industrialised societies and their militaries on an enormous fossil-oriented technological and institutional system of unparalleled inertia and inflexibility creates its own special global warming vulnerabilities. Michael Northrop of Rockefeller Brothers Fund and David Sassoon of Science First Communications note in a recent business publication that 'climate change is unlike any other "risk factor" that our modern financial system has ever confronted':

It contains no reciprocal or alternative opportunity... Climate change renders [money managers] impotent. It's a risk that can't be managed around, and the only rational course of action is to minimise its impact.<sup>58</sup>

### *Worlds inside Computers*

General Circulation Models (GCMs) are miniature, closed worlds created inside computers. Consisting of tens of thousands of lines of computer code, each GCM calculates how climate might change in a particular imaginary world over decades or centuries, given certain initial assumptions.

These models – there are dozens of them in use in various places – are based on solid principles of physics. Taken together, they give a feel for how climate might change in the real world. But their usefulness can't be checked by experiment in the ordinary sense, and there are things they cannot tell us.

First, GCMs are highly simplified when compared with the real climate system. Second, all of them are likely to have left out certain mechanisms influencing climate that are not yet known.<sup>50</sup> This difficulty is made more serious by the fact that many models share a common heritage. 'Typically, one modelling group "borrows" another group's model and modifies it, meaning that the "new" models may

retain problematic elements of those from which they were created', replicating systematic errors.<sup>51</sup>

Third, the global data that models use have certain limitations – limitations exacerbated by the fact that many of the data are generated by the models themselves, to fill in blanks needed to run global simulations.<sup>52</sup>

Fourth, models are characterised by various kinds of uncertainty. For instance, they are extremely sensitive to initial assumptions, meaning that different runs will yield hugely different results. No particular run of a model can be expected to reflect the real climate system, in which, also, small changes at one location and time can lead to large differences at other locations and times.<sup>53</sup> Climate modelling generates what one analyst calls 'mutated' facts full of theories, uncertainties and ambiguities – facts that have to be grasped 'as much with your imagination as with your calculator'.<sup>54</sup> That does not make them any less worthy of attention.

*So if conventional types of economic management are out the window, what do we do?*

A different kind of precaution is needed, one matched to the particular nature of the climate problem.

This kind of precaution would acknowledge and attempt to remove ignorance and uncertainty. It would try to maximise flexibility, resilience and possibilities for future learning. And in the meantime it would avoid irreversible courses of action that are potentially civilisation-threatening.<sup>59</sup>

Unavoidably, that means taking better care of the world's native biota, which constitute a large and volatile storehouse of carbon. But above all, it means slowing and halting fossil fuel extraction pending more research into gaps and blind spots.

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*'Humanity has become more and more vulnerable to long- and short-term climate change, as it has become ever more difficult and expensive for us to respond to it...*

*The times require us to learn the vagaries of the global climate, to study its moods, and to keep our skies relatively free of excessive greenhouse gases with the same diligence, and for the same reasons, that Mesopotamian farmers five millennia ago had to learn the moods of the Euphrates and keep their irrigation canals reasonably free of silt.'*<sup>60</sup>

*Brian Fagan, 2004*

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*What? You mean we have to stop mining coal and drilling for oil and gas?*

More or less, yes. Remember the image of the above-ground carbon-cycling system – oceans, atmosphere, vegetation, soil – as a giant global waste dump with limited capacity. Then think of fossil fuel mining and burning as a giant factory that's ceaselessly pumping waste into this dump regardless. The only secure way of stopping the dump from overflowing is to reduce drastically, and ultimately stop, the flow into it – to make sure that most remaining fossil fuels stay in the ground.

*That seems so extreme.*

It's not. Even Sheikh Zaki Yamani, the former Saudi oil minister, has acknowledged that '[t]he Stone Age did not end for lack of stone, and the oil age will end long before the world runs out of oil.'<sup>61</sup> Most fossil fuels are going to have to be left in the ground, just as most of the world's stone is never going to be transformed into arrowheads or Stonehenges.

Continuing to take fossil carbon out of the ground and putting it in the above-ground dump is a one-way street, because it can't safely be put back. Stopping the flow into the dump, on the other hand, is both possible and prudent. Keeping fossil fuels in the ground – and encouraging any democratic movements that already have this objective – has to be the default, mainstream approach to tackling climate change.

*How soon must the flow of fossil fuels from the ground to the surface be cut off, then? Immediately? As soon as possible? How soon is that?*

There is no single 'correct' answer to questions like that. But some work has already been done on the scale of actions needed to minimise future damage and keep options open.

In 2001, the IPCC estimated that restricting temperature rise to 1.5–3.9 degrees Centigrade would require CO<sub>2</sub> levels to be stabilised at 450 parts per million (ppm). That would imply cumulative carbon emissions of only 630–650 million tonnes between 1990 and 2100, compared to the 4,000 million tonnes or so that would result if all remaining accessible fossil fuels were exploited.<sup>62</sup>

In 2005, researcher Malte Meinshausen of the Swiss Federal Institute of Technology found that, on some models, a temperature rise of 2 degrees Centigrade or less – identified rather arbitrarily by many climate experts to be the highest 'safe' level of heating – was likely only if levels of greenhouse gases could be stabilised at 400 ppm of CO<sub>2</sub> equivalent, after peaking at 475 ppm.<sup>63</sup> That would entail a 50 per cent cut in emissions by 2050, with a peak emissions level of no more

than 120 per cent of 1990 levels at around 2010. A rise of 2 degrees Centigrade or less could actually be guaranteed only if atmospheric concentrations stabilised at 350 ppm. That would imply even steeper cuts, since concentrations already stand at 380 ppm.

Quick action is crucial in order to avoid even more painfully drastic action later. Meinshausen warned that annual reduction rates would have to become 1 per cent steeper for every five years of delay. Delaying cuts by 10 years would nearly double the required reduction rate in 2025. Delaying for 20 years, according to researchers Steffen Kalbekken and Nathan Rive, would mean having to reduce emissions three to seven times faster.<sup>64</sup>

*But how are these cuts going to be made? And who is going to make them?*

These are the questions at the heart of the climate debate. And they are not just questions for experts. By revealing that the world's carbon dump is a very limited good, the science of global warming has revealed a problem that is just as much political as technical.

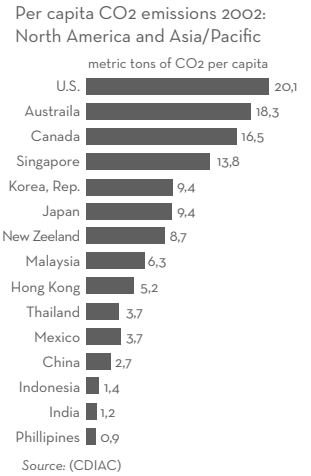
*What do you mean?*

The world's carbon-cycling capacity, partly because it's very limited, has also become extremely valuable. For that reason, everybody is going to be interested in getting rights to it (see box, below: The Birth of Atmospheric Rights). Pressures will grow to divide up the global carbon dump among the world's people.

*Divide up how?*

That's a crucial question, and one that has simmered underneath the surface of international negotiations about climate for many years.

What kind of rights should people or governments have to carbon dump space, given the need to maintain climatic stability for current and future generations? And who will get these rights? Do you divide up the dump space equally among the world's people? Do you give the world's worst-off disproportionate shares in the dump? Do you give the biggest shares to those who haven't yet had a chance to use much of the dump? Do you give the biggest shares to those who can least afford to cut down on their use of the dump? Do you give the most dump space to those who can use it to contribute the most to the global good? Or do you just give the most rights to the dump to those who are using it the most already? There are arguments for all of these ways of distributing the world's carbon-cycling capacity.




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*'Delaying action for decades, or even just years, is not a serious option.'*

Science, 9 January 2004

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*'If we are to avoid having to make dramatic and economically destructive decisions in the future, we must act soon.'*

Foreign Affairs,  
July/August 2004

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### *The Birth of Atmospheric Rights*

Up to now, philosopher Peter Singer writes, it is as if the world's people have been living 'in a village in which everyone puts their wastes down a giant sink'. At first there is no problem:

'No one quite knows what happens to the wastes after they go down the sink, but since they disappear and have no adverse impact on anyone, no one worries about it. Some people consume a lot, and so have a lot of waste, while others, with more limited means, have barely any, but the capacity of the sinks to dispose of our wastes seems so limitless that no one worries about the difference.'<sup>65</sup> No matter how much of the sink one person may use, no problems arise, because there is always enough for everybody else.

But after a while,

'...the sink's capacity to carry away our wastes is used up to the full, and there is already some unpleasant seepage that seems

to be the result of the sink's being used too much... When the weather is warm, it smells. A nearby water hole where our children swim now has algae blooms that make it unusable. Several respected figures in the village warn that unless usage of the sink is cut down, all the village water supplies will be polluted.'

Continuing to throw wastes down the sink, in other words, does not leave enough of it for everyone to use without harm to the community.

'What we might have assumed was our *de facto* right to use the sink any way we wanted comes into question. The sink belongs to us all in common. In order to avoid consequences no one wants, everyone who uses it must now accept some limits.' Atmospheric rights, Singer believes, must now be discussed, defined, limited and allocated.<sup>66</sup>

*Whew. Sounds complicated.*

It is. That's why the second and third chapters of this special report of *Development Dialogue* are reserved partly for a look at how this politics has developed.

*OK, I'll wait for that. But right now can't you at least give me some idea of the political status quo? Who has been using the most dump space so far? Who is most responsible for the current climate crisis?*

As mentioned at the beginning of this chapter, the North is overwhelmingly responsible. Andrew Simms of the New Economics Foundation perhaps sums up the situation best: 'Economic superpowers have been as successful today in their disproportionate occupation of the atmosphere with carbon emissions as they were in their military occupation of the terrestrial world in colonial times.'<sup>67</sup>

From 1950 to 1986, the US, with less than 5 per cent of the world's population, was responsible for 30 per cent of its cumulative greenhouse

gas emissions. India, with 17 per cent of the world's population, was responsible for less than 2 per cent.<sup>68</sup> In 2000, the US was emitting 20.6 tonnes of carbon dioxide per person, Sweden 6.1, Uruguay 1.6 and Mozambique 0.1.

In fact, it's probably not too far off the mark to say that the US alone is currently using all of the 'available' global dumping space for greenhouse gases. To borrow Peter Singer's words, to continue to act in this way and yet to 'ensure community survival would be to deprive others of any use of it at all.'<sup>69</sup>

*In short, industrialised societies are not only using more of the world's carbon dumping space than everybody else; they're also using several times more than is available for the use of all.*

That's about the size of it. So any attempt to keep fossil fuels in the ground is going to have to tackle industrialised societies' addiction to fossil fuels and the energy-profligate ways of living they have made possible.

*So the days of petrol-fuelled cars, coal-fired electricity generation, and oil-based air travel are limited.*

These are all now 'sunset' technologies, to be phased out as soon as possible.

*Not an easy challenge.*

No, but not an impossible one, either.

*Where do you start?*

There are plenty of places to start, and many of them will be discussed in this special report. But the important thing to remember now is that in the struggle to stem the flow of fossil carbon out of the ground, no one is beginning from zero.

Most human experience and most human achievement has taken place in societies in which very little oil, gas or coal is used. It is the world's rich minority that has grown most dependent on fossil carbon; and only in relatively recent times. And even their addiction can be broken by social and technological innovations that only require powerful enough political movements to be set in motion.<sup>70</sup>

Nor is it only efficiency experts, community planners and developers of solar or wind energy that are providing the materials to enable greater independence from fossil fuels. Just as important are the many social movements with deep experience in resisting fossil fuel extraction or exploitation.

Global warming, after all, isn't the first fossil fuel crisis. Coal, oil and gas have been associated with environmental degradation, damaged lives, debt,<sup>71</sup> social conflict and war for a long time, resulting in sustained campaigns of opposition.

For decades, exploration for new oil and gas fields has gone hand in hand with encroachment on people's land and with preparations to dispossess them.

Extraction has also provoked creative resistance all over the world, as, from Ecuador to the Russian Far East, from Nigeria to Burma, fossil fuel corporations, usually backed by governments, have stolen or contaminated local land, forests and water while massively increasing the debt of countries they work in.<sup>72</sup>

Refining and transport have brought their own legacy of impairment, disease, dispossession and contamination. And pollution from industrial and power plants burning fossil fuels has left a mark of suffering, disease and conflict on affected communities for over 150 years.

Road built through forest in Ecuador to extract oil (top).

Oil spill in the Ecuadorean forest (bottom).



Not least, the militarised quest of industrialised societies for oil has endangered security, poisoned lives and blighted politics around the world. Today, wars costing countless numbers of lives and billions of dollars can be fought for the sake of a few months' or years' worth of oil, and face opposition movements worldwide.

The struggle to stabilise climate – to stop the world's above-ground carbon dump from overflowing – takes its place as one more aspect of this long history of conflict. And it brings out a lesson encoded in that history: the need to find ways of leaving coal, oil and gas in the ground.

*That's not a lesson you often see discussed in the newspapers or on television.*

No. In fact, most business and political leaders continue to act as if it's a foregone conclusion that all remaining oil, gas and even coal will have to be taken out of the ground, even as they proclaim the urgency of doing something about global warming (see box: Trying to Have It Both Ways).



Women from coastal communities in Songkhla, southern Thailand, protest against a gas pipeline and separation plant project that threatens local fisheries, common land and livelihoods.



### *Trying to Have It Both Ways: More Fossil Fuels, Less Climate Change*

Most business and political leaders speak as if humanity could survive all remaining fossil fuels being taken out of the ground, yet also claim to be committed to action on climate change.

‘There is no environment minister on Earth that will stop this oil from being produced,’ said Canadian environment minister Stéphane Dion in November 2005,<sup>73</sup> referring to a project to mine and process Albertan tar sands that will double Canada’s CO<sub>2</sub> emissions in the course of making available billions of additional barrels of oil.<sup>74</sup> Less than two weeks later, Dion told the delegates to the international climate negotiations gathered in Montreal that ‘climate change is the single most important environmental issue facing the world today’:

‘We know that the longer we wait, the larger will be the challenge and the damage from climate change...more action is required now [in pursuit of] our ultimate common objective of stabilising greenhouse gas concentrations.’<sup>75</sup>

Across the Atlantic, British Prime Minister Tony Blair bullied Members of Parliament into acquiescing in an expansion of Britain’s aviation industry, the recipient of a GBP 9 billion annual subsidy in waived fuel taxes: ‘Hands up around this table... how many politicians facing a potential election at some point in the not-too-distant future would vote to end cheap air travel?’

Blair, who then went on to ditch a policy to require housebuilders to improve the

energy efficiency of homes,<sup>76</sup> and whose ‘minimal’ support for renewable energy has been ‘deplored’ even by a committee of the House of Lords,<sup>77</sup> had recently identified climate change as ‘probably the single most important issue we face as a global community’<sup>78</sup> and emphasised that ‘the time to act is now’.<sup>79</sup> Subsequently, he criticised the international climate change debate for a ‘reluctance to face up to reality and the practical action needed to tackle problems’.<sup>80</sup> Blair’s aviation policy means that his government’s target of cutting carbon emissions by 60 per cent by 2050 could only be achieved if every bit of machinery other than aeroplanes and ships stopped producing any emissions at all.<sup>81</sup>

In the same year, the International Energy Agency (IEA), comprising the 26 main oil-consuming nations, recommended that the global oil industry invest USD 20.3 trillion in new facilities by 2030, to avoid higher oil prices. The IEA then went on to warn that unless the world takes action to reduce energy consumption, global greenhouse gas emissions will increase by 52 per cent by 2030. ‘These projected trends lead to a future that is not sustainable... We must change these outcomes and get the planet onto a sustainable energy path,’ said William C. Ramsay, the IEA’s Deputy Executive Director.<sup>82</sup>

Oil companies such as BP and Shell meanwhile continually boast of increased, not decreased, efforts to find and exploit new sources of fossil fuels. ‘My view is that hydrocarbons will be the bulk of the energy supply for the next 30 to 50 years,’<sup>83</sup> said John

Browne, chief executive of BP. Yet Browne, who oversaw a switch of BP's logo to a green and yellow starburst adorned with the slogan 'Beyond Petroleum', proclaims that 'global warming is real and needs to be addressed now'.<sup>84</sup> Ron Oxburgh, head of Shell, conceded in 2004 that climate change made him 'very worried for the planet'.<sup>85</sup>

In a 2005 publication, the World Business Council on Sustainable Development outlines key areas for future action on climate change, including efficiency, nuclear energy, government support for energy research and development, and technology transfer to the South. It neglects to mention any measures for phasing out fossil fuels before they are exhausted.<sup>86</sup>

Finally, the World Bank, which has consistently obeyed the 1981 demand of the US Treasury Department that it play a lead role in the 'expansion and diversification of global energy supplies to enhance security of supplies and reduce OPEC market power over oil prices',<sup>87</sup> scorned the August 2004 recommendation of its own review commission that it halt support for coal extraction projects immediately and phase out support for oil extraction projects by 2008.<sup>88</sup> The commission, chaired by former Indonesian environment minister Emil Salim, had pointed out that such extractive projects did nothing to promote the Bank's stated mission of alleviating global poverty.

From 1992 through late 2004, the World Bank Group approved USD 11 billion in financing for 128 fossil-fuel extraction projects in 45 countries – projects that will ultimately lead to more than 43 billion tonnes of carbon-dioxide emissions, a figure hundreds of times more than the emissions reductions that signatories to the Kyoto Protocol are required to make between 1990 and 2012. Another USD 17 billion has gone for other fossil fuel-related projects. In 2004–2005, the World Bank Group spent USD 7.6 billion in fossil fuel-intensive sectors (37 per cent of its total lending for the year) with only marginal efforts to address the climate change implications.<sup>89</sup> More than 82 per cent of World Bank financing for oil extraction has gone to projects that export oil back to wealthy Northern countries. Bank financing for fossil fuels outpaces renewable energy financing by 17 to one.<sup>90</sup> Some of the biggest beneficiaries of Bank funding include Halliburton, the oil contractor, Shell, ChevronTexaco, Total, ExxonMobil, and other fossil fuel companies.<sup>91</sup> Yet in 2005, the Bank was assigned a key role in tackling climate change by the G8 group of economic powers. 'Let's work together for a climate-friendly future,' said Bank president, Paul Wolfowitz, one of the architects of the US war on Iraq.<sup>92</sup>



Gas flaring in Delta State, Nigeria (top) and protests (bottom).

They hope to solve the problem of the overflowing above-ground carbon dump not by cutting off the flow of fossil carbon from underground, but by carving out new dumps to put it in.

Solemnly, they propose parking carbon dioxide in holes in the ground, or liquefying it and injecting it into the bottom of the ocean. In all seriousness, they suggest putting the extra carbon in billions of extra trees specially grown for the purpose. Without any sense of absurdity, they advocate ‘compensating’ for the extraction of remaining fossil fuels by making extra efforts to ‘save’ them or use them more efficiently; or by cutting down on the use of other greenhouse gases like hydrofluorocarbons or nitrous oxide; or by building more windmills than had been originally planned; or by burning off the methane that coal mining releases rather than just venting it into the atmosphere.

Political and business leaders then go on to propose a market for exchanging all of these supposedly ‘equivalent’ things for each other. This is a market, they assure the public, in which you will be able to ‘pay’ the environmental costs of continuing to drill oil by screwing in efficient light bulbs, or for the costs of opening a new coal mine by burning the methane that seeps up out of the same mine.

The message is clear. Industrialised societies can continue to use up fossil fuels until there are none left worth recovering. Subsidies for exploitation of fossil fuel deposits need not be reduced. Nor is there any need to get started right away on a just technological and cultural transition to a society that does not need coal, oil and gas.

The untenability of this attempt to escape from the climate crisis – and the way it extends those classic conflicts over exploration, extraction, refining, pollution, militarisation, debt and insecurity that have been a feature of society’s relationship to coal, oil and gas for more than a century – will be the subject of much of the rest of this special report. The next chapter will sketch how carbon trading developed historically.

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- 7 Duncan Austin *et al.*, *op. cit. supra* note 1.
- 8 United States National Oceanic and Atmospheric Administration, *NOAA Magazine*, 15 July 2004, [www.magazine.noaa.gov](http://www.magazine.noaa.gov); Eugene Linden, 'Cloudy with a Chance of Chaos', *Fortune*, 17 January 2006. Putting all remaining fossil carbon into the atmosphere would entail staggering concentrations of several thousand parts per million.
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## Chapter 2

### ‘Made in the USA’

### A short history of carbon trading



*In which the surprising story is told of how corporations, academics, governments, United Nations agencies and environmentalists united around a neoliberal or ‘market’ approach to climate change emanating from North America.*

In the space of a few decades, a new form of global inequality has abruptly become politically important. An industrialised minority has been shown to be overusing the earth’s ability to cleanse the atmosphere of excess carbon and other greenhouse gases. Awkwardly, this inequality has turned out to be one that threatens survival itself – including, ultimately, the survival of the rich.

*So what’s to be done?*

By whom? And about what? Different people see the crisis in different ways.

Northern elites face one set of problems. How are they going to defend power and privilege over a global good they never had to compete for before? How are corporations and society going to cope with the new threat to a fossil-fuelled industrial structure? How best might corporations ride the wave of the climate crisis, seeking rewards for innovation and seizing new assets? What effect will different kinds of political action on climate change have on accumulation and inter-regional economic competition? How can the political unrest that’s sure to follow on from various climate disasters be either contained or exploited?

Southern elites are concerned about somewhat different questions. How can the climate crisis be prevented from being used as yet another excuse for pushing aside the long-thwarted claims of Southern countries to industrialisation and the world’s wealth? How might it be transformed into a source of political leverage? What are the best strategies for dealing with unanticipated catastrophes and enormously increased flows of environmental refugees?

As with every new international development, all sides are eyeing each other cautiously, uncertain how the new conditions will affect their respective standings.

*Sounds like a familiar story.*

Yes. But if elites' attitudes are predictable, some of the issues are new. Global warming isn't a threat like that of ozone depletion or even nuclear weapons. It can't be fixed without broad social and political change. Its implications for corporations are many-sided, but threatening for the largest energy companies and the energy-intensive private sector generally. Hardest of all, as this report will argue, averting the worst effects of climate chaos is likely to entail democratic mobilisation.

For global elites, particularly in the North, these realisations are inevitably harder to stomach than the threats posed by global warming itself. The science fiction-like spectre of rampant superstorms, collapsing agriculture and drowned coastlines is easily trumped, in the elite imagination, by the more mind-wrenching terrors of less energy use, less centralisation, slower transport, and – most staggering of all – less inequality.

*But isn't it also the case that political and business leaders are simply in denial about the urgency of the climate crisis?*

Northern environmentalists often like to say so. But as the last chapter has suggested, most elites, with a little help, can quite well imagine what lies in store if greenhouse gas levels continue to rise. What they have difficulty with is accepting political action that is commensurate with the problem.

*You mean they know what's happening, but lack the political will to do anything about it.*

It's not really a 'lack of political will'. In fact, as this chapter will document, many leaders – and the private corporations and technocracies that channel their choices – have a surplus of 'political will' for dealing with the climate crisis, just as they have plenty of political will for trying to turn any other crisis to their advantage. The problem is that almost all of this 'will' is directed towards technical, informational or 'market' fixes entrusted to a handful of undemocratic institutions.

Thus US president George W. Bush openly proclaims the need for the US to break its addiction to oil – only to propose technological fixes such as sequestration of carbon from coal-fired power plants, biofuels and more nuclear energy.<sup>5</sup> Sir David King, the UK government's chief scientific adviser, warns that climate change is a threat greater than terrorism – only to embrace some of the same technologies, plus emissions trading, as a solution.<sup>6</sup>



Technological fixes are tempting.

### *What Is International Climate Policy About?*

The 1992 Framework Convention on Climate Change ‘was not negotiated primarily to reduce greenhouse gas emissions’ but rather ‘as part of a wider bargain between rich and poor countries, competing energy interests and governments faced with growing economic problems making investments in the future increasingly more essential but also more difficult.’<sup>1</sup>

*Sonja Boehmer-Christiansen, 1994*

‘It is more appropriate to explain the nature of the principal elements in climate policy at both national and international levels if one assumes that what is driving the leading states and firms in this regard is the concern to create new sites of capital accumulation, rather than a focus on aggregate GDP growth and the impacts of climate policies on such growth.’<sup>2</sup>

*Karine Matthews and Matthew Paterson, 2005*

‘Establishing a robust global regime for addressing climate change is... comparable to the creation of the international trade regime under the World Trade Organization.’<sup>3</sup>

*Michael Zammit Cutajar,  
ex-Executive Secretary  
of the United Nations Framework  
Convention on Climate Change, 2004*

‘Acceptance of [the carbon trading provisions of the Kyoto Protocol] represents an article of faith, faith in the free market and faith in the process of globalisation. It rests on an ideological stance.’<sup>4</sup>

*Mick Kelly, Climatic Research Unit,  
University of East Anglia, 2000*

*You talk about ‘fixes’ as if there was something wrong with them. But what’s wrong with fixes? Isn’t that what we want – to fix the climate crisis?*

The problem is that such ‘fixes’ don’t fix. They promise to deliver the world from the worst dangers of climate change while leaving everything else – politics, commerce and so forth – just as it is. But in fact, as the rest of this special report will demonstrate, they do the opposite. They leave the course of climate change just as it is while exacerbating the inequalities that will have to be addressed if the issue is to be touched on at all.

This chapter will introduce this subject by sketching the history of the processes that trapped official international action on climate change within a US-style framework of neoliberal policy. It will suggest that a new enclosure movement has formed around three inter-linked strategies, or alternatives, each of which interacts with and often reinforces the others.

*The first strategy* works to reshape or suppress understanding of the climate problem so that public reaction to it will present less of a political threat to corporations. *The second strategy* appeals to technological fixes as a way of bypassing debate over fossil fuels while helping to spur innovations that can serve as new sources of profit. *The third strategy* appeals to a ‘market fix’ that secures the property rights of heavy Northern fossil fuel users over the world’s carbon-absorbing capacity while creating new opportunities for corporate profit through trade.

## The knowledge fix

One constant theme of climate politics over the last 20 years has been the attempt to engineer public reaction to global warming so that it will present fewer political threats to, and more opportunities for, corporations and their political clients. Some corporations, particularly in the US, try to deny that humans are changing the climate at all. Others openly acknowledge the threat while trying to reformulate it in a way that benefits them.

*So the big companies are arguing among themselves about global warming?*

Yes, but on another level the different sides are working in similar directions. For example, more regressive factions in the oil industry, working public opinion mainly within the US, may promote the view that the climate isn’t changing or that it’s fruitless to try to do anything about it. Other factions, working worldwide, may argue that there is a scientific basis for action but read the science in a way that helps them steer international agreements toward technological and market fixes that preserve the inertia of fossil fuel-intensive industries. The broader outcome is the same: entrenchment of corporate power over carbon dumps.

*It sounds like the good cop – bad cop technique of police interrogation. It’s as if, like the proverbial bad cop, industry activists within the US go straight for the throat of any international agreement on climate change – while, like the good cop, their colleagues outside the US ‘defend’ such agreements, hoping to cajole and squeeze them into giving them what they want. Have the people who deny that humans are causing the climate to change gone as far as the pro-tobacco lobby used to go in rejecting the evidence?*

There are certainly some parallels with previous cases of suppression of scientific evidence, but the antagonists in the climate debate are more numerous and the issues more complicated.

The health effects of tobacco (some of which were noticed as early as 1602),<sup>7</sup> were confirmed through extensive research in the 20th

century, but it was not until 1970 that the Surgeon General's health warning had to be displayed on every cigarette pack sold in the US.

Discussion of climate change science follows a somewhat similar – but much more complex and twisting – trajectory. Although the first explanation of how carbon dioxide can act as a greenhouse gas is usually attributed to the great Swedish scientist Svante Arrhenius in 1896,<sup>8</sup> the 'greenhouse earth' analogy was used as early as 1827 by the French polymath Jean-Baptiste Fourier<sup>9</sup> and the term itself mentioned by US scientist Thomas Chamberlin in 1906.<sup>10</sup> In the 1950s, a regular rise in levels of carbon dioxide in the atmosphere began to be documented, and in the 1970s a series of studies by the US Department of Energy increased concern about possible global warming. In 1975, scientists still weren't sure whether the earth was warming or cooling, but 10 years later, at the first major international conference on the greenhouse effect at Villach, Austria, climatologists warned of a 'rise of global mean temperature which is greater than any in man's history' in the first half of the 21st century and up to a one-metre rise in sea levels.

At that point, with the help of funding-hungry research bodies, an alarmed US government moved energetically, in the words of one observer, to put climate scientists 'back in their cages'.<sup>11</sup>

### *How?*

It worked to shift the centre of gravity of engaged scientific inquiry into climate change from independent academics and the United Nations Environmental Programme to technical bureaucracies more closely tied to governments. These included the World Meteorological Organisation and the Intergovernmental Panel on Climate Change (IPCC), which was formed in 1988.<sup>12</sup>

The scientific debate over society's effects on the climate has some similarities with past debates over tobacco's health effects.



*How did that help the US?*

The Northern-dominated science bureaucracy that resulted was ‘increasingly dependent on multinational research funding’<sup>13</sup> and was subject to a great deal of US influence, with many US officials assigned to comment on every draft report produced.<sup>14</sup>

Designated the task of providing governments and diplomats with authoritative but standardised story lines describing climate change, the IPCC naturally tended to homogenise contrasting views and downplay controversy. Under pressure from policy makers to say exactly how bad things might get, it also got into the dubious habit of reformulating indeterminacies and ignorance as ‘uncertainties’ or mere ‘risks’ or ‘probabilities’.<sup>15</sup> This stance was useful in giving some policy makers the numbers they wanted and attracting more research funding, but it also encouraged the notion that governments and corporations could delay action until more ‘definitive’ results were in.

*That’s hardly evidence that the IPCC was under the thumb of the US government.*

It wasn’t. It’s important not to oversimplify. But there has always been a sense in which the IPCC has helped shape climate problems and solutions in ways that make them more acceptable to powerful governments and corporations. A more concrete example might be the IPCC’s response to diplomats’ request to look into the possibility of storing carbon in trees and soil as a way of compensating for carbon dioxide emissions.

*I suppose you’re going to say that the IPCC was under a lot of pressure to give its stamp of approval to the idea of trading trees for smoke, because that’s what Northern countries needed in order to continue using fossil fuels.*

Well, it’s certainly true that by 2000, when the IPCC submitted its 377-page report on *Land Use, Land Use Change and Forestry*,<sup>16</sup> countries such as the US, Japan, Canada, Australia, New Zealand and Norway had been pressing hard for some time to be allowed to count huge amounts of the carbon soaked up by their forested land against their industrial emissions. Many Northern countries were also keen on being allowed to buy pollution rights from carbon-absorbing forestry projects abroad.

So perhaps it shouldn’t be a complete surprise that the IPCC’s report provided the US and its allies with just the conclusions they needed. The problem was that the report had to abandon normal standards of technical rigour in order to do so.



Under pressure from policy makers to say exactly how bad things might get, some scientists got into the dubious habit of reformulating indeterminacies and ignorance as ‘probabilities’.

*What do you mean?*

Defying a warning from the International Institute for Applied Systems Analysis that the IPCC's work to date 'could not be considered adequate in handling the uncertainties underlying the carbon-accounting problem and thus the Kyoto Protocol',<sup>17</sup> the authors assumed without evidence that 'removals by sinks' could verifiably compensate for 'emissions by sources'. According to one author, the land use panel 'never considered' whether the necessary carbon accounting procedures were actually possible or not (see Chapter 3). After the report came out, one businessman panel member proclaimed that there were 'no technical problems left' with the idea of trading emissions for trees.<sup>18</sup>

It quickly emerged that the panel had brought little of the available knowledge relevant to forest carbon accounting to bear on its deliberations. Thousands of relevant peer-reviewed references were missing – on deforestation, the history of forestry development projects, peasant resistance, forest commons regimes, investor behaviour, and so on. While the panel observed that it is 'very difficult, if not impossible' to distinguish changes in biotic carbon stocks that are 'directly human-induced' from those that are 'caused by indirect and natural factors',<sup>19</sup> it failed to draw the logical conclusion that it would be very difficult, if not impossible, for countries to claim credit for changes in forests and soils.<sup>20</sup> Ironically, it fell to non-scientist UN delegates from Southern countries such as Uganda, Kenya, Tanzania and Guatemala to raise scientific questions that the expert panel had neglected, about forest data, opportunity costs of carbon forestry, accounting for effects on fossil fuel use, discount rates, and so forth.

*Are you suggesting that somebody bribed the whole panel to come up with the 'politically correct' response?*

No, of course not.

*Are you saying that this panel of dozens of reputable experts and business-people was somehow incompetent?*

Not at all. Their technical qualifications were often impressive.

*You mean that someone intimidated them, then?*

Nothing so crude. The ways influence works are usually more subtle and more powerful. Most of the authors of the report were affiliated with environmental consultancies, mainstream forestry or economics institutes or faculties, industry associations, official agencies and government-funded research institutions. Many saw carbon 'offset'

research as a promising enterprise for their institutions. Three-quarters hailed from the North, and even more worked at Northern institutions. Over half of the authors and editors of the chapter examining the technical possibility of countries' claiming carbon credit for 'additional land and forest activities' within their borders were from the US, Canada or Australia – the three countries most active in demanding credit for wooded land.<sup>21</sup>

At the same time, the panel included no representatives of indigenous peoples who live in or depend on forests, or of communities directly affected by plantation projects. It included no representatives of communities damaged by fossil-fuel pollution that would be licensed by 'forestry offset' projects, who also would have had incentives to insist on better science. To the middle-class natural scientists and economists who dominated the panel, it was likely to be simply a given that there were vast 'degraded lands' in the South (but not the North) that could be taken over for carbon projects without land or forests being degraded elsewhere as a result; that project development agencies could do what they promised; and that it would be easy to determine from a distant office whether projects actually 'saved' carbon. The panel's membership was largely mismatched with the problem it investigated.

*So you're saying that official climate-mitigation science is contaminated with politics?*

No. To say the science is 'contaminated' would imply that it's an abnormal situation for science to be enabled, constrained and motivated by politics.

But it's not abnormal. It's unavoidable. No world can exist in which policy can be 'science-led' without science being 'policy-led' at the same time. Nor would such a world be desirable. Nor would it be desirable to live in a world in which people believed such a world was possible or desirable.

*What are you suggesting?*

Just that it would be constructive for scientists and policy makers to face the reality that 'modern science both constitutes and is constituted by particular forms of politics', as Sheila Jasanoff, Professor of Science and Public Policy at Harvard, puts it.<sup>22</sup> It would be helpful for everyone simply to admit that both the answers scientists give and the questions they ask and the way they work are influenced by funding, by policy makers' and journalists' questions, by market ideologies, by cultural background, by friends, by schooling and all the rest.



*Why would that be helpful?*

Acknowledging and examining these lines of influence – rather than claiming that ‘good science’ is somehow immune from them – would give all sides incentives to be more aware of what kind of politics is involved in any particular research scheme, and what the consequences are. It could help refocus public attention on the importance of working to create an environment in which there can be scientific communities that ask interesting and varied questions of concern to a wide range of interests in a democratic society, and are not pushed too hard into trying to provide impossible escape routes for narrow elites or inveigled into dead-end research programmes, damaging mistakes and acts of self-deception. Such communities would be able to work among a group of peers who would allow and encourage them to question received wisdom, to make trouble for neoliberal doctrine when the scientific need arises, and to have the choice not to answer every policy maker’s or journalist’s demand with an oversimplification.

*But what would make that possible?*

Claiming to be able to conjure up an ‘objective’ science outside any social context isn’t an option.

Probably the only way to make a space for a science less restrained by neoliberalism is to work against the dominance of neoliberalism in the wider society. Finessing the problem by claiming to be able to conjure up an ‘objective’ science outside any social context isn’t an option. As science scholar Simon Shackley and colleagues observe, scientists may as well accept politicisation of climate science ‘as a given and find ways to cope constructively with such a political reality’.<sup>23</sup>

In another example of the interpenetration of politics and climate inquiry, prodding from the US and ‘well-organized social science research interests’ resulted in orthodox economists capturing much of the agenda of the IPCC’s Working Group III, charged with defining possible responses to global warming.<sup>24</sup> The historical and social roots of climate change were ignored, as were grassroots resources for tackling climate change. Instead, technocrats forecast energy use, modelled the future global economy, collected socioeconomic data needed for management ‘solutions’ and toyed with the idea of using cost-benefit analysis to help make decisions about climate change. On the whole, the tendency was to try to fuse ‘formal mechanistic models across the various distinct natural and social science disciplines’<sup>25</sup> and to ‘treat society as a single species’.<sup>26</sup>

The bad (social) science that resulted should not be blamed on bias – even the best-researched and best-defended results would have been biased – but on the narrowness and less than democratic nature of

the political process that guided and constituted the research. Correspondingly, insofar as the bad science that came out of Working Group III was challenged at all, it was countered most effectively by a political movement that put that narrow process in perspective, not a demand from within the profession of orthodox economics for greater ‘objectivity’.

*How was the challenge made?*

In 1995, economists in Working Group III, using data on how much money different groups spent to avoid risk of death, calculated the value of a statistical life of a US citizen at USD 1.5 million and that of a statistical life of a ‘developing country’ citizen at USD 100,000. The economists used these calculations to suggest that climate change would cause twice as much ‘socio-economic’ damage to the industrialised countries as to the rest of the world. The figures touched off a furore among Southern delegations to the UNFCCC, who contested this interpretation of their countries’ citizens’ appreciation for safety. The calculations were sent back to their authors.<sup>27</sup>

Despite such setbacks, much of the IPCC’s work had the effect of making climate change seem potentially manageable by private and public sector institutions including oil companies and the World Bank, and by means of neoliberal approaches generally. It became ‘politically incorrect’ to enquire whether radical social change might be necessary to reduce greenhouse gas concentrations to a safer level. What was needed, it was implied, was to unleash the productive powers of private sector companies in the service of climatic stability. For corporations, this was the positive, opportunity-creating aspect of the ‘knowledge fix’.

But the story is far from one-sided. Viewed from another angle, the establishment of the IPCC was itself an admission of the difficulty of reconciling the climate problem with business as usual. And the very constraints inherent in having to pursue a highly centralised, self-censoring, compromise science meant that results indicating the reality of climate change – when they did come in from bodies such as the IPCC – were hard for the US and many large corporations to handle.

*So this particular US attempt to block or shape public awareness of climate change was double-edged.*

Very much so. It backfired so badly, in fact, that in the end various ruling factions in the US became dissatisfied with the very body – the IPCC – that the US had been so influential in setting up in order to

'contain' scientists' talk. Even Robert T. Watson, the World Bank scientist-bureaucrat who as head of the IPCC had often worked hard to accommodate scientific findings to US and World Bank sensibilities,<sup>28</sup> attracted the wrath of ExxonMobil and was voted out of his position in 2002.<sup>29</sup>

*But didn't US corporate interests have ways of influencing climate science other than through the IPCC?*

Of course. US companies and their political supporters would never have dreamed of relying on only one set of institutions to contain the domestic political threats implied by climate change.

Corporate or corporate-backed groups such as the Business Roundtable, the Global Climate Information Project, the Coalition for Vehicle Choice, the National Centre for Public Policy Research, the Advancement of Sound Science Coalition and the Information Council for the Environment spent millions of dollars on experts, conferences, books and advertisements associating climate action with economic harm to the US, including higher petrol prices.<sup>30</sup> The US Electric Power Research Institute, which is funded by electric utilities, financially supported 'seven of the major authors of integrated assessment studies' as well as co-sponsoring a special issue of *The Energy Journal* on the costs of the Kyoto Protocol, provoking the editors of the academic journal *Climatic Change* to protest that the 'nature of funding of most leading economic models' of climate change was 'a source of concern'.<sup>31</sup> Non-government organisations such as the Pew Centre for Climate Change and establishment think-tanks such as the Council on Foreign Relations, aided by the faculties of many North American and British economics departments, also helped carry the message to news media that Kyoto targets were 'unrealistic'.<sup>32</sup>

Aligned with a somewhat different set of corporate interests, the Global Climate Coalition meanwhile aimed a multimillion-dollar disinformation campaign at US audiences attacking the whole idea that the climate was changing, including a USD 13 million pre-Kyoto Protocol advertising blitz in 1997 alone.<sup>33</sup> Business coalitions and corporate-funded think-tanks have also sought out and supported climate-sceptic scientists in order to disseminate their views in an attempt to ensure that the idea of human-caused climate change remains 'controversial'.<sup>34</sup>

*These are the famous climate change 'deniers' we always hear about?*

Yes.

*Are they really still around?*

Well, these days they're fighting a bit of a rearguard battle. And there were never many of them in the first place. Still, as late as May 2006, the right-wing Competitive Enterprise Institute was laying out hundreds of thousands of dollars for a US television advertising campaign attacking 'global warming alarmism' as an attempt to 'suppress energy use' based on dubious science.<sup>35</sup> As before, such efforts are targeted mainly at the US public.<sup>36</sup> But they also remain visible elsewhere.<sup>37</sup>

*Still, it's in the US that the influence of the global warming sceptics really counts.*

Yes. What with the dependence of US elected officials on corporate finance, extreme and often bizarre views about climate change that would not be heard elsewhere in the world have endlessly reverberated in the echo chamber of Congress as well as on US television news programmes. Also, while many US scientists do continue to be outspoken about the biophysical dangers of climate change and the global inequalities that underlie the overloading of the atmosphere with fossil carbon, they are seldom able to draw conclusions from these views in a way that challenges conventional economic development ideology and its corporation-first pieties. All too often, they follow warnings about the need for drastic action on climate change with claims (for instance) that more nuclear energy or tree plantations are needed, or that 'we should not have a strategy that results in premature retirement of capital stock'.<sup>38</sup>

The same institutionalised weakness of imagination is reproduced in US universities, schools, newspapers and popular entertainment. The global warming movie *The Day after Tomorrow*, for instance, has plenty of scenes of New York streets awash in an icy Atlantic ocean, but, just as in UN negotiations, the words 'oil' and 'corporation' are not mentioned. The crisis the film is about, it is implied, can be traced mainly to the failure of political leaders to 'listen to scientists'. Aside from the slightly cheeky suggestion that Mexico might soon be faced with a tide of middle-class environmental refugees from the US, the movie's main contribution toward stimulating its viewers' political imaginations is to declare itself 'carbon-neutral' – a marketing strategy whose pointlessness will be explored later in this report. Former US vice-president Al Gore's documentary *An Inconvenient Truth*, released two years later, presents more climatology, but also winds up trying to channel action into carbon trading, responsible consumerism, tree plantations and other 'fixes'. Meditating on Hollywood disaster movies, literary critic Fredric Jameson once observed: 'It seems to be easier for us today to imagine the thoroughgoing deterioration

of the earth and of nature than the breakdown of late capitalism.<sup>39</sup> It's no surprise, in an age when Hollywood scriptwriters are advising the Pentagon on terror scenarios<sup>40</sup> and pulp novelist Michael Crichton appears as an expert witness on climate change before a US Senate committee,<sup>41</sup> that such attitudes are reflected back into politics.

Where imagination is most lacking in such environments is in the realm not of climatology but of politics. An unhealthy mixture of biophysical horror stories, scepticism, fatalism and vague calls for 'action' is all too easily answered with sophisticated versions of 'business as usual'.

## The technological fix

A second strategy for containing climate change and the present and future political threats it implies – as well as for using the climate crisis to open up new opportunities for corporations – is to appeal to technological fixes that allow continued exploitation of coal, oil and gas. Once again, the US has always played a central role.

### *What are these fixes?*

From the 1970s to the 1990s, scientists such as Freeman Dyson and Norman Myers and economists such as Roger Sedjo proposed country-sized tree plantations (usually conveniently sited in the South) as ways of soaking up industrial carbon dioxide.<sup>42</sup> Genetic modification has recently been added to this techno-fix: trees are now being deliberately engineered to absorb more carbon from the atmosphere.<sup>43</sup>

Giant plantations were not the only place US elites hoped to stash the carbon released by the burning of fossil fuels. By 2000, one US Energy Department laboratory was laying plans to spend over USD 900 million over the next 15 years on such schemes as dosing soil with coal combustion by-products to increase carbon uptake, injecting carbon dioxide into deep ocean waters off the coast of Hawaii, and burying carbon dioxide hydrates under Monterey Bay.<sup>44</sup>

Other US-inspired projects have included seeding large areas of land with organisms genetically engineered to fix carbon 'more efficiently'; establishing floating kelp farms thousands of square kilometres in size which, growing heavier as they consumed carbon dioxide, would eventually sink to the ocean floor; and using fleets of C-130 military transport planes to bomb Scotland and other countries with millions of metal cones containing pine saplings.<sup>45</sup> In 2001, the Los Alamos National Laboratory in New Mexico proposed constructing a collection of calcium hydroxide ponds covering an area of 200,000 square kilometres to scrub fossil fuel-produced carbon dioxide from the air.<sup>46</sup>



An unhealthy mixture of biophysical horror stories, scepticism, fatalism and vague calls for 'action' is all too easily answered with sophisticated versions of 'business as usual'.

*Good grief!*

It doesn't end there. US and Canadian research institutions have also recently seeded various areas of the Pacific Ocean with iron particles to try to stimulate CO<sub>2</sub>-absorbing plankton blooms.<sup>47</sup> With financial support from the US Department of Energy, human genome pioneer Craig Venter is now committed to creating a new life form – a synthetic construct based on simple micro-organisms – to clean up carbon dioxide or other greenhouse gases.<sup>48</sup>

Scientists convened by the White House under George W. Bush have meanwhile proposed fleets of ocean-going turbines to throw up salt spray into clouds to improve their reflectivity.<sup>49</sup> And the US National Science Foundation is discussing the possibility of creating a biological film over the ocean's surface to divert hurricanes.<sup>50</sup> In January 2006, a 'weather-modification' bill (S517) was 'fast-tracked' by the US Senate and House of Representatives. The Bill was expected to become law before the 2006 hurricane season.<sup>51</sup>

US scientists have also long contemplated spraying the stratosphere with fine metallic particles to reflect sunlight, perhaps using the engines of commercial jets for the job.<sup>52</sup> Taking unilateral action to dim the sky in this way, explained the late Edward Teller, the father of the hydrogen bomb, is a simpler, cheaper alternative to 'international consensus on ...large-scale reductions in fossil fuel-based energy production'.<sup>53</sup>

*These schemes sound crazy! Who knows what might happen if they were carried out? Shouldn't scientists and technologists be encouraged to use their ingenuity in ways that would help end dependence on fossil fuels instead?*

Perhaps they should, but they would need more institutional, financial and cultural support to do so. Today, as Teller implied, the focus is on avoiding 'large-scale reductions' in fossil fuel use.

Supporting more use of fossil fuels certainly seems to be a big priority at, for example, the US Department of Energy and its old national nuclear weapons laboratories, which have teamed up with oil companies such as Chevron, Texaco, Shell, and BP to study geological sequestration of carbon dioxide. It's also a priority at top universities, due to floods of government and corporate funding directed at the same objective. In 2000, for instance, BP and Ford contributed USD 20 million to Princeton's Carbon Mitigation Initiative, the largest corporate contribution in the university's history. Headed by professors from two departments – mechanical and aerospace engineering, and ecology and evolutionary biology – the scheme tried to find ways to collect carbon dioxide at central processing sources, then store it deep underground. One ostensible objective was to help India and

China 'spend fossil fuels...without doing what we've done to the atmosphere'.<sup>54</sup>

With the help of on-the-ground corporate experiments in Norway and Algeria, the initiative helped disseminate this little-tested and hazardous techno-fix<sup>55</sup> into mainstream discourse. A *Scientific American* article entitled 'Can We Bury Global Warming?'<sup>56</sup> appeared in 2005, along with a parlour game for industry, academic and NGO audiences that conveys the message that carbon capture and sequestration, biofuels, tree plantations and nuclear power can all be reasonably placed alongside energy efficiency and solar energy as components of a climate action portfolio.<sup>57</sup> By 2004, Ron Oxburgh, non-executive chairman of Shell, was on record saying that 'if we don't have sequestration I see very little hope for the world'.<sup>58</sup>

Not to be outdone, Exxon-Mobil, General Electric, Schlumberger Technology and Toyota agreed in 2002 to funnel USD 225 million to Stanford University for a Global Climate and Energy Project assigned to investigate carbon capture and sequestration, production of hydrogen from fossil fuels, biomass energy, and other fields on a list set out in the contract with the four corporations.<sup>59</sup>

## The market fix

The third strategy for containing the political threats implied by climate change – while at the same time using it to create new opportunities for corporate profit – is the 'market fix'.

The market fix began to take shape in the late 1980s and early 1990s. Public pressure was growing for governments to agree to do something about global warming. Some of the changes needed had been obvious since the 1970s.<sup>60</sup> These included long-term shifts in the structure of Northern industrial, transport and household energy use away from wasteful expenditure of fossil fuels toward frugal use of solar and other renewable sources. Tackling the problem internationally meant addressing the institutions and power imbalances that had resulted in both the overuse and the globally unequal use of the earth's carbon-absorbing capacity.

*That sort of action would have been hard for corporations, governments and UN agencies to accept unless they were under a lot of public pressure to do so.*

Yes. It also required a historical and political perspective unfamiliar to many climate scientists and technocrats. It was easier to view global warming's causes in simple physical terms – 'too much greenhouse gas' – without looking too carefully at what would have to be done

to tackle the problem. The priority became to set some targets while leaving the ‘how’ of long-term structural change for later.

Many international negotiators and their advisers were encouraged to take this approach by the precedent of the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer.<sup>61</sup> The Montreal agreement had been a technocrat’s dream. Spearheaded by Northern scientific bureaucracies and governments, it had never had to scrutinise the industrial system as a whole.<sup>62</sup> The ozone problem was presented as nothing more than ‘flights of inanimate particles from activities deemed benign in themselves, and not the lifestyles of the rich and famous’, to quote the wry assessment of Harvard’s Sheila Jasanoff.<sup>63</sup>

But the treaty worked. Unlike global warming, the ozone problem didn’t require long-term restructuring of energy sectors central to industrialised economies.<sup>64</sup> Only a few factories were involved. It was relatively easy to set a target and find substitutes for some ozone-depleting substances or phase them out. With the eventual backing of industry itself and the help of a few transition-aiding payments to Southern nations, nearly all nations wound up complying with the agreement.

*A tempting model.*

Yes. Many climate negotiators thought a similar idea might work with global warming.<sup>65</sup> They were even guided by some of the same scientist-bureaucrats. Targets and timetables for reducing emissions became the big issue. Few questions were asked about power, property, and path-dependence.

Into this vacuum rushed the idea that the technical means of achieving reductions could best be left to the private sector and ‘technology transfer’. And if corporations were going to be the stars of the show, why not make it as cheap and profitable as possible for them to meet whatever targets had been set?

*And this was the market fix?*

Yes. The earth’s carbon dump would gradually be made economically scarce through limits on its use imposed by states. Tradeable legal rights to it would be created and distributed to the biggest emitters. Bargaining would generate a price that would reflect the value society (that is, governments) placed on carbon dump use. Emitters who found ways of using the dump more efficiently could profit by selling their unused rights to more backward producers. They could also develop new dumps. The market would ‘help society find and move along the least-cost pollution reduction supply curve’<sup>66</sup> (see box on next page, ‘What is Carbon Trading?’).



## *What is Carbon Trading?*

There are two kinds of carbon trading. The first is *emissions trading*. The second is *trading in project-based credits*. Often the two categories are put together in *hybrid trading systems*.

### *Emissions trading*

Suppose you have two companies, A and B. Each emits 100,000 tonnes of carbon dioxide a year.

The government wants to cut their emissions by 5 per cent. It gives each company rights, or 'allowances', to emit 95,000 tonnes this year. Each company must either reduce its emissions by 5,000 tonnes or buy 5,000 tonnes of allowances from someone else.

The market price for these allowances is USD 10 per tonne. Company A can reduce its emissions for half this cost per tonne. So it's reasonable for it to cut its emissions by 10,000 tonnes: if it sells the extra 5,000 tonnes (for USD 50,000) it will be able to recover its entire expenditure. So the company saves USD 25,000.

For company B, making reductions is more expensive. Cutting each tonne of emissions costs it USD 15. So it decides not to reduce its emissions, but instead to buy the 5,000 tonnes of surplus allowances that company A is offering. If company B reduced its own emissions, it would cost USD 75,000. But if it buys company A's surplus allowances, the cost is only USD 50,000. So company B also saves USD 25,000 on the deal.

Both firms, in short, save USD 25,000 over what they would have had to spend without trading. If they are the only two companies in the country, this means the country's business sector winds up cutting emis-

sions just as much as it would have under ordinary regulation. But by distributing the reductions over the country's entire private sector, it costs the sector as a whole USD 50,000 less to do so.

Some emissions trading schemes allow companies to save any surplus allowances they have for their own use in future years, rather than selling them.

Emissions trading is also sometimes called 'cap-and-trade'.

### *Trading in project-based credits*

Suppose you have the same two companies, A and B, each emitting 100,000 tonnes of carbon dioxide a year. Again, the government wants to cut their emissions by 5 per cent, so it gives each company allowances to emit only 95,000 tonnes.

But now the government tells each company that if it doesn't want to cut its emissions by 5,000 tonnes each, it has another option. It can invest abroad in projects that 'reduce' emissions of carbon dioxide 5,000 tonnes 'below what would have happened otherwise'. Such projects might include growing crops to produce biofuels that can be used instead of oil; installing machinery at a chemical factory to destroy greenhouse gases; burning methane seeping out of a coal mine or waste dump so that it doesn't escape to the atmosphere; or building a windpower generator. The price of credits from such projects is only USD 4 per tonne, due to low labour costs, a plethora of 'dirty' factories, and government and World Bank subsidies covering part of the costs of building the projects and calculating how much carbon dioxide equivalent they save.

In this situation, it makes sense for both company A and company B to buy credits from abroad rather than make reductions themselves. Company A saves USD 5,000 by buying credits from projects abroad rather than cutting its own emissions. Company B meanwhile saves USD 55,000. The total saving for the domestic private sector is USD 60,000.

Other names for project-based credit trading include ‘baseline-and-credit’ trading and ‘offset’ trading.

#### *Hybrid trading systems*

Some pollution trading systems use emissions trading only. *Hybrid* systems use both emissions trading and ‘offset’ trading, and try to make ‘allowances’ exchangeable for project-based ‘credits’.

The US sulphur dioxide market uses emissions trading only. But both the Kyoto Protocol and the EU Emissions Trading System mix ‘cap-and-trade’ allowances and project-based credits, and try to make them mutually exchangeable.

Such systems are enormously complex. Not only is it difficult to try to create credible ‘credits’ and make them equiva-

lent to ‘allowances’. Mixing the two also changes the economics.

For example, imagine that company A and company B above are allowed three options in any combination: cutting their own emissions, trading allowances with each other, or buying credits from abroad.

For company B, the best option would be, again, to buy USD 20,000 worth of credits abroad rather than spend USD 75,000 to reduce its own emissions.

For company A, the best option would be to cut its own emissions by 10,000 tonnes – but only if it could find a buyer who would pay USD 10 per tonne for the 5,000 allowances it would have to spare. Instead of having to pay USD 20,000 for carbon credits from abroad, it wouldn’t have to spend anything.

Unfortunately for company A, it can’t find any such buyer. If company B can save USD 5,000 by going abroad for credits, it won’t buy company A’s spare allowances. But company B is the only other firm in the emissions trading scheme. So without company B as a buyer, it’s not worthwhile for company A to make any cuts at all, and it too will wind up buying credits overseas.

As Michael Zammit Cutajar, the former executive secretary of the UNFCCC, has stressed, this approach was ‘made in the USA’.<sup>67</sup> The pollution-trading mechanisms that formed the core of the Kyoto Protocol were of a type proposed by North American economists in the 1960s;<sup>68</sup> put into practice in US markets for lead, nitrogen oxides and sulphur dioxide and other pollutants beginning in the 1970s and 1980s;<sup>69</sup> and successfully pressed on the UN by the US government, advised by US economists, US NGOs and US business, in the 1990s.<sup>70</sup>

#### *What is the Kyoto Protocol exactly?*

The Protocol was adopted in 1997 at one of the annual conferences of the parties to the 1992 United Nations Framework Convention on

Climate Change (UNFCCC). The treaty finally came into force on 16 February 2005, having been ratified by 127 countries responsible for 61 per cent of global greenhouse-gas emissions.

The Protocol binds 38 industrialised nations to reducing their emissions an average of 5.2 per cent below 1990 levels by 2008–2012.

But there are loopholes. Countries unable or unwilling to achieve these modest targets are allowed to 'compensate' for their failure through three trading mechanisms, or markets.

*Which are?*

First, they are allowed to buy emissions rights from countries that have permits to spare. Countries that were able to win very lax targets to begin with, such as Russia and the Ukraine, are likely to have plenty of permits with which to supply this market.

*And second?*

Second, industrialised countries can also escape the need to reduce emissions by putting money into carbon-absorbing forestry or soil conservation.<sup>71</sup>

*And third?*

Last, and most important, the industrialised North can escape its obligations to reduce at home by investing in special, UN-approved 'greenhouse gas-saving' projects abroad.

*What are these foreign-based projects?*

They fall into two categories. Clean Development Mechanism (CDM) projects are carried out in the South, in countries not subject to the emissions 'cap' on industrialised nations.

Joint Implementation (JI) projects are similar, but are set up in other industrialised countries, in practice mostly in Eastern Europe.

Such trading mechanisms had been tried out nowhere in the world outside of the US. By and large, they had failed even there (see Chapter 3). But support for them from the Bill Clinton regime set in motion a politics that eventually prevailed over both European and Southern opposition<sup>72</sup> (see box on page 52, 'International Climate Politics: Some Recent Highlights'). As climate expert Michael Grubb notes, the 'dominance of US power, and the continuing weakness of foreign policy... elsewhere' has ensured that the negotiations following the Kyoto Protocol – as well as the Protocol itself – have been 'very much as sought by the US administration'.<sup>73</sup>

Also significant was support from some Northern corporations, who were happier with schemes that gave big polluters free property rights in previously ‘open access’ global dumps than with programmes focused on taxation and more conventional forms of regulation. Traders and bankers hoped to set up new carbon exchanges in London, Chicago, Sydney, Amsterdam, Leipzig and elsewhere. Environmental groups, too, threw in their lot with the market fix on the theory that it was the only way to get a climate treaty approved.<sup>74</sup>

By the time the second George Bush pulled out of Kyoto in 2001 (much to the consternation of US companies hoping to profit from carbon trading, such as Enron), the approach had become internationally entrenched even though its original political rationale had vanished. Its environmentalist backers, many of whom had by now spent much of their careers in the negotiations, were left in the odd position of having to champion an agreement written largely by the US for US purposes on the basis of US experience and US economic thinking, but which no longer had US support.

But the anomaly was quickly forgotten. Journalists and environmentalists alike soon came to treat any criticism of the Kyoto Protocol not as directed against US-style ‘free market’ environmentalism but, ironically, as playing into the hands of US oil interests and as endorsing a do-nothing position. A little-tested idea spearheaded by a small US elite was now perceived as a global consensus and the ‘only show in town’.<sup>75</sup>

*Why was US pressure to turn the Kyoto Protocol into a set of market mechanisms so successful?*

There’s no simple answer. Almost certainly, many factors were involved.

First, there is sheer force of numbers. In the 2000 UNFCCC climate negotiations in The Hague, to take one example, the US fielded 150 well-equipped delegates, housing them in a luxury hotel and sending well-rested and well-briefed representatives to every working group meeting, while Mozambique had to put up its three harried delegates in a noisy youth hostel occupied largely by Chinese tourists.<sup>76</sup> During complex negotiations featuring many simultaneous sessions and drafts of hundreds of crucial documents flying around for continuous comment and revision, such numerical superiority can be decisive.

The US was also able to impose a language on the climate talks in which objections to neoliberal policies could not be effectively made.<sup>77</sup> As IPCC member Wolfgang Sachs notes, orthodox economics and public policy methodology prevented the question even being

raised as to what type of changes would be necessary to reduce greenhouse gas concentrations to a safer level or allocate atmospheric rights equitably.<sup>78</sup> Officials of most countries had neither the background nor the staff to work out in time how to counter, or even to understand, a complicated pollution-trading policy jargon essentially 'made in the USA'.

In addition, the structure of the climate negotiations was itself biased in favour of US interests. As scholar Joyeeta Gupta notes, standard UN negotiating techniques such as 'avoiding polarisation', 'incrementally building on agreement', and pretending to be guided by international legal norms handicap activist Southern diplomats by automatically relegating talk of structural change to the category of the 'merely rhetorical' or 'irrelevant'.<sup>79</sup> Privately, too, negotiators also often speak of US trade threats, bribes and 'dirty tricks', although diplomats and other officials who are successfully targeted often want to keep the news off the record as much as the US itself does.

One example of US influence in the negotiations comes from the Kyoto Protocol talks themselves. In 1997 Brazil proposed a 'Clean Development Fund' that would use penalties paid by industrialised countries that had exceeded their emissions targets to finance 'no regrets' clean energy initiatives in the South.

The gist of Brazil's proposal was accepted by the G-77 nations and China. During a few days of intense negotiations, however, the fund was transformed into a trading mechanism allowing industrialised countries to buy rights to pollute from countries with no emissions limits. Fines were transformed into prices; a judicial system was transformed into a market.

### *How?*

Smaller negotiating groups assigned to discuss channelling penalties for Northern failure to meet emissions targets to a fund for the South were dominated by Northern delegates who wanted to dodge the issue of penalties as much as possible. The 'direct link between compliance and the fund dissolved'<sup>80</sup> and the negotiations turned into a gruelling series of sessions on how to convert the clean development fund into a version of a trading scheme the US had already been backing against the opposition of most of the G-77/China and the EU.

The Clean Development Mechanism that resulted now occupies an immense slice of UN time and involves billion-dollar money flows despite the fact that its effect on the climate may well be negative (see Chapters 3 and 4).

### *International Climate Politics: Some Recent Highlights*

1990: In the wake of warnings from scientists, international support grows for requiring countries to reduce their greenhouse gas emissions to mitigate global warming. The US is opposed.

1991: The UN Conference on Trade and Development sets up a department on greenhouse gas emissions trading.

1992: The Rio de Janeiro Earth Summit produces the United Nations Framework Convention on Climate Change (UNFCCC) to prevent 'dangerous anthropogenic interference with the Earth's climate system'. The UNFCCC suggests, but does not require, that emissions in 2000 not exceed 1990 levels.

1994: The UNFCCC enters into force, signed by 153 countries. The Alliance of Small Island States, in an attempt to hold sea-level rise to 20 centimetres, demands that emissions be cut to 80 per cent of current levels by 2005. The US and its allies reject the idea of cuts, saying that it would be cheaper for them to be allowed to buy permits to pollute in an emissions market. Most EU nations, believing they already have cost-effective means for domestic reductions, portray the US proposal as an attempt to shirk responsibility.

1996: US proposals to avoid reductions by buying permits from abroad and borrowing against future emissions continue to be condemned by the EU, G-77 nations and most NGOs.

1997: The Kyoto Protocol is adopted, binding industrialised countries to limit emissions to approximately 95 per cent of 1990 levels by 2008–2012. But Northern

pressure, especially from the US, opens loopholes that allow the target to be met partly by global trading in emissions allowances and carbon project credits, as well as growth of domestic forest cover.

1998: Increasingly worried about the costs of domestic emissions reductions and, in the face of industry pressure, unable to make enough progress on common regulatory policies and taxes,<sup>81</sup> the EU begins to develop an internal emissions trading scheme. But it insists on limits to global carbon trading, demanding that permits bought in from abroad be used to meet no more than 50 per cent of any country's emissions targets. The US opposes any limits on global trading and threatens to form a pact with Canada, Japan, Australia and New Zealand to meet all emissions targets by buying meaningless Russian credits created by the use of 1990 (before the post-Soviet economic collapse) as a 'baseline year'.

1999: The World Bank sets up a Prototype Carbon Fund (PCF) to generate cheap credits from Southern carbon-saving projects that can 'reduce the costs of emissions reductions for industrialised countries'.<sup>82</sup> The PCF quickly attracts investment from Mitsubishi, BP, and other companies, as well as several governments. The International Emissions Trading Association, a corporate lobby group, is established through the cooperation of UNCTAD and the World Business Council for Sustainable Development.<sup>83</sup>

2000: The EU rejects a compromise that would have allowed the US limited credits for its own forest carbon sinks, allowed

it to buy credits for carbon sinks abroad, lifted the 50 per cent limit on the use of trading to meet domestic targets, and not punished it if it failed to meet any targets. European industrialists step up efforts to erode European opposition to unlimited carbon trading. Denmark experiments with domestic carbon dioxide trading.

2001: The US withdraws from the Kyoto Protocol. With carbon trading freed of the stigma of being associated with US intransigence, the EU reverses its opposition to the extensive use of trading.<sup>84</sup> Now holding the balance of power over whether the Protocol will be ratified, Japan and Russia demand extra carbon credits for their domestic forests. Desperate to hang onto the Protocol as a way of asserting EU leadership in global climate policy,<sup>85</sup> and already committed to its own emissions trading scheme and other climate legislation, the EU capitulates. Most NGOs celebrate an agreement they would have condemned a year previously, justifying it as a 'necessary compromise'. A 'rule book' for CDM and other Kyoto Protocol trading mechanisms is adopted after much wrangling, protecting loopholes that essentially cancel out the Protocol's minimal emissions cuts.

2003: Northeastern states of the US begin to develop a Regional Greenhouse Gas Initiative that would use trading to cut the costs of a proposed 10 per cent cut in emissions from power plants by 2020.

2004: Defying environmentalist objections, the EU decides to allow countries to use credits from carbon projects outside the EU to meet EU emissions targets.<sup>86</sup>

2005: The EU Emissions Trading Scheme comes on line with broad backing from NGOs. The Kyoto Protocol comes into force after being ratified by Russia in 2004, again with broad NGO support. It becomes obvious that many industrialised signatories will not meet their 2008–2012 emissions targets. New procedures are adopted for speeding the flow of CDM credits into the system. Kyoto signatories 'agree to discuss' emissions targets for the second compliance period beyond 2012. Countries without targets such as the US and China agree to a 'non-binding dialogue' on their future role in curbing emissions. The US proposes an Asia-Pacific Partnership for Clean Development and Climate to seek technological fixes for global warming.

2006: The EU carbon market crashes, due partly to governments having given their corporations too many property rights in the earth's carbon dumps for the commodity to be sufficiently scarce (see Chapter 3). Projects expected to deliver some 420 million tonnes of carbon dioxide credits by 2012 are registered with the CDM by mid-year, injecting still more assets into global carbon trading systems.

## Early history of the market fix

The market fix for global warming could not have become so dominant if it came out of nowhere. Part of its success is owed to the fact that it is part of a larger, more longstanding historical wave of neoliberalism.

Internationally, neoliberalism is a movement using institutions such as the World Bank, and the World Trade Organisation, along with various treaties, to establish new forms of globally-centralised control over far-flung resources. Attempting to integrate trading systems worldwide, neoliberalism reorganises property rights systems and fights regulation in an attempt to reduce the power of national governments, labour unions and local communities over corporate activity.

Justifying neoliberalism is an ideology of ‘efficiency’ developed over decades, largely in the think-tanks, academic economics departments, international agencies and government ministries of Anglo-America. The ideology revolves around the claim that society as a whole will benefit if it ‘makes the most’ out of whatever stuff is available to it.

*That seems reasonable.*

Sure – as long as everybody agrees on what it means to ‘make the most’ out of the stuff you have.

*How do you tell when you’ve made the most out of what you have?*

On a neoliberal view, you first divide all your stuff into a lot of different bits. This isn’t always so easy. The categories the bits are divided into don’t always reflect the categories people use to live their lives.

For example, you might be forced to divide your land into ‘permanent forests’ and ‘permanent fields’ even if you’re a member of an indigenous group that doesn’t demarcate land this way and instead uses some areas as woodland during some periods and as fields during others.

Or you might be forced to divide your activities into ‘labour’, ‘housework’ and ‘leisure’, even though you’re not used to looking at things that way either.<sup>87</sup> Or you might have to divide your state welfare institutions into pieces that can be more easily managed for profit.

It’s a bit like taking a picture and sawing it into a jigsaw puzzle. You wind up with a lot of odd-shaped pieces with a bit of blue sky and cloud here and half an eye or a piece of a house over there.



*So what's next?*

You transform all these jigsaw puzzle pieces into 'resources' and 'commodities'. A resource is something whose value lies in being a 'source' of something else, usually an abstraction called wealth.<sup>88</sup> A commodity is something whose value lies in what it can be swapped for or what price it can fetch. So you wind up treating your bits not as pieces of a picture that happened to get separated from each other, but as things that are on their way to being something else, something to do with industry and wealth.

*And then?*



*Economist Ronald Coase, who insisted that a polluter should not be seen as someone 'doing something bad that has to be stopped'. According to Coase, '[P]ollution is doing something bad and good. People don't pollute because they like polluting. They do it because it's a cheaper way of producing something else. The cheaper way of producing something else is the good; the loss in value that you get from the pollution is the bad. You've got to compare the two. That's the way to look at it.'*<sup>90</sup>

Now you shuffle all the pieces together with a view to finding out who should get them and what new thing can be made out of them as a whole. Crudely speaking, you see which way of distributing, using, keeping or destroying your bits makes the most money. That's how you find out how to make the most out of the stuff you have.

Neoliberals say not only that dividing and redistributing all your stuff into these interchangeable bits is a good idea, but also that what will tell you how to make the most of them is a special computer called the 'perfect market'. Feed your bits into the perfect market and the result will be that everything gets used or destroyed in a way that maximises total production.

*Wow. But what does all this have to do with climate change?*

That's the contribution of Ronald Coase, a University of Chicago economist who wrote a series of influential articles in the middle of the last century. In a way, Coase is the grandfather of pollution trading (and thus of the Kyoto Protocol). In some ways, he's also the presiding economic spirit of the 1992 Earth Summit and the international environmental agreements that followed.<sup>89</sup>

Coase's idea was that a pollution dump is just another jigsaw puzzle piece – just another resource or commodity. The right to pollute is a factor of production just like the right to use land. In both cases, exercising your right naturally entails that some losses will be suffered elsewhere.<sup>90</sup> The only question is how significant those losses are.

To find out how best to use a pollution dump, you put it on the market together with the other bits you've created – like real estate, water, labour, rice, silver, forests, jet planes and mobile phones. You measure them all by the same yardstick and treat them all in the same way.

If the market is a perfect market – if it has no 'transaction costs', as Coase called them, and is inhabited by properly calculating, maxi-

missing economic agents with perfect information – the pollution dump will wind up being used in the way that contributes the most to society’s ‘total product’.<sup>91</sup>

If that means a lot of pollution, so be it. But there’s no need to worry that there will be ‘too much’ pollution, because if the society got too polluted, you wouldn’t get the best value out of other goods – your labourers might die, for example – and ‘total product’ would decline. The perfect market will select against that, automatically ‘optimising’ pollution so that there’s neither too little nor too much.

*I think I’ve heard this line of thought somewhere before...*

It certainly made headlines back in 1991. That’s when Larry Summers, former US Treasury Secretary and former president of Harvard University, built on Coase’s view in a famous memorandum he wrote to colleagues when he was chief economist of the World Bank. ‘The economic logic of dumping a load of toxic waste in the lowest wage country is impeccable, and we should face up to it,’ Summers said. ‘Underpopulated countries in Africa are vastly underpolluted.’<sup>92</sup>

*Now I remember.*

But if it’s poor economics simply to say that pollution is ‘bad’ without looking at ‘total product’, it follows that it’s also poor economics to say that polluters must be held liable for damages, or that they must internalise all costs, or that certain types of pollution have to be reduced ‘whatever the cost’, or that regulation or taxes should be based on that assumption.

To do that, Coase thought, would be to fail to ‘optimise’ pollution or maximise the ‘value of production’. A tax that penalised both polluters and pollutees for losses to ‘total product’ might be a good thing (although Coase thought such a tax would be impossible to calculate), but not a tax that was based on the idea that some level of pollution was simply unacceptable.

*Which is, as you’ve been saying, the idea now emerging from the science of climate change.*

Yes. But bear with Coase at least until you hear what he had to say. Because what he said now dominates a great deal of world climate politics.

The idea of responsibility, Coase concluded, is of no use economically: ‘Whether someone is liable or not liable for damages that he creates, in a regime of zero transaction costs, the result would be the same...

[and] you can expand that to say that it doesn't matter who owns what; in a private enterprise system, the same results would occur.' The important thing is to create property rights and reduce impediments to bargaining so that 'affected parties themselves can decide whether to restrict activities through private trading of rights'.<sup>93</sup> In a perfect market, pollution rights would gravitate into the hands of whoever could squeeze the most money out of them.<sup>94</sup>

*But where are you going to find a perfect market? They don't exist.*

No. And nobody knew that better than Coase himself. As he rightly stressed, a perfect market is only a figment of the imagination. But the conclusion he drew was that, in the real world, the state and the courts would have to lend a hand in giving rights to pollute to those who could make the most out of them.

Coase's successors, such as the economist J. H. Dales,<sup>95</sup> modified pollution trading theory further. While continuing to emphasise the importance of giving polluters rights to pollute, they avoided Coasean talk about 'optimising' pollution through trading. It should be up to the government, they said, not an imaginary 'perfect market', to set the best overall level of pollution.<sup>96</sup> In their hands, pollution trading became merely a way of finding the most cost-effective way to reach an emissions goal that had been set beforehand.

*And when did all this begin to be put into practice?*

The first major emissions trading programme was adopted in 1976 by the US Environmental Protection Agency. It allowed new polluting plants to be built in exchange for 'offsets' that reduced air pollution by a greater amount from other sources in the same region. A 1979 policy allowed polluters to meet emissions targets through any combination of on-site emissions reductions. Then, in the 1980s, academics advocated market fixes as cost-effective alternatives to regulations that would have required more technological change. A backlash against the environmental regulation of the 1970s encouraged business to team up with some Washington-based NGOs to formulate trading legislation.<sup>97</sup>

In the increasingly strident neoliberal political climate of the 1980s and 1990s, pollution trading became more and more fashionable.<sup>98</sup> Finally came the Clean Air Act Amendments of 1990, which set up a national sulphur dioxide trading programme to save power plants money in the effort to control acid rain, as well as encouraging states to use emissions trading to reduce urban smog.<sup>99</sup> That paved the way for later US trading programmes in water pollution, wetlands

destruction, biodiversity depletion and so on. By the early 1990s, with the blessing of the Clinton regime, pollution trading was poised for its leap into the climate arena. In an atmosphere of privatisation, the thing to do seemed to be to privatise the atmosphere.

## ‘All that is solid melts into air’

The neoliberal approach that currently dominates global warming politics does more than just reorganise the earth’s carbon-absorbing abilities. At a time when ‘oil and state’ are merged at the highest levels of US government,<sup>100</sup> it is also helping dissolve most of the conventional boundaries that used to divide private corporations, governments, the UN, scientists, academics, consultancies, think-tanks, non-government organisations and even artists. As institutional borders disappear, so do checks and balances that could have restrained the blunders and excesses of carbon trading.

Pollution trading itself is no corporate conspiracy, but rather a joint invention of civil society, business and the state. Non-governmental organisations (NGOs) have been nearly as prominent in its development as private corporations.

### *Are you serious?*

Completely. Although pollution trading derived from the theories of economists working in universities and think tanks,<sup>101</sup> it was written into the 1990 US Clean Air Act Amendments by Environmental Defence, a corporate-friendly NGO that subsequently pushed for it to be included both in the Kyoto Protocol and in Chinese environmental programmes.<sup>102</sup> The Washington-based NGO World Resources Institute (partly bankrolled by government and UN agencies, international financial institutions and corporations such as Monsanto, TotalFinaElf, Shell, BP, and Cargill Dow) tirelessly lobbied for carbon trading alongside the World Business Council for Sustainable Development and other corporate pressure groups. The World Wide Fund for Nature (WWF), an organisation with an annual budget 3.5 times that of the World Trade Organisation, meanwhile joined the European Roundtable of Industrialists (UNICE) and the US think tank-inspired Centre for European Policy Studies in support of the EU Emissions Trading Scheme.<sup>103</sup> WWF also helped develop an eco-label for the Kyoto Protocol’s Clean Development Mechanism projects (see Chapter 4). Greenpeace, for its part, has moved from being critical of corporate lobby groups and carbon trading to complete acceptance.

As forest conservation NGOs such as the Nature Conservancy and Conservation International move in to mop up corporate and World

Bank finance being offered for 'carbon sinks', other NGOs confine themselves to trying to reform or 'contain the damage' done by trading programmes such as the Clean Development Mechanism (CDM). Most Northern members of the largest NGO grouping on climate change, the Climate Action Network, have thrown their support behind the carbon market, often demoting themselves to the role of advisers to governments on such matters as national emissions allocations. Critical NGOs, to borrow the words of Daphne Wysham of the Institute for Policy Studies, are being continually urged 'to unite behind an entirely bizarre, incomprehensible, and totally corruptible system of carbon trading'.<sup>104</sup> Even well-meaning artists such as sculptor Damien Hirst and rock group Coldplay have got into the act as both clients and spokespeople for carbon marketing firms.<sup>105</sup>

*What's the UN's role in all this?*

As carbon trading moved into the centre of international climate policy, UN climate conferences began to resemble trade fairs more than international environmental negotiations. From the start, umbrella groups such as the International Petroleum Industry Environmental Conservation Association, the Transatlantic Business Dialogue and the Emissions Marketing Association have been in touch with national governments to promote market approaches to global warming, and corporation executives even sit on country delegations.<sup>106</sup> At today's UN climate negotiations, carbon traders, consultants, manufacturers associations, fossil fuel, mining, nuclear and forestry companies, together with lobbyists and other corporate representatives of all kinds, easily outnumber both government delegates and environmentalists.<sup>107</sup>

Early on, the rot also spread to UN agencies other than the UNFCCC as well.

*Such as?*

The World Bank, which provides billions of dollars in public money to fossil fuel companies for their production and transport expenses, profitably expanded its remit to host seven different carbon funds aimed at providing cheap credits to corporations to allow them to continue to use fossil fuels.<sup>108</sup>

In addition, in the late 1990s, the UN Development Programme (UNDP) put its head together with the World Business Council on Sustainable Development to get companies involved in CDM projects<sup>109</sup> and, together with the Food and Agriculture Organisation, sponsored research into carbon sinks and carbon accounting.<sup>110</sup> By 2006, UNDP was pushing for an international pollution permit trading system that



Business meets and greets in exhibition and conference spaces at UN climate meetings.

it claimed could deliver USD 3.64 trillion in global wealth.<sup>111</sup> The cash-strapped UN Environment Programme meanwhile infuriated many environmentalists in 2000 by trying to position itself as a broker for CDM projects, including carbon ‘offset’ forestry projects in Africa.<sup>112</sup>

*Is there more?*

A lot, but it’s not always visible to the naked eye. A good deal of corporations’ work with the UN goes on behind the scenes. One example involves the International Chamber of Commerce (ICC), a powerful corporate lobby group that has played a huge role in global negotiations since the 1992 Rio Earth Summit. Shortly before the 1998 climate talks in Buenos Aires, the ICC, together with Shell, Texaco, Mobil and Chevron, sent a 30-person team to Senegal to round up support for the CDM from the energy and environment ministers of more than 20 African countries. In return, the companies offered technology transfer and foreign investment.<sup>113</sup> Similar efforts with forest-rich Latin American nations have helped recruit nearly all their governments to the cause of carbon forestry.

As carbon-trading businesses fused with the UN climate apparatus, revolving doors between the two became jammed with profiteers moving in both directions. In 1991, the UN Conference on Trade and Development (UNCTAD), an agency charged with ‘assisting developing countries’, brushed aside other regulatory or tax alternatives to set up a department on greenhouse gas emissions trading. UNCTAD later helped form the International Emissions Trading Association (IETA), a corporate lobby group dedicated to promoting emissions trading. Frank Joshua, who served as the UN Head of Greenhouse Gas Emissions Trading and led several expert groups including the UNCTAD Earth Council Emissions Trading Policy Forum and the UNCTAD Expert Group on the Clean Development Mechanism, went on to be the first executive director of the IETA, Global Director of Greenhouse Gas Emission Trading Services at Arthur Andersen, and managing director of US-based carbon trader Natsource – all of which are cashing in on the accounting rules Joshua himself helped to enshrine in the UN.<sup>115</sup> James Cameron, a lawyer who helped negotiate the Kyoto Protocol, later became Vice Chairman of Climate Change Capital, a carbon-trading merchant bank.<sup>116</sup>

At the same time, staff of corporations and other organisations in a position to benefit financially from carbon trading occupied positions on UN expert panels that decided on the rules that would determine their future profits.<sup>117</sup>



Sticker on the window of a London chain store that buys carbon credits from the Carbon Neutral Company (formerly Future Forests). The credits are claimed to ‘neutralise’ the store’s greenhouse gas emissions. The Carbon Neutral Company is the secretariat of the UK Parliament’s All-Parliamentary Climate Change Group, which numbers over 100 Members of Parliament from all three major parties. The Group counts promotion of the Carbon Neutral Company’s ‘carbon-neutral’ idea among its objectives.<sup>114</sup> Chairman Colin Challen, MP, defends the sponsorship deal as standard parliamentary practice.

### *Globalisation and Carbon Trading: Two Complementary Views*

'The response of global business to new legal frameworks is creating new relationships ... the carbon market can be easily grafted onto powerful financial markets that can bring amoral scale... Consider colleagues of mine at Climate Change Capital, an Australian woman who built experience in the carbon market at the World Bank, a Hungarian educated in the US who founded an organisation in his twenties to work on the climate change issue, working together with a Chinese plant manager in a hard hat during endless dinners with unusual foods, vast amounts of alcohol, explaining how international law works and why we must have English law govern the contract and at the end there is opportunity for wealth to be created here in cosmopolitan London and the rapidly developing world.'<sup>118</sup>

*James Cameron, Vice Chairman,  
Climate Change Capital, 2005*

'A lot of "offsets" are produced by consultants. Example: you own a steel plant in a poor country that turns scrap metal into new steel. It is an old-fashioned basic oxygen furnace (BOF), and it is finally com-

pletely worn out. A rebuild won't do this time; it needs to be replaced. There is hydroelectric power in your area. You can save a lot of money by buying an Electric Arc Furnace (EAF) and using that for processing your scrap metal. But you know that EAF is a lot cleaner and greener than your old BOF. Isn't there some way you can get paid for this? Why, yes, there is. Call in a certified carbon market consultant and pay him a nice fee. He will produce a study certifying that you could have gotten ten more years out of that old BOF, and that the only reason you are investing in a new EAF is carbon credits. *Voilà!* The carbon market will examine the report, find it convincing, and a new annual producer of offsets is born – which a "green" rock band can buy to justify burning petroleum in planes and buses. "Mommy, where do carbon offsets come from?" "Well, you see, honey, when a polluter and a consultant love money very, very much, they come together in a very special way to produce an extremely long piece of paper."<sup>119</sup>

*Gar Lipow,  
systems analyst and peace activist, 2006*

In addition, the small circle of private carbon consultancies that help design and, with the permission of the UN, validate, verify and certify greenhouse gas-saving projects in the South have little incentive to question the effectiveness of the carbon projects they work on, since to do so would be to jeopardise their chances of getting future work. It could also jeopardise their relationships with their other clients. For example, the Norwegian-based Det Norske Veritas (DNV) consultancy, under contract to the World Bank's Prototype Carbon Fund (PCF), recommended the controversial Plantar scheme (see Chapter 4) as a CDM project. Yet DNV also has significant consultancy contracts with two of the PCF's investors, Statoil and Norsk

Hydro. One validator, which had not even visited the project it was validating, was actually part-owned by a parent-company that was an investor in the CDM project. After a meeting with the CDM Executive Board in 2005, validators agreed to take measures to avoid such incidents in the future, without specifying what such measures would consist of or how they would be enforced. ‘We must establish self-justice internally,’ said Einar Telnes of DNV.<sup>120</sup>



Advertisement for DNV Climate Change Services, Milan, December 2003.

*Hasn't anyone at the UN ever heard of conflict of interest?*

Sometimes it's hard to say. Conflict of interest has become so routine in international climate politics, as elsewhere under neoliberalism, that the concept has virtually disappeared. Despite being prodded by NGOs such as the World Rainforest Movement, the UN has declined to acknowledge the issue. To try to keep vested interests out of the rule-making process for carbon trading, said John Houghton, a member of the IPCC Bureau which appointed the land use review team, would 'cut out important experts'. In his view, 'It's impossible to flush out everybody.'<sup>121</sup>



## Three in one

This chapter has suggested that a market fix, a technological fix and a knowledge fix have come to be intertwined in climate change politics in an intimate way.

The recent US neoliberal innovation known as the pollution market, growing largely out of academic theory, NGO advocacy and an anti-regulation backlash among corporations, moved with startling speed into international climate politics in the 1990s. Fed by a corporate-friendly reading of climate science and economics, as well as research into technological fixes, it drew UN agencies and activists alike into its gravitational field, eventually triumphing over early Southern and European opposition through complex and still partly obscure political processes. An astonishing range of institutions from private companies to UN agencies, university departments and NGOs are now aligned around an agenda characterised by rejection of precaution, inability to come to terms with indeterminacy and irreversibility, insistence that tradeoffs are always possible, and support for growth in corporate power.

The market fix, the technological fix and the knowledge fix have come together to encase international climate politics in a debate in which almost the only questions spoken are the narrow ones large corporations most want to hear. Is there or is there not human-caused climate change? If there is, what might make continued fossil fuel use possible? How can more subsidies be channelled to technologies corporations can profit from? How can privatisation and 'efficiency' be furthered in a way most acceptable to the public? Such questions are uniting the most cynical corporate hack and the most innocent environmental activist in a single agenda. The consequences of bypassing the central issues of fossil fuel overuse, ownership, corporate power, free enquiry and democracy will be explored in the next chapter.

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- 107 See UNFCCC list of observers, [http://unfccc.int/parties\\_and\\_observers/items/2704.php](http://unfccc.int/parties_and_observers/items/2704.php).
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# Chapter 3

## Lessons unlearned



*In which carbon trading, contrary to slogans about the universal effectiveness of markets in dealing with environmental and social problems, is shown to be ill-suited to addressing climate change. The experience of the US in pollution trading is demonstrated to be an argument not for, but rather against, making carbon markets the centrepiece of action on global warming.*

### Introduction

Pollution trading, the last chapter has pointed out, is a US invention now at the centre of efforts to address climate change worldwide. It's being enthusiastically pushed by governments, international organisations, business and even many NGOs.

The rest of this special report will argue that this approach isn't working, and even threatens to derail more constructive movements to address global warming. The US experience with pollution trading is an argument not for, but rather against, greenhouse-gas trading programmes such as the Kyoto Protocol and the European Union Emissions Trading Scheme.

*But I thought pollution trading was a huge success in the US!*

That's what carbon trading proponents often say. The reality is more complicated. US pollution trading schemes have produced no more reductions, and spurred less innovation, than traditional regulation, to say nothing of other possible programmes for cutting emissions. US pollution trading schemes have cut only short-term costs, and only for some actors, have raised many questions of equity, and in many ways have distracted attention from fundamental issues.

Equally importantly, the conditions that made possible the best-designed US emissions trading scheme – the US's sulphur dioxide programme – are simply not present in global regimes for controlling greenhouse gases.

*I don't understand. What could be wrong with trading? Isn't trading always the most efficient way of reaching a given goal?*

Carbon trading's claim to be 'efficient' is certainly its main attraction – together with its claim to be able to stimulate change in a relatively politically 'easy' way. But to decide whether such claims are true, you need to look carefully at specific cases.<sup>2</sup>

Trading's 'efficiencies' tend to conceal a lot of 'inefficient' stage-setting: arranging infrastructure, working up a legal framework, and so forth. Global trade in paper pulp, for instance, becomes 'efficient' only after subsidies or violence have gone into building roads and ports; securing large-scale, contiguous areas for producing raw material; finding ways of convincing people that local land is of 'greater economic value' when under tree plantations than when treated as a commons; hiring and training police; ensuring sustained high demand; and so on.<sup>3</sup>

At the same time, trading is often a singularly *inefficient* way of attaining goals that require sweeping structural changes in society, or that place local rights before accumulation. It's also inefficient when the necessary conditions for trading – measurement instruments, legal institutions and so forth – are inadequate.

Where pollution trading is possible at all, it can get in the way of achieving changes of the kind required for breaking industrialised societies' addiction to fossil fuels. Its cost savings, while often real, tend to fall only to some members of society. In addition, it can exacerbate political conflict. Pollution trading, in short, only makes harder the difficult job of broad-based political organising required for coping with global warming. To put it another way, the 'efficiency' that is fostered by trading is often not *effective*.

#### *Why is that?*

Broadly, there are five reasons, and they are what this chapter is about.

*First*, in order to work, greenhouse gas trading has to create a special system of property rights in the earth's carbon-cycling capacity. This system sets up deep political conflicts and makes effective climate action exceedingly difficult. *Second*, pollution trading is a poor mechanism for stimulating the social and technical changes needed to address global warming. *Third*, the attempt to build new carbon-cycling capacity is interfering with genuine climate action. *Fourth*, global trading systems for greenhouse gases can't work without much better global enforcement regimes than are likely in the near future. And *fifth*, building a trading system reduces the political space available for education, movement-building and planning around the needed fair transition away from fossil fuels.

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*'Emissions trading derives from economic theory and a small amount of empirical evidence from US practice, untested on a global scale, and certainly untested in the various economies in which these mechanisms must work.'*<sup>1</sup>

Ruth Greenspan Bell,  
Resources for the  
Future, 2006

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## Property rights and privatisation

In any trading system, traders need to own what they sell. Pollution traders are no exception.

The very ‘basis of emissions trading,’ says former World Bank chief economist Sir Nicholas Stern, ‘is assigning property rights to emitters, and then allowing these to be traded’.<sup>4</sup> As University of Texas Law School property specialist Gerald Torres explains, in emissions trading systems ‘an emitter is not only legally obligated to reduce emissions down to the limit specified on its permit; it is also legally entitled to emit up to that amount’.<sup>5</sup> As a result, ‘legal instruments providing evidence of ownership’<sup>6</sup> are a universal requirement of all tradable permit systems.

*Who gets these property rights? And how do they get them?*

That depends.

Under a scheme advocated by many economists, they are sold to polluters by government. Under a scheme backed by many environmentalists, they are given to a trust which sells them to polluters at intervals and distributes the revenue to citizens. But under most real-world trading schemes, including US pollution trading programmes, the Kyoto Protocol and the EU Emissions Trading Scheme, they are given to a selection of historical polluters – wealthy countries and companies – for free.

The US acid rain programme, for instance, handed out sulphur dioxide emissions rights free of charge to several hundred large industrial polluters – companies such as Illinois Power and Commonwealth Edison. The Kyoto Protocol dispensed greenhouse gas emissions rights to 38 industrialised countries who were polluting the most already. Although the South was allowed to continue emitting greenhouse gases unimpeded for time being, it got no allowances to trade. The first phase of the European Union Emissions Trading Scheme, which got under way in 2005, donated carbon dioxide emissions rights to 11,428 industrial installations, mostly in the high-emitting private sector.<sup>7</sup>

In other words, like rights to many other things that have become valuable – oil fields, mining concessions, the broadcast spectrum – rights to the earth’s carbon-cycling capacity are gravitating into the hands of those who have the most power to appropriate them and the most financial interest in doing so.

*Whoa, whoa, whoa! I don't believe it. The United Nations would never give away a public good to rich nations. European governments would never give away rights to the global carbon dump to its own corporations. Who would allow such a thing to happen?*

It's already happened. The Kyoto Protocol gives Germany, France, Sweden and the rest of the European Union formal, transferable rights to emit, in 2012, 92 per cent of what they were emitting in 1990. Japan and Canada get 94 per cent, Russia 100 per cent, Norway 101 per cent, Iceland 110 per cent. Under the EU Emissions Trading System, the UK government alone hands out free, transferable global carbon dump assets worth around €4 billion yearly (at June 2006 prices) to approximately a thousand installations responsible for around 46 per cent of the country's emissions (see table 2, p. 89). Saleable rights to emit 145.3 million tonnes of carbon dioxide per year were given out to power generators, 23.3 million tonnes to iron and steel manufacturers, and so forth.

*But surely this is a misunderstanding. These emissions trading programmes are giving out 'allowances', not rights to pollute. The Marrakech Accords – the 'rule book' for the Kyoto Protocol – states clearly that the Protocol 'has not created or bestowed any right, title or entitlement to emissions of any kind on Parties included in Annex I'.<sup>8</sup> The EU ETS creates discrete permits under a regulation, not property rights. And the US Clean Air Act Amendments of 1990 are likewise careful to specify that a sulphur dioxide allowance 'does not constitute a property right',<sup>9</sup> while a proposed US law setting up a greenhouse gas trading scheme also stipulates that 'tradeable allowances are not a property right'.<sup>10</sup> So relax! No one's giving anything away to polluters. The world's capacity to recycle carbon is not being privatised.*

If only it were so! In fact, things are more complicated – and more disturbing. When governments say they are not giving out property rights, what they mean is that they are not giving out a particular kind of property rights. But they are giving out property rights of another kind – ones which do contribute to the privatisation of a global good.

*You'd better explain what you mean.*

Let's begin by acknowledging that there are good reasons why governments are afraid to mention the words 'property' and 'rights' in laws and treaties governing emissions trading.

An emissions trading system has to cut emissions and prove it is doing so.<sup>11</sup> It can do that only if it reduces the amount of pollution allowances in circulation. Governments have to be able to confiscate some

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*'The road to the free market [had to be] opened and kept open by an enormous increase in continuous, centrally-organised and controlled interventionism... laissez-faire economy was the product of deliberate state action.'*<sup>15</sup>

Karl Polanyi (1944)

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of the emissions allowances they gave out previously. And they have to be able to confiscate them without compensating their holders.<sup>12</sup>

*Why?*

Imagine what would happen if the government had to compensate permit-holders every time it tightened an emissions ‘cap’ by taking away some of their allowances. Taxpayers would have to pick up the bill for every emissions reduction that corporations made, and the bill would be ‘prohibitively high’.<sup>13</sup>

In a housing market, homeowners need to know that the government can’t simply take their rights to their houses away from them without compensation and sell the houses, pocketing the proceeds itself. But in an emissions market, it’s essential that the government *does* have the power to take away some of the rights to pollute it has given or sold to companies or individuals. The property rights in an emissions market, in other words, must be less ‘absolute’ than the property rights in a car market. And in the case of carbon trading, it’s especially important that governments be tough about taking away allowances.

*Why?*

Because they’re going to have to take away so many in order to forestall climate chaos.

In the first phase of the Kyoto Protocol, governments have handed out, to industrialised countries alone, several times more rights to the world’s carbon cycling capacity than are available if global temperatures are not to rise by more than, say, 2 degrees Celsius.<sup>14</sup> Having given a temporary stamp of approval to this huge overflow, governments will have to commit themselves to taking away an especially large proportion of those rights in the future.

Unfortunately, the rightsholders in question – powerful Northern governments and their heavy industries – are not going to give them up without a fight. In fact, the fight has already started (see below). So the job of dispossessing them of their carbon emissions permits not only carries much higher stakes, but will also be politically much harder for the UN and world governments to carry out, than the job the US government faced in taking away sulphur dioxide permits.

That means governments will have to make it especially clear in the case of global warming that emissions allowances are only temporary.

*Exactly! And if allowances are temporary, they’re not property rights. Therefore nothing is being given to Northern countries, or their polluting industries.*

## *Sir Henry Maine and the Right to Pollute*



In order to use, defend, steal or appropriate the things they want and need, people have invented property rights of many different kinds. Today, there are property rights governing everything from land and water to birds' nests, ideas and DNA. There are rights to exclude, to use, to benefit from, to inherit, to manage, to transfer. There are rights that are held by communities, rights that are held by individuals, and rights that are held by the state. There are permanent rights and temporary rights. There are freeholds, leaseholds, licenses, patents, easements, quotas, copyrights, concessions, and usufructs. There are formal rights and informal rights, written and unwritten. There are hundreds of kinds of commons rights. Such systems of rights overlap and even interpenetrate. A single plot of land may be seen as private, public and common property by different groups. Private property is guaranteed by but subject to the authority of the state and the public; individual user rights of commoners tend to be granted at the will of the community.

A century and a half ago, the British jurist Sir Henry Maine recognised something of this diversity and complexity when he compared different kinds of property systems to different 'bundles of sticks.' Some bundles include the right to pass on the good in question to your heirs, some do not. Some bundles include the right to buy

and sell, some do not. And there are many other rights, or 'sticks', as well, each of which may or may not be in any particular bundle: rights to use, to have access to, to manage, to exclude, and so forth. The number of possible 'bundles' is dizzying. And some may have few or no sticks in common with other bundles. As political scientist Elinor Ostrom notes, 'None of these rights is strictly necessary... Even if one or more sticks are missing, someone may still be said to "own" property... one must... specify just what rights and corresponding duties [a] regime would entail.'<sup>16</sup>

Tradeable pollution allowances and credits fit easily into this conception of property. They are

- 'Enforceable claims to use something'<sup>17</sup> – to pour carbon dioxide into the oceans, soil and vegetation;
- 'Enforceable rights to benefit from something'<sup>18</sup> – to make money through trading allowances, for example, or to gain a competitive advantage through access to free carbon dump space that others have to pay for;

Pollution allowances and credits also contain other 'sticks' such as

- Tradability;
- Excludability – for example, Scottish Power cannot use Ineos Fluor's allowances or credits.<sup>19</sup>

So when a law says that emissions allowances are not property rights – meaning merely that they are not permanent – it should not be taken literally.

It's not so simple. Just because something is temporary doesn't mean it's not a property right.

Property rights come in many shapes and sizes (see box: 'Sir Henry Maine and the Right to Pollute', opposite). A lot of property rights *are* temporary. Think of monthly or yearly leases. Think of mining, logging or grazing concessions that governments give out to corporations for 30 years or 75 years. Think of copyrights, trademarks, and licenses. Think of fishing quotas or seed, gene or drug patents, all of which expire after a certain length of time.

All of these temporary property rights have been used to privatise or enclose various goods. All have been used to make billions for private companies. And all have been used to transfer wealth and power to the rich, sometimes igniting bitter conflict over democracy and how human beings' environments are to be treated.

Emissions allowances are no different. Industry, economists, governments and legal scholars all agree that, in giving away these allowances, emissions trading schemes do give away something quite substantial.

As the International Accounting Standards Board notes with regard to the EU ETS, allowances are 'assets...owned by the company concerned...and as such represent a significant and immediate creation of value to companies'. They should be seen as a 'government grant, and accounted for as such, i.e. treated as deferred income in the balance sheet and recognised as income on a systematic basis'.<sup>20</sup> Temporary or not, emissions permits constitute a 'major input factor to production'.<sup>21</sup>

Allowances aren't valuable just because they enable polluters to avoid having to spend money on pollution control. They also enable corporations to borrow money more easily and give them a better share price. And they set a precedent for granting them further entitlements. They can also be bought and sold for clear profit. They have market value. It matters who they are given to.

*I still don't understand. How can you have rights over something as intangible as the earth's carbon-cycling capacity?*

Companies have legal rights over all sorts of intangible things. Drug companies own genes. The Disney Company owns the Winnie-the-Pooh story. General Electric and Rupert Murdoch hold temporary rights over parts of the broadcast spectrum – rights that they are now trying to make permanent.<sup>22</sup> Other companies own new ideas for their production lines.

### *What's Property Got to Do with It?*

Transforming the earth's capacity to maintain a liveable climate into formal property has practical consequences. As the Canadian political scientist C. B. Macpherson once put it, a property right is a 'right in the sense of an enforceable claim to some use or benefit from something'.

That word 'enforceable' is crucial. Rights give access; rights give power. Property is not a relation between an individual and a thing, but, crudely speaking, between people and people. Individuals hold objects only through the sanction of some community or government. The law may or may not be involved, but realising property rights depends on a whole raft of social factors that include trust, access to authority and knowledge, and perhaps also access to markets, capital, measurement technology, records, accounts, labour and identity.

So when systems of private property are introduced in a good like land or the earth's carbon-cycling capacity, the changes are not abstract. They involve the physical mobilisation of lawmakers, accountants, lawyers, surveyors, consultants, journalists, engineers, police, banks and all the associated paraphernalia of offices, maps, calculators and so on. In the process, new means of persuasion and coercion become possible. New groups or professions gain new powers and privileges. Power and knowledge are redistributed. Some gain, others lose.

Take the system of private property for land introduced in Egypt in the 1850s. The system recognised existing claims to the land under Ottoman and local law,

but added new courts, property registers, mechanisms of enforcement, institutions making possible acquisition and transfer, and sources of credit for those who wished to use their property as collateral.<sup>23</sup> European capital poured into the country. Local landowners and European entrepreneurs invested in new irrigation schemes and land reclamation in the countryside and housing and modern infrastructure in the cities. By the turn of the twentieth century the Egyptian stock market, whose largest share holdings were in mortgage companies and property development, was one of the most active in the world. Meanwhile, small farmers faced rapidly rising prices. Tax payments increased sharply, to cover mortgage payments on the estates of the ruling family. To obtain loans to survive crises such as cattle epidemics, farmers now had to mortgage their own land, giving creditors the power to seize the fields, animals, ploughs and houses of those unable to keep up debt payments. Farmers described the courts that enforced foreclosure decisions as 'a machine for transferring the land' from small farmers to the wealthy.<sup>24</sup>

The machinery of debt provided leverage for colonial occupation. When a global depression struck in 1874, the Ottoman viceroy in Cairo was forced to foreclose on his large cotton and sugar cane estates. British and French banking houses established a Debt Commission in Cairo, which took control of the country's finances and used the new courts to take possession of the viceroy's estates. When he resisted the takeover, the British and French governments installed his son in



his place. The subsequent rise of a constitutionalist movement led by junior army officers and disaffected notables provoked a British invasion in 1882 that reasserted European control over both finances and mortgaged property, including the extensive viceregal estates.<sup>25</sup> The private property system was further consolidated with a land survey more comprehensive than anything known at that time in Britain.<sup>26</sup> Despite belated attempts to slow down the rate at which villagers were losing their land and their homes to creditors, by the 1920s it was estimated that more than one third of the agricultural population in the Nile Delta had become landless.<sup>27</sup>

For Egyptian villagers, private property meshed with and modified existing power relations in ways that benefited some and harmed others. The same is true of the early ages of enclosure of commons in Europe's colonies and in Europe itself. And it remains true today. A World Bank-supported programme that issued 8.7 million land titles in Thailand beginning in 1984 paved the way for corrupt acquisitions of land by speculators, undermining villagers' tenure security and causing widespread rural conflict.<sup>28</sup> In Thatcherite Britain, privatisation of social housing ultimately turned 'working class housing estates into centres of intense gentrification' while producing 'homelessness and social anomie in many urban neighbourhoods.'

Privatisation of utilities redistributed assets in a way that 'increasingly favoured the upper rather than the lower classes'. Argentinian privatisation resulted in a 'huge inflow of overaccumulated capital and a substantial boom in asset values, followed by a collapse into massive impoverishment.'<sup>29</sup> Not long after the Mexican government passed a reform law in 1991 that both permitted and encouraged privatisation of the *ejido* lands, 'divesting itself of its responsibilities to maintain the basis' for indigenous security, the Zapatista rebellion broke out. Extending intellectual private property rights over biological assets to communities whose 'political resources are not commensurate with their newfound economic resources'<sup>30</sup> may wind up damaging, not improving, livelihoods.

So it is only to be expected that current moves to turn the earth's carbon-cycling capacity into a tradable asset are viewed cautiously by many groups, out of concern for their practical effects. To bring the world's carbon-cycling capacity under a new system of property sparks social change and shifts the political character of the atmosphere and the earth's ability to regulate its climate. It has already transformed or reinforced a wide range of power relations – by, for example, creating new institutions to quantify, handle, regulate, distribute and police the new assets that are being given away.

The new carbon commodity is ghostly only in the sense that it's up to governments and governments alone to decide – on whatever grounds they choose, scientific or not – how scarce it is, and how much can be distributed, bought, sold and used. Tradable permits to pollute are what law professor and pollution trading advocate Richard Stewart calls 'hybrid property' – property conjured up by regulation and thus

dependent, even more than ordinary private property is, on a centralised, complex system of government control.<sup>31</sup>

One reason why talking about ownership is important is that some of the devastating climate dilemmas that governments and the UN are now caught in are a result of the property system that emissions trading requires.

## A matter of realism

*How's that?*

For the market to work at all, 'interests in allowances must be sufficiently protected to protect investment'.<sup>32</sup> Indeed, guaranteeing that 'property rights can be assigned and enforced to ensure that trades can

### *Rent-Seeking and Carbon Trading*

Rent-seeking, a phenomenon first named by economists Gordon Tullock and Anne Krueger, is the process by which a firm seeks to extract 'uncompensated value from others through manipulation of the economic environment rather than through trade and the production of added wealth'.<sup>35</sup>



Gordon  
Tullock  
and  
Anne  
Krueger

Lobbying for favourable economic regulation is one way of rent-seeking, especially when the regulator must rely on private firms for knowledge about the market.

If firms can calculate the cost of lobbying, bribing or otherwise causing the government to enact favourable regulation, then it can compare this cost with that needed to gain similar benefits through capital improvements or increased efficiency. If 'buying' a favourable regulatory environ-

ment is cheaper than improving production lines, then firms may reap uncompensated income. Spending money on influence-peddlers instead of improved business practice slows down growth in productivity.<sup>36</sup>

Rent-seeking is therefore often considered an example of corruption or the undue influence of special interests.

Carbon-trading programmes such as the EU ETS, in which pollution rights are given to private companies depending on how much they say they have been polluting in the past, are fertile grounds for rent-seeking. The notorious horse-trading over the allocation of pollution rights to national governments under the Kyoto Protocol is an analogous case.

As financial journalist John Kay writes in the *Financial Times*, 'When a market is created through political action rather than emerging spontaneously from the needs of buyers and sellers, business will seek to influence market design for commercial advantage.'<sup>37</sup>

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*‘The creation of formal legal title and property registration becomes a machinery for transferring property from small owners and concentrating it into larger and larger hands.’<sup>39</sup>*

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*Timothy Mitchell, 2002*

take place in an ordered fashion and with a high degree of certainty’ is *the* ‘key role of the policy system’ in an emissions trading scheme.<sup>33</sup> Nobody who holds emissions allowances, or is thinking of buying or selling them – whether polluter, broker, banker or investor – is going to want anybody to be able to take them away arbitrarily.

So just as corporations lobby for exemption from pollution regulations, they lobby to make sure emissions allowances amount to secure property rights and to get as many as they can. As ‘semi-permanent property rights,’ in the words of David Victor of the US Council on Foreign Relations, emissions permits are ‘assets that, like other property rights, owners will fight to protect’.<sup>34</sup>

Luckily for corporations, their privileged access to legislators enables them to secure carbon dump commodity for themselves merely by lobbying and pressure politics. Just as systems of private property in land give new moneymaking powers to surveyors, officials and firms with access to titling and licensing mechanisms, the property systems of pollution trading schemes give new commercial powers to those with access to legislators.

As economists Peter Cramton and Suzi Kerr point out, the ‘enormous rents’ at stake ‘mean that interest groups will continue to seek changes in the allocation over time’:

Firms may end up putting as much effort into rent capture as into finding efficient ways to reduce carbon usage. Investments may be delayed in the hope that high observed marginal costs would lead to more generous allowance allocations as compensation. The increased complexity of the programme... may lead some groups to seek exemptions or bonus allowances... [I]nterest groups will fight bitterly for a share of annual rents. This fight will lead to direct costs during the design of the policy. Groups will invest in lawyers, government lobbying, and public relations campaigns. Government officials will spend enormous amounts of time preparing and analysing options and in negotiations. This will lead to high administrative costs and probably considerable delays in implementation.<sup>38</sup>

Governments eager to placate industry are almost sure to give out too many emissions rights. This in turn will make future cuts even more difficult, while increasing pressures to reduce emissions in sectors that have not been awarded rights (for example, domestic households, the transport sector and the state).

*But hang on a minute. Regulators can be influenced into handing out resources to big companies even without environmental trading schemes. You can’t pin that problem on emissions markets.*

No, of course not. Under any kind of regulation, regulators can be ‘captured’ by those they are regulating.<sup>40</sup> But emissions trading adds new complications. In extreme cases, governments under heavy corporate pressure to hand out large numbers of emissions permits may wind up creating too little scarcity even to make a market possible.

Of course, some governments may be able to resist more short-sighted types of business pressure and, bit by bit, cut the amount of property rights granted to the private sector. But questions about equality will remain, since whatever rights are left will still be in the hands of business and will now be worth even more in monetary terms. As Massachusetts Institute of Technology economist and cap-and-trade enthusiast A. Danny Ellerman admits, ‘there is likely to be agreement on the creation of the scarcity only as there is agreement on the allocation of the rents thereby created’.<sup>41</sup>

Already, environmentalists are facing a battle to stop governments from giving out too many property rights much like the battles they’ve faced to organise movements for stricter conventional regulation. Emissions markets are no less ‘political’ a form of climate action than any other.

*It sounds like you’re suggesting that governments setting up emissions trading schemes are caught in a difficult bind. Any desire they might have to reduce emissions in line with scientific knowledge and the public interest pulls trading systems one way – toward giving regulators a free hand to modify allowances. Governments’ need to reassure traders that they will not be expropriated unfairly pulls another way – towards protecting allowances against government modification and making them as much like full title as possible.*

Yes. As legal scholar David M. Driesen of Syracuse University’s School of Law puts it, there is a ‘tradeoff’ between the ‘need to protect the public properly from environmental harms that may grow over time’ and ‘stability to encourage cost-decreasing trades’.<sup>46</sup>

*How do governments handle this dilemma?*

With difficulty. Take the US Clean Air Act Amendments of 1990, which launched the sulphur dioxide trading programme. In order to keep from having to pay legal penalties to corporations for making them reduce their emissions, the government had to find a way around the so-called ‘takings clause’ of the Fifth Amendment of the US Constitution, which prohibits ‘private property’ from being ‘taken for public use, without just compensation’.

Yet to deny that emissions permits were property, as the law specified, worried members of Congress concerned to defend corporate privilege in a working market. A stable market, they said, depended on trust that

### *'Temporary' Property Rights that Become Permanent*

In many circumstances, government-granted open-ended 'temporary' property rights become permanent in all but name. In countries around the world, 'temporary' commercial mining and logging concessions, leases and licenses – valid on paper for, say, 20, 30, 40 years or more – have frequently in effect resulted in handing over public or community lands to the private sector for good.<sup>42</sup> In Indonesia, for instance, wealthy interests have often held on to their vast timber leaseholds by converting them to plantation crops or exploiting their minerals, often using old logging roads and dispossessing hundreds of thousands of local residents who have little access to the judicial system.

The US example of grazing permits offers another illustration of how distribution of permits that the government nominally retains 'control' over can in effect privatise a resource.

Under the Taylor Grazing Act of 1934, grazing permits were given to those who were already the biggest users of rangeland – just as today's Kyoto Protocol and EU ETS allowances are given to those who are the biggest users of the atmospheric carbon dump. Like today's pollution allowances, too, grazing permits could be both limited and revoked. And like today's pollution allowances, they were explicitly claimed not to amount to 'rights, title, interest or es-

tate in or to lands'. They were not protected against being taken away by government without compensation. Congress viewed them as mere privileges, not rights, and wanted the Department of the Interior to regulate the rangelands by adjusting the number of permits periodically.



Yet in the end, the permits 'essentially privatised the public ranges'. What they created was 'an odd species of property', 'less than a right but more than a mere revocable privilege'.<sup>43</sup> Ranchers' political clout meant that the Bureau of Land Management 'acquiesced in the creation of *de facto* private rights in the public rangelands while neglecting to improve range condition'.<sup>44</sup> Rather than hastening, tightening, streamlining and economising on environmental protection, the permits merely resulted in a different dynamic between regulators and regulated,<sup>45</sup> in which those to be regulated gained some new and different powers.

the government would not interfere with 'the property interest', which must be allowed to have recourse to the courts.<sup>47</sup> The Environmental Protection Agency's power to 'terminate or limit authorisation' of an allowance undermined 'the very concept of allowance trading'<sup>48</sup> and would make investment in excess allowances too risky.

*What did the US lawmakers do about this contradiction?*

They wished it away. On the one hand, they dutifully specified in the Clean Air Act Amendments that an emissions allowance ‘does not constitute a property right’ and can be ‘terminated’ or ‘limited’ by the government without compensation being due.<sup>49</sup>

Yet at the same time, they went out of their way to reassure polluters and utility investors that they ‘should expect that allowances will partake of durable economic value and that commercial and other relevant law will apply to allowances and function to protect their value’.<sup>50</sup> A senator inserted an explanation into the record stating that allowances were commodities.<sup>51</sup> The Environmental Protection Agency expressed its ‘intention to treat emissions allowances as if they were absolute property rights, except in exigent circumstances’.<sup>52</sup>

As economist A. Danny Ellerman and colleagues note,

For [most] intents and purposes, the allowances are treated as [homogeneous and valuable] property rights. They are freely tradable, there are a variety of market mechanisms that mediate transactions, and the Environmental Protection Agency consciously allocated allowances to eligible parties for years beyond 2010 to provide confidence that they would be treated essentially as property rights. All this will clearly make it difficult politically to alter allowance allocations in the future.<sup>53</sup>

After all, as Ellerman and company explain, ‘whenever valuable property rights are created by legislation, the associated allocation decisions are likely to be highly politicised in much the same way as is tax legislation or appropriations bills.’<sup>54</sup> In the US, Congress used up most of the time it spent debating the sulphur dioxide trading programme not on discussing environmental targets but on ‘allocating valuable private property rights created under the scheme among clamouring interest groups ... dividing up the pork’.<sup>55</sup> Once these ‘liquid, federally-created intangible property right[s]’<sup>56</sup> had been distributed, as economist Dallas Burtraw notes, they appeared in company accounts as gifts amounting to USD 2 billion in zero-cost assets yearly.

Companies were prevented from charging customers for something they had received for free, but they were allowed to pass through to customers costs of reducing emissions and of any extra allowances they had to buy to comply with the law. And they were allowed to make money by selling them; as Burtraw observes, ‘if you discover oil on your property, you’re not going to give it away for free’.<sup>57</sup>

No surprise, then, that squabbles over allowances early on led to civil litigation and other disputes.<sup>58</sup> At one point, the Wisconsin Public

Utility Commission had to rule that profits from sales of allowances should go to ratepayers, not stockholders.<sup>59</sup> Sulphur dioxide levels in the US actually increased by 4 per cent in 2003 as a result of the programme's banking mechanisms.<sup>60</sup>

Similarly for Los Angeles's Regional Clean Air Incentives Market (RECLAIM). Emboldened by economic theory and the Clean Air Act Amendments of 1990 authorising states and local air districts to develop market incentive programs, Los Angeles industry successfully lobbied local government to replace existing and proposed air quality regulations with a trading programme.

The South Coast Air Quality Management District (SCAQMD) allocated pollution allowances to 370 big polluters including oil refineries, power plants, aerospace companies, asphalt batch plants, chemical plants and cement plants. In response to industry pressure, the aggregate number of pollution permits issued was generously set equal to the amount of total pollution that would enter the air during periods of peak production and economic boom, when emissions were highest. Over 40,000 tonnes more permits to pollute with nitrogen oxides (NO<sub>x</sub>) and sulphur dioxide were allocated in the first year than there was actual pollution.

As a result, reducing the number of credits in circulation at first didn't actually reduce emissions. In the first three years of the programme, the 'cap' was tightened by 30 per cent, but actual industrial NO<sub>x</sub> emissions declined by at most 3 per cent, compared to a 13 per cent decline in the preceding three-year period. In 1999, ambient levels of NO<sub>x</sub> actually increased, following a decade of consecutive reductions. RECLAIM arguably wound up reducing pollution more slowly than previous regulations that assigned control technologies or emissions levels for particular firms would have done if they had been continued. For example, RECLAIM allocations for NO<sub>x</sub> were greater in most years of the program than the comparable allocations from the 1991 Air Quality Management Plan that RECLAIM replaced. Dismantling the previous regulatory regime also took time, costing lives.<sup>61</sup>

Emissions trading has also slowed down reductions elsewhere. For example, the US required 23 years to eliminate leaded gasoline through a trading programme, a task that took China three and Japan 10, without trading.<sup>62</sup> Even in the short term, the US lead trading programme can be said to have slowed the phase-out of lead in gasoline. Lead trading allowed refiners that banked purchased lead credits to continue exceeding lead limits through 1987, whereas the previous regulation had required refiners to meet the standard by 1986.<sup>63</sup>

*OK, so maybe RECLAIM and other schemes may have slowed down pollution control a bit and given away a lot of assets in the atmosphere to big private companies. But didn't they work in the end?*

They worked in the sense that they were part of a programme that reduced pollution. But continuing and strengthening previous regulation would have worked, too – and perhaps in a way that would have been less costly for society as a whole in the long term.

For example, lead could have also been virtually eliminated from petrol through conventional performance-standard regulation. And it might have been eliminated faster. The question is not only whether pollution control methods work, but how, how effectively, and for whose advantage.

## History repeats itself

*And you're suggesting that a history of problems with property rights in US pollution markets is being repeated with greenhouse gas emissions trading schemes?*

Unfortunately, yes. Following in the footsteps of the US, parties to the UNFCCC have tried to paper over the dilemma that pits environmental effectiveness against the market's need for secure property rights. While wanting to give away rights to the global carbon sink, many signatories to the Kyoto Protocol are worried about being held liable for the resulting damages.

All along, too, the UNFCCC has had to fend off objections Southern governments and critical environmentalists have made to the give-away of atmospheric assets to big polluters. One example was India's belated, quixotic 1999 demand for assurances that the Kyoto Protocol 'has not created any asset, goods or commodity for exchange'.<sup>64</sup> Some are also concerned that governments' gifts of allowances to business may amount to subsidies actionable under the World Trade Organisation.<sup>65</sup>

Governments know, in other words, that admitting openly that they're giving billions of dollars in assets to the worst greenhouse gas polluters could be both legal and political poison. That's why, in the 2001 Marrakech Accords, the parties to the UNFCCC were driven to stipulate that the 'Kyoto Protocol has not created or bestowed any right, title or entitlement to emissions of any kind on Parties included in Annex I.'<sup>66</sup>

But – just as in the US – the pretence is hard to maintain. Outside UN meeting halls, nearly every institution involved in carbon



trading, including the World Bank and the EU, acknowledges that both the EU Emissions Trading Scheme and various programmes created by the parties to the UNFCCC under the Kyoto Protocol have in fact created rights and assets worth billions of dollars.<sup>67</sup> Price-WaterhouseCoopers, in an analysis of the tax implications of the EU ETS, has observed that ‘trade in CO<sub>2</sub> [carbon dioxide] emissions is equated with the transfer of similar rights such as copyrights, patents, licensing rights and commercial and industrial trademarks’.<sup>68</sup> In 2005, a Dutch banker involved in carbon trading noted his satisfaction that European Union emissions allowances had become ‘real property’ in that governments had to compensate corporations in case of default.

Both the EU ETS and various trading-related institutions brought into being by the Kyoto Protocol are therefore arguably in breach of the Marrakech Accords, although no court case has yet been brought.

*So carbon dioxide emissions trading schemes are putting more and more rights – and more and more power over climate – in private polluters’ hands.*

‘The allocation of marketable pollution permits constitutes a form of limited privatisation’, Indiana University law professor Daniel Cole observes, ‘as the government conveys to private parties limited entitlements to use the public’s atmosphere.’<sup>69</sup>

The politics is playing out exactly as it did in US pollution trading schemes. The Kyoto Protocol’s effectiveness, for instance, has long been acknowledged to have been undermined by the granting of large amounts of excess allowances to countries like Russia for political reasons.<sup>137</sup> Giving huge amounts of rights to industrialised countries as a whole has meanwhile entrenched their expectations for further privileges – expectations that Southern countries are bound to upset if they ever agree to similar emissions limitations under a trading scheme.<sup>70</sup>

The EU Emissions Trading Scheme is plagued by similar problems. In April 2006, it became clear that corporate participants in the EU ETS had been granted around 10 per cent more allowances than they needed to cover their 2005 emissions. That translated to between 44 and 150 million tonnes of surplus carbon permits,<sup>71</sup> or, at €13 per tonne, up to ‘€1.8bn of free money’.<sup>72</sup>

In the UK, when environment secretary Margaret Beckett published her draft EU ETS allocations for British industry in May 2004, they added up to a total of 736 million tonnes of carbon dioxide for the next three years. The plan called for no emissions cuts whatsoever: industry had won tradable rights to emit yearly at least as much carbon dioxide as it had annually emitted *de facto* between 1998 and 2003.

Even so, ‘intense lobbying by industry followed, apparently supported by industry minister Patricia Hewitt, and in October 2004, the expected business-as-usual emissions were substantially increased, and the permitted emissions *raised* to 756 million tonnes.’<sup>73</sup> This led to a prolonged legal row with the European Union which ended only in May 2006 with a British defeat.

In 2004, only a minority of companies believed that the EU ETS would result in any reduction in emissions at all.<sup>74</sup> By 2005, climate economist Michael Grubb was warning that the huge number of allowances being donated to industry would render them almost worthless, destroying any incentive for cleaning up.<sup>75</sup> By April 2006, Grubb’s prediction looked to have some chance of coming true. As surplus emissions rights flooded the market, prices crashed 60 per cent within a week, from a high of around €30 per tonne of carbon dioxide to €11. Traders began to express the fear that the emissions price would drop to zero and that the first phase of the market ‘would die.’<sup>76</sup> A European Commission representative refused to comment on whether member governments had ‘allowed companies to wilfully overstate historical emissions when they were compiling their... national allocation plans, in order to receive more free allowances.’<sup>77</sup>

‘The obvious thing to say now’, observed one market analyst in May 2006, ‘is that the caps must be corrected in the second phase, but what has happened recently makes us realise that if regulators are off with their estimates, prices will be either very high or very low. I am not sure that something with such an inherently unstable price is an incentive for people to invest. It is a fundamental flaw in the scheme.’<sup>78</sup>

With so many allowances being given out, even factors such as the fluctuations in fossil fuel use associated with yearly variations in weather are now playing havoc with demand, putting future prices in doubt. And prices may well stay volatile, especially since no European government wants to be the first to reduce radically the number of allowances granted to industry. All the signs are that EU governments are going to be pressured into handing out too many allowances in the second phase of the scheme, just as they did in the first.<sup>79</sup>

Table 2. Quasi-Privatisation of the Existing Global Carbon Dump by the UK National Yearly Allocation under the EU Emissions Trading Scheme, 2005

Industrial Sector (UK Only)	Annual Gift of Emissions Rights (Million Tonnes of CO <sub>2</sub> )	Increase/Decrease from Actual Average Emissions 1998–2003	Fraction of 'Available' World Above-ground Carbon Dump <sup>a</sup>	Approx. Annual Value at €16/tonne of CO <sub>2</sub> <sup>b</sup>
Power Generators	145.3	-6%	1.5–3.0%	€2.325b
Iron and Steel	23.3	+16%	0.2–0.5%	373m
Refineries	19.8	+11%	0.2–0.4%	317m
Offshore Oil and Gas	19.1	+14%	0.2–0.4%	306m
Cement	10.7	+18%	0.1–0.2%	171m
Chemicals	10.1	+12%	0.1–0.2%	162m
Pulp and Paper	4.7	+18%	0.0–0.1%	75m
Food and Drink	3.9	+26%	0.0–0.1%	62m
Other Industries	15.1	+16%	0.2–0.3%	242m
Total	252.0	+2%	2.6–5.1%	€4.032b

<sup>a</sup>Figures in this column are not based on any attempt to estimate the earth's capacity to recycle transfers of fossil carbon with no remainder, which, even if initial assumptions could be agreed on, would probably be impossible in technical terms. Rather, they take as a point of reference the Intergovernmental Panel on Climate Change finding that anthropogenic CO<sub>2</sub> emissions from fossil fuel combustion and flaring must be reduced by 60–80 per cent from current levels of 24,533 million metric tonnes/year to achieve eventual stabilization of CO<sub>2</sub> levels at twice Industrial Revolution levels.

<sup>b</sup>Approximate price in early June 2006. For every tonne of uncompensated-for CO<sub>2</sub> emitted above the limit, companies face a fine of €40, rising to €100 from 2008 onwards. Columns may not add up due to rounding.

Sources: UK Department of Environment, Food and Rural Affairs, *Carbon Market News*.

*But if emissions caps are ever tightened, companies will need either to make reductions or to pay up, won't they? And surely eventually it is the biggest polluters who will lose out at that point, no?*

Yes, many corporations are sooner or later probably going to have to give something up. But emissions trading encourages them to treat global warming not as a social and environmental problem to be solved but as a business and public relations problem to be kept out of ordinary people's hands and to be managed at the least possible relative financial and market loss to themselves. And it gives them the means to make sure caps are not tightened very much or very swiftly. Far-sighted companies treat the carbon trading as an opportunity to gain *new* property rights, assets and openings for capital accumulation, even if climate change is accelerated in the process.

*But isn't it the South and other parties currently not included in emissions trading schemes that will reap more benefits, financially speaking, as long as they don't have to pay for allowances?*

As of now, the biggest polluters are granted the maximum possible advantages relative to smaller polluters. It is they who hold rights to the global carbon dump – not renewable energy system manufacturers, not non-polluting firms, not communities, not trusts, not campaigners who have prevented hydrocarbon development in their regions, not socially-responsible actors who have kept their societies on existing low-carbon paths, not (in Europe) the state sector, and not ordinary members of the public, North or South.

If emissions caps are tightened, moreover, when will they be tightened, and by how much? Politicians like to say that 'market approaches' like emissions trading will prevent the pain of other kinds of regulation. But if there isn't enough political pressure to reduce emissions in the first place, the result will be merely a gaming of the system and continual over-allocation of pollution rights. Carbon trading does not offer a way around the tough political decisions.

*But surely some day the necessary political movement will come into being. And surely it will some day become more costly to emit carbon dioxide. And when it does, renewable energy companies will win out, because demand for their products will rise.*

It's going to be a tough slog for renewable energy companies in the meantime, as long as they are deprived not only of the large subsidies and research and development money that continue to go into 'sunset' fossil fuel and nuclear technologies, but also of any assets handed out under emissions trading schemes.<sup>80</sup>

*Well, all right. But I still can't get my head around the idea that the Kyoto Protocol and the EU ETS are simply 'polluter earns' programmes. After all, it's not as if European utilities, oil companies and steel manufacturers are just being handed free cash to do whatever they want with. They have to use their allowances to cover their emissions, no? They're not making any money out of them.*

Well, it's funny you should mention that, because, actually, many of them are. As Garth Edwards of Shell explains, the 'opportunity cost of allowances is incorporated into the power price in countries with liberalised energy markets... . The largely free allocation of allowances means that power generators receive a windfall profit since their compliance costs are far less than their revenue increase'<sup>81</sup> from increased consumer prices.

While most assets given to companies under the EUETS do go toward covering emissions, their sheer volume guarantees new profit-making opportunities as well. Costs of buying extra pollution permits are being passed on to consumers without any incentives for systemic change being created, generating new profits for utilities and other corporations. Let's look at the facts:

- The big six UK electricity generators are getting around USD 1.2 billion per year in windfall profits from the EU ETS – even more than the GBP 500 million per year the UK Parliament's Environmental Audit Committee had earlier estimated.<sup>82</sup> None of this 'valuable income on their balance sheets'<sup>83</sup> need be spent on a structural transition away from fossil fuels.<sup>84</sup> 'A combination of free allocation to power stations and full pass-through of marginal costs to consumers has led to a massive increase in the electricity industry's profitability,' consultants IPA Energy noted recently.
- In the UK, oil companies BP, Esso and Shell have made millions of pounds by selling off surplus free EU ETS allowances, while National Health Service hospitals have had to pay tens of thousands of pounds to buy extra allowances.<sup>85</sup>
- In Germany, where power prices rose from €30 to €47 per megawatt-hour from 2005 to 2006, heavily-polluting power companies are being accused of profiteering off carbon trading. Major utility RWE is alone said to have made €1.8 billion in windfall profits in one year by adding the current market value of the EU allowances it had received for free to its customers' bills.<sup>86</sup>
- In Belgium, France and the Netherlands, some 40 to 70 per cent of the cost of freely-allocated EU ETS allowances is passed through to large and small consumers. Contrary to the stated objective of emissions trading, the system is stimulating investments in carbon dioxide-intensive power plants, according to the Energy Research Centre of the Netherlands.<sup>87</sup>
- In the Czech Republic, the electricity giant CEZ received one-third of the 97.6 million metric tonnes of carbon dioxide emission allowances issued to the country. (Only around 90 million tonnes of carbon dioxide were produced yearly in the country before 2005.) This will enable the company to make as much as USD 187 million from trading in carbon credits between 2005 and 2007, according to an analyst at Atlantik Finanční trhy. After having made profits off carbon allowance sales in 2005 when prices were high, the company is looking to buy them back now that prices have dropped. As a result, 'we've also launched more coal production,' said Chief Executive Officer Martin Roman.<sup>88</sup>

- According to UBS Investment Research, the first phase of the EU ETS ‘has probably contributed to €10–20/megawatt-hour higher power prices with a very significant redistribution of value from consumers to producers and between companies.’ In May 2006, Estonian Energy declared a €74 million pre-tax profit from net sales of emissions rights in 2005, more than a third of its total profits. Based on the company’s own environmental reporting, only €6–9 million can be explained by ‘real emissions reductions’.<sup>89</sup>
- In the very first publicised spot trade of EU allowances in February 2005, Danish power utility Energi E2 was able to sell a block of rights it had been granted free by its government to Shell simply because a spell of mild temperatures had happened to keep the utility’s carbon emissions slightly below expected levels.<sup>90</sup> The following year, Norway’s Fortum Corporation bagged USD 25 million from selling carbon dioxide allowances due to the fact that the reservoirs behind its hydropower dams happened to be exceptionally full in 2005.<sup>91</sup>
- In Australia, New South Wales taxpayers are being charged millions of dollars by a state government trading scheme that ‘aims to cut greenhouse gases but has done little other than provide windfall gains for some of Australia’s dirtiest power stations’.<sup>92</sup>

None of this should have been a surprise. Under Los Angeles’s RECLAIM pollution trading scheme as well, high prices of nitrogen oxides (NO<sub>x</sub>) credits contributed to large increases in wholesale electricity prices.<sup>93</sup> Liberalised energy markets made the US sulphur dioxide programme vulnerable to a similar problem. Looking further back, members of the Organisation of Petroleum Exporting Countries garnered windfall profits by limiting carbon extraction in the 1970s.

*But don’t power utilities have to buy at least a few permits in order to continue business as usual?*

Often they do – particularly utilities dependent on coal. But, as IPA Energy consultants found in a detailed report done for the UK government, large utilities are being allowed to ‘over-recover carbon costs’ by charging customers for the extra emissions permits that would be needed if their ‘baseline’ generating capacity were carbon-intensive coal plants rather than the less polluting mixture of technologies they actually use. (Coal’s ratio of carbon content to heat production in kilogrammes of carbon dioxide to million British Thermal Units is 94, as opposed to oil’s 78 and natural gas’s 53. Production of carbon dioxide per megawatt-hour is 698–975 kilogrammes for coal, 470–820 for oil,

and 290–545 for gas, depending on the technology used.)<sup>94</sup> Last year the carbon price added about GBP 3.50 per megawatt-hour to wholesale electricity prices in the UK. To halt this gravy train for polluting power companies, their allocations of allowances would have to be cut by two-thirds, IPA concludes.<sup>95</sup>

At present, the EU ETS is unlikely to do anything for the climate other than affect the timing of the transition to more gas generation capacity. (Gas-fired power is less carbon-intensive than coal, although still a ‘sunset’ industry, since it too will have to be phased out soon.) By 2015, IPA suggests, ‘the UK’s electricity system will look remarkably similar regardless of assumptions on how the EU ETS plays out’.<sup>96</sup>

In fact, the EU ETS is rendering even the switch to gas doubtful. Uncertainty about how many allowances will be available in the future – resulting, again, from EU governments’ policy of leaving decisions on allocations largely to a process of corporate rent-seeking – combined with current high gas prices, is causing utilities to delay investment in gas rather than coal. And if the government doesn’t give out even more free rights to the global carbon dump to new entrants in the industry, then investment in new plant will be further deferred, raising emissions even more.

All in all, the EU ETS is likely to have helped *delay* reductions in annual UK power sector emissions to anything below 120 million tonnes of carbon dioxide for 15 years, just as the RECLAIM and lead trading schemes slowed pollution control in the US.

It may be slowing action on climate change in other sectors as well. In all member states except The Netherlands, governments withdraw companies’ pollution permits if they close dirty plants. This creates an incentive to keep such installations open. Yet continuing to grant such companies pollution rights after they close such plants would hardly make their competitors happy.<sup>97</sup> The large cement firm Holcim complains that large emitters are not being given incentives to invest in more efficient installations.<sup>98</sup> Dutch nitric acid plant operators have meanwhile made it known that they want to delay making cuts in their nitrous oxide emissions in order to be in a better position to gain from the EU ETS from 2008.<sup>99</sup>

The practical outcome of the EU ETS is so clearly the opposite of what was advertised that even financial analysts state baldly that the ‘competitive advantages’ bestowed by handouts of assets under the EU Emissions Trading System simply ‘cannot be justified from a climate policy point of view.’<sup>100</sup> As Citigroup Smith Barney and other analysts predicted as early as 2003,<sup>101</sup> governments are beginning to

have to think about stepping in to prevent the EU ETS from handing out enormous windfalls to the worst polluters. Even the investment bank UBS Warburg – not normally noted for its environmentalist enthusiasms – has questioned the wisdom of providing a multi-billion-dollar windfall to EU energy utilities, asking ‘whatever happened to the principle of “polluter pays”?’<sup>102</sup> In May 2006, Tony Ward, energy director at Ernst and Young, stated flatly that the EU ETS ‘has not encouraged meaningful investment in carbon-reducing technologies’.<sup>103</sup>

Unfortunately, this is only the beginning of the contradictions that result from the attempt to traffic in property rights to carbon dumps.

*Uh-oh. What else is there?*

## A question of quantification

One of the most difficult problems is measurement. Property rights require quantification. Land titles require that territory be demarcated, mapped and surveyed. Fishing quotas require that catches be monitored and populations checked. Broadcast spectrum rights presuppose the ability to quantify frequencies, and permits to dump hazardous chemicals won’t work unless the authorities are strict about amounts.

That’s why, as Yale University property specialist Carol Rose points out, it is only recent ‘[g]overnmental advances in measurement, record-keeping, and legal enforcement’ that have made possible the ‘dramatic turn in the “proptertisation” of what might seem to be “un-ownable” diffuse resources or *res communes* in the tangible world’. And it is this ‘proptertisation’ that has enabled the rise of tradable pollution permit systems.<sup>104</sup>

For instance, the US sulphur dioxide trading scheme on which the Kyoto Protocol is based, as Daniel Cole of Indiana University has pointed out, would never have been possible before particular bits of high-tech measuring equipment called continuous emissions monitoring systems came into existence in the 1980s and 1990s.

The problem is that the fad for tradable permit systems has now far outstripped measurement ability, at least as far as greenhouse gases go. The level of quantification technology that made the sulphur dioxide programme in the US possible isn’t available for greenhouse gases. Here again, the US model should have provided more discouragement than encouragement to the project to frame a market-oriented Kyoto Protocol.



*What do you mean?*

If the US can offer any model at all for pollution control schemes relevant to global warming, it should not be the 1990 Act which launched the sulphur dioxide trading programme, but rather the original US Clean Air Act of 1970.

Although the theory of tradable permits had been formulated by the late 1960s, the US's pioneer 1970 Act had no provisions for pollution trading. And it was a good thing that it didn't, at least with respect to sulphur dioxide. In 1970, there would have been no way of making a sulphur dioxide market work, because at the time there was no way of measuring how much sulphur dioxide each firm was releasing at any particular time. As one specialist noted, 'emission measurement technology is presently inadequate to meet the requirement that a regulatory agency be able to determine with some precision just how much an individual polluter is contributing to the atmospheric burden'.<sup>105</sup> In 1970, there were only 86 ambient sulphur dioxide monitors in the entire US, and those were only crudely accurate.<sup>106</sup> Monitoring at the point of emission was in an even more primitive state.

*But that means there would have been no way of either verifying independently what each firm's original emissions level was or monitoring emissions afterwards to find out how much they were exceeding or falling short of their quotas.*

Exactly. And even if firms had been allocated quotas, they would have had no means of finding out whether their emissions were in line with them, nor any incentive to do so. So there would have been no point in allocating different amounts of atmospheric 'dump space' to each firm to put its sulphur dioxide emissions in.

Still less would there have been any ability or incentive on the part of firms buying quotas to verify what they were buying. As David Driesen notes,

Polluters purchasing emissions allowances have no interest in the quality of the goods. Buyers of blue jeans care about whether they wear out; buyers of pollution reduction credits only care about whether regulators will accept them in lieu of local compliance.<sup>107</sup>

In short, debits, credits and trading would have been impossible at the time – as would have been taxes.

*How did the 1970 law reduce emissions, then?*

The 1970 Act worked only because it took a different, directly regulatory approach. Instead of trying to monitor each firm's emissions,

it insisted that each firm install technology of a certain standard. As long as each firm did so, the government could be assured that some emissions reductions were being made, even if it could not precisely measure them, because officials could easily visit each installation and see whether the right technology was in place. In the early 1970s, for instance, the Los Angeles County Air Pollution Control District managed to inspect the technology at every major source once a month, at a time when it would not have been possible for it to monitor point-source emissions for all regulated pollutants at finite cost.<sup>108</sup>

Pollution trading theorists might assume that this approach was necessarily less efficient in achieving the Act's goals than trading would have been. But, in context, it was *more* efficient, given the state of pollution measurement at the time.<sup>109</sup> Trying to trade would have been, in effect, infinitely costly, due to the lack of the necessary measurement technology.<sup>110</sup> With technology-based regulation, on the other hand, the technology itself was the monitoring device. As Michael T. Maloney and Bruce Yandle explain, 'If the approved technique was in place, and working order documented, emission control was being accomplished.'<sup>111</sup> Similarly, the Corporate Average Fuel Economy regulation enacted by the US Congress in 1975, which doubled auto efficiency, did not prove either 'costly, inefficient or unsafe'.<sup>112</sup>

This points up a general lesson summarised by Daniel Cole: '[The] comparative efficiency of alternative environmental instruments cannot be determined in isolation from the institutional and technological circumstances in which they operate.'<sup>113</sup> Trading systems are 'quantification-heavy'. They can't reduce the costs of achieving an emissions reduction goal except in the presence of an extensive, far-



Oil extraction in the US.

reaching, uniform and accurate system of measurement and monitoring. Although, as Marc Roberts observes, '[w]hen economists discuss such matters as emissions trading they sometimes talk as if monitoring devices were widely available to cheaply and reliably record the amount of all pollution emissions',<sup>114</sup> such devices can't be taken for granted. If they are not available, giving polluters pollution quotas makes little sense.

*So this is one of those cases in which emissions trading would have been inefficient, not efficient.*

Yes. Although measurement technologies improved (there were six times as many ambient concentration monitors in 1977 as in 1970, and they were more reliable), they weren't good enough or cheap enough to support an efficient trading system (or taxes) until much later. The first continuous emissions monitoring systems (CEMs) became available only in 1975, and it was only the succeeding two decades of further technological development that made sulphur dioxide trading possible in the 1990s. Today, CEMs used by major SO<sub>2</sub> sources are capable of collecting data every fifteen minutes, and real-time data from every plant are sent via computer to Environmental Protection Agency headquarters in Washington.<sup>115</sup> The whole process is fully automated, minimising opportunities for cheating. On-site inspections are also made periodically.<sup>116</sup>

In sum, the sulphur dioxide market was less a matter of Congress suddenly grasping the economic theory of tradeable permits than of a change in the technological and institutional conditions that made a market possible.<sup>117</sup>

With respect to measurement of production and absorption of carbon dioxide and other greenhouse gases, the United Nations today is in a position similar to that the US was in 1970 with sulphur dioxide – only worse.

Like Marc Roberts's naïve economic theorists, the framers of the Kyoto Protocol 'simply presumed that a trading system would provide a lower cost mechanism than traditional command and control for meeting the Protocol's goal'<sup>118</sup> without looking carefully at whether the conditions for such a market – and thus for such savings – existed. As quickly became clear, the measurement systems required for the Kyoto market were simply not there.

In fact, the prospects of a quantification system robust enough to support property rights in a market are even less promising for the Kyoto Protocol than they were for a sulphur dioxide trading system in the US in 1970.

*Why?*

With respect to trading in emissions themselves, the problem is deficient direct pollution measurement and monitoring systems. Many countries – and not just Southern countries – lack the technical and institutional capability to quantify and monitor industrial greenhouse gas emissions precisely and regularly. Uncertainties about the quantity of greenhouse gases being emitted by national energy systems ‘are in the range of plus or minus 10–30 per cent,’ according to one survey.<sup>119</sup> Another survey puts uncertainties about overall greenhouse gas emissions in selected industrialised countries between 4 to 21 per cent.<sup>120</sup> Either figure is inadequate for the purpose of detecting the small reduction signal needed to demonstrate compliance with Kyoto. IPCC country inventory guidelines calculate that uncertainties come to 10 per cent for electricity generation, 10 per cent for industrial processes including cement and fertiliser production and 60 per cent for land-use change and forestry. For methane, the figures are even higher: 100 per cent for biomass burning, 60 per cent for oil and natural gas activities, 60 per cent for coal-mining and handling, and greater than 60 per cent for rice cultivation, waste, animals and animal waste. For nitrogen dioxide, they are 50 per cent for industrial processes, 100 per cent for biomass burning, and two orders of magnitude for agricultural soils.<sup>121</sup> In 2004, one author foresaw a ten-year delay prior to the establishment of adequate biotic carbon national monitoring systems in industrialised countries such as the US.<sup>122</sup>

In addition, in most countries, data on industrial emissions is provided by polluting companies themselves, not by an impartial authority, often calling the figures into question. In Los Angeles’s RECLAIM scheme, companies’ widespread use of emission factors developed by the Western States Petroleum Association instead of measurements of actual emissions allowed margins of error in reporting ranging from 50–100 per cent. Oil companies underreported their tanker emissions by factors between 10 and 1000<sup>123</sup> – one of several problems with the programme discovered only through a time-consuming investigation by an NGO, Communities for a Better Environment.<sup>124</sup> In March 2002, Anne Scholtz, architect of RECLAIM and Chief Executive Officer of the emissions broker ACE, was issued citations for filing false trading reports.<sup>125</sup>

In England and Wales, the Integrated Pollution Prevention and Control System that monitors and controls industrial emissions relies heavily on emitters taking samples of their emissions and reporting the results to the British Environment Agency. A report from the Agency suggested that 40 per cent of sites did not have satisfactory monitoring procedures in place. Yet from 2001 to 2005, the level of independent

monitoring of industrial sites' emissions dropped by three-quarters.<sup>126</sup> California's Environmental Protection Agency noted in late 2005, meanwhile, that the state simply did not yet have the 'accurate inventory of greenhouse gas emissions' required for a cap-and-trade programme.<sup>127</sup> BP, for its part, has acknowledged an uncertainty of 30–40 per cent in the 1990 baseline it uses in determining whether it has reached the 10 per cent reduction target of its in-house emissions trading programme, and the margin of uncertainty of its operations' current emissions, it admits, is still 5 per cent.<sup>128</sup>

Trading expert Ruth Greenspan Bell of the Washington think tank Resources for the Future observes that 'many highly industrialised countries such as China, Russia, and many of the other countries of the former Soviet Bloc do not have adequate monitoring equipment to detect what pollutants, and in what amounts, particular factories and power plants are releasing into the atmosphere. They have weak environmental enforcement systems and cannot really say whether particular plants comply with environmental requirements.'<sup>129</sup> Southern countries, Greenspan Bell says, are 'not the right places to insert theories that have only been tested in models and in the minds of the people who thought of them, where confounding facts and poor conditions can be assumed away.'<sup>130</sup>

*Also, there are more carbon dioxide sources to watch over than there ever were sulphur dioxide sources, aren't there?*

A lot more.<sup>131</sup> So many more, in fact, that one businessman with successful experience in brokering US sulphur dioxide trading allotments, John Henry, Chief Executive Officer of Power Navigator in Washington, DC, is concerned that international carbon trading – given the lack of ability to monitor so many source points and the absence of a national regulatory enforcement mechanism – will 'give the mechanism of emissions trading a bad name.'<sup>132</sup> In the US alone, hundreds of thousands of industrial sources would have to be monitored in a comprehensive carbon trading system, compared to a few thousand in the sulphur dioxide programme.<sup>133</sup>

'This is not a problem that will be solved like acid rain,' agrees Phil Clapp of the US National Environmental Trust. 'Acid rain dealt with a specific number of facilities in one industry that was already regulated...Global warming is not an issue that will be resolved by the passage of one statute. This is nothing short of the beginning of an effort to transform the world energy economy.'<sup>134</sup>

Technicians' ability to measure releases from the millions of biotic sources scattered over the surface of the planet is also constantly being

called into question. One recent example of many is the unexpected discovery in 2005 that the carbon content of British soils has been dropping steeply since 1978. Annual releases, scientists were surprised to find, were higher than the entire reduction in greenhouse gas emissions the UK has achieved between 1990 and 2002 as part of its commitment to the Kyoto Protocol – some 12.7 million tonnes annually.<sup>135</sup>

*And it's not only carbon dioxide that needs to be measured, is it?*

No, and that makes measurement even harder for schemes that have to measure half a dozen greenhouse gases at once. Each gas affects the climate in different ways, to different degrees, for different time periods. Although scientists try to aggregate all the gases into one omnibus category of 'carbon dioxide equivalent', their noncomparability is widely acknowledged. The lack of an adequate measurement system can only exacerbate the opportunities for cheating that are already inherent in emissions trading systems, where both buyers and sellers have strong incentives to conceal whether reductions have actually been made.

Some of these problems might be avoided with an 'upstream' rather than a 'downstream' system of monitoring – that is, one that measured the amounts of fossil fuels coming out of the ground rather than the amounts being burned.<sup>136</sup> And measurement technology is bound to improve over time. But there is 'no reason to expect that countries will reduce their greenhouse gas emissions to comply with quotas that cannot be effectively monitored and enforced'.<sup>137</sup>

*That seems a decisive objection to greenhouse gas emissions trading of any kind. But if specialists in the IPCC and elsewhere knew about this, why didn't the message get across in the UN and the EU? And how could the US be so cynical as to cite its own permit trading systems as models for the Kyoto Protocol?*

These are important questions, and ones that should perhaps be subjects of a special inquiry. The answers aren't completely clear, although the phrase 'wishful thinking' comes to mind, along with less charitable expressions. As in every aspect of carbon trading, the tail of free-market ideology is wagging the dog of science, political common sense, and technical possibility.

*Still, isn't it true that if we could put the necessary measuring instruments and bureaucracies in place, emissions trading could help reduce greenhouse gas emissions more efficiently? Isn't the US sulphur dioxide programme regarded as having saved money and been more efficient than conventional regulation?*

Yes. But that brings up a difficulty best dealt with in the next section – the meaning and value of ‘efficiency’ when set against the need for effective strategies to reduce and ultimately halt the use of fossil fuels.

## Emissions trading vs. structural change

Carbon trading is often said to be a ‘more efficient’ way of reaching environmental goals. The trouble with terms like ‘more efficient’, though, is that they’re vague. Efficient in what? And for whom?

*Well, efficient in providing good things for all of us, no?*

That’s the theory. But you have to go through a lot of steps to get there, and each of those steps can be challenged.

For example, in the US sulphur dioxide case, most experts say with some confidence that trading saved the energy sector money, or ought to have done. To reformulate the example from the last chapter, a utility in North Carolina might use coal with a pound of sulphur in each tonne, and one in Indiana coal with three times that amount. So a scrubber installed at the Indiana plant would remove a lot more sulphur per dollar invested than the same scrubber in North Carolina. It might cost the North Carolina company USD 300 to collect a ton of sulphur, but the Indiana generator only USD 100. As a result, the Indiana operation could sell its North Carolina counterpart allowances at USD 200 per tonne, making USD 100 for itself and at the same time saving its sister plant USD 100. In this way, US sulphur dioxide trading, together with emissions banking, is widely held to have halved the cost of keeping emissions down to the target 9 million tonne level,<sup>138</sup> a saving of many billions of dollars for the firms involved.

In reality, it’s unlikely that trading and banking alone made this saving. Emissions were already falling during the decade before the programme began. Twenty per cent of the emissions reductions often said to be due to the trading scheme were in fact achieved between 1980 and 1990, before it began,<sup>139</sup> and were due to such factors as increased availability of low sulphur coal and a shift of population toward areas in which it was easily available. In addition, a number of experts argue that it was factors such as the ability to take advantage of fuel-switching technologies, the fortuitous drop in prices of low sulphur coal in many areas since 1985 due to lower rail shipping costs, and the similarly fortuitous

elimination of a legal requirement for redundant scrubbers, that were the main source of subsequent cost reductions.<sup>140</sup>

In the late 1980s, too, officials and experts had often overestimated the cost of cutting future emissions, which made a lot of what happened afterwards seem like a ‘saving’ even if it wasn’t. The American Electric Power Company assumed in 1981 that scrubbers would cost USD 500 per tonne of sulphur dioxide removed. The Tennessee Valley Authority thought USD 155 was closer to the mark; the department of energy USD 153–273, the Office of Technology Assessment USD 116–313. Most estimates didn’t anticipate the historical accident of cheaper coal from the Powder River area.<sup>141</sup> As economist Dallas Burtraw points out, this price reduction, together with fuel switching cost reductions and other such factors that ‘have caused marginal abatement costs to fall would also have lowered the costs of achieving the SO<sub>2</sub> emissions cap via some form of command and control policies’.<sup>142</sup>

Once the trading scheme got under way, in addition, a lot of installations managed to cut emissions without trading at all. Most of those who did trade traded only within their own firm. Inter-firm trading amounted to only two per cent of total emissions.<sup>143</sup>

*But no one denies that emissions trading did save the private sector at least some money, right?*

No, that’s fairly uncontroversial. The question is what the impacts were on others – and on society and its environment in the long term.

*What do you mean? Surely if the programme saved energy producers money, then everybody who used electricity benefited. Society as a whole was enabled to produce goods more efficiently, no?*

It’s not so simple. Sure, such schemes save specific companies money. And in doing so they are supposed to maximise what the grandfather of emissions trading, Ronald Coase, called ‘total product’ (read GDP), and thereby benefit society as a whole (see Chapter 2).

But they do so only by lumping together emissions with other economic goods. For a Coasean economist, the ability of the earth to keep temperatures within liveable limits has to find a market value just like wheat or silver. It must be translated into an ‘abstract’, calculable, alienable form that can live what globalisation guru Hernando de Soto pictures as an ‘invisible, parallel life’<sup>144</sup> alongside its physical existence.

Thus creating ‘efficiencies’ in emissions reductions, like creating most other ‘efficiencies’, is a political process of morphing apples and



oranges into a single new fruit. In the case of carbon dumps, this becomes possible only by misreading the radical uncertainties, scales and irreversibilities connected with the climate system and confusing survival with economic benefit (see Chapter 1). As a result, it's going to be harder to make sense of using greenhouse gas emissions trading to create 'efficiencies' in abating climate change, even under ideal conditions, than it was to make sense of using sulphur dioxide trading to create 'efficiencies' in attaining a given numerical emissions target.

Emissions trading becomes 'efficient' in addition, only by commensurating emissions at one place or time with emissions at another place or time, shifting emissions cuts around over a wide area and extended time period so that they can be made wherever and whenever they are cheapest. It makes one place equivalent to another place and one time equivalent to another time.

*So? What's the problem? That's a virtue, isn't it? The earth's carbon dump straddles all political and geographical borders. The atmosphere is constantly mixing on a global scale. Whether you cut emissions in Tomsk or Toledo, the atmospheric results are the same. Assuming we can perform the measurements, emissions trading is one way of recognising this reality. The climate doesn't care where we make our cuts, as long as we make them.*

No, actually, that's wrong. It does matter to the climate where cuts are made.

*What are you talking about? A one-tonne CO<sub>2</sub> cut in Tomsk has the same climatic effect as a one-tonne CO<sub>2</sub> cut in Toledo. A tonne is a tonne is a tonne. That's just basic science, isn't it?*

Of course. But widen your vision a bit. Doing what is necessary to cut one tonne in Tomsk tomorrow may result in different *future* emissions than doing what is necessary to cut one tonne in Toledo tomorrow. The cut made in Tomsk may be the result of a radical new renewable energy technology or way of organising social life that will lead to vastly multiplied future cuts, whereas the equal cut made in Toledo may be a routine efficiency improvement that should have been made long ago and leads to nothing else. Where – and when – cuts are made is likely to have knock-on effects. How cuts are made now will have an influence on how much can be cut in the future.

Precisely because it treats all one-tonne cuts as the same no matter where and how they occur, and results in the cheapest cuts being made first, emissions trading runs the risk of delaying progress in dealing with global warming. Instead of encouraging the type of

### *Not All Emissions are the Same*

If not all cuts in carbon dioxide emissions are technologically the same (see main text), neither are they the same politically.

Sunita Narain and the late Anil Agarwal of India's Centre for Science and Environment are famous for the distinction they made in the early 1990s between 'survival emissions' – what people emit to subsist – and 'luxury emissions'.



Centre for Science and Environment

Trading away a society's 'survival CO<sub>2</sub>' – if that ever became possible in a carbon market – would be politically different from trading away its 'luxury CO<sub>2</sub>', even if, tonne for tonne, the carbon market as-

signed both the same price. And that difference would have climatic effects if it translated into political conflict and the failure of official programmes for tackling global warming.

The distinction is analogous to that between 'survival water' and 'luxury water'. One reason water privatisation has failed in countries such as Bolivia, Tanzania, the US and the Philippines is that the water market, in aggregating all water across different locations and contexts, makes no distinction between the two. When the water ordinary people need to pursue a dignified and healthy life is priced out of their reach, they resist.

A privatisation of the world's carbon-cycling capacity that set survival emissions equivalent to luxury emissions would have the same shortcoming.

innovations, long-term investments and broad restructuring that are crucial to speeding the transition to a society that doesn't use fossil fuels, it discourages them in favour of scattered stopgap measures that may ultimately be very costly. 'Optimising components in isolation', in the words of energy experts Amory Lovins and colleagues, 'tends to pessimise the whole system – and hence the bottom line'.<sup>145</sup>

This is another case in which what is typically called 'efficiency' is not *effective*.

## Emissions trading and innovation

*That doesn't make any sense to me at all. What you're saying seems to go against what economics teaches us: that markets give people incentives to invent useful things so they can make money.*

*Say what you like about the problems of emissions trading, the great achievement of projects like the Kyoto Protocol and the EU Emissions Trading Scheme is that they have given carbon a price. Maybe the measurements can't be made*

*yet, maybe no one agrees yet on who owns the rights, maybe big polluters are still being rewarded, maybe the price isn't high enough yet, maybe there are all sorts of other problems. But at least having a price is better than having no price, isn't it? Emissions trading promises to make it impossible for a lot of people to release greenhouse gases for free, or use the world's carbon dump as if it had no value.*

*Having to pay a price gives industry a new incentive to clean up and stop using so much fossil fuel. The more allowances that industry has to pay for, the more it will need to shift toward more efficient, renewable and low-carbon technologies, which will direct more capital toward green energy suppliers and creative technology development. The result, as the EC says, is to promote 'global innovation to combat climate change'.<sup>146</sup>*

*Markets in pollution allowances also spurs innovation by providing polluters with incentives to compete to do even better than they are required to do by law. Sure, conventional regulation can force the private sector to improve technology. But trading encourages even more change, since companies can make money by 'overshooting' the minimum requirement and selling the resulting credits to firms less willing or able to reduce emissions or banking them for their own future use.<sup>147</sup> How can emissions trading be slowing down action on global warming?*

There are all sorts of problems with this argument. But let's start with the idea that giving carbon a price is a royal road to structural change in energy use.

You're right that prices can provide incentives for change. In fact, there are plenty of ways that, under better regulatory systems, prices could lead to more efficient uses of energy *without* carbon trading schemes. This is particularly true in highly energy-wasteful countries such as the US. Indeed, according to many analysts, even after a century of entrenchment of carbon-intensive technologies in the US, non-carbon or reduced-carbon energy generally lowers costs rather than raising them, for corporations, consumers and countries alike.<sup>148</sup> Similarly, according to the Intergovernmental Panel on Climate Change's (IPCC's) conservative Working Group III, using known and currently available technologies could reduce global greenhouse emissions below year 2000 levels by 2010 at zero net costs, with at least half of this achievable at a profit.<sup>149</sup>

But the question here is whether emissions trading schemes, particularly as they are currently designed, add any incentives for the particular kinds of change most needed to combat global warming. Are they, as many governments, businesses and large environmental NGOs claim, the 'best option for the world to make a transition to a low-carbon economy'?<sup>150</sup>

One problem is that while emissions trading provides financial incentives for *some* polluters to seek ways of reducing emissions, it simultaneously provides financial incentives for *other* polluters *not* to reduce emissions. That is, it gives incentives to industries that can make pollution-reducing technological changes cheaply and easily to make the most of their advantage, but also gives incentives to industries that find it harder and more expensive to make such changes to cut emissions *less* than they would have to do under conventional regulation.<sup>151</sup>

The overall effect is to discriminate against costlier types of innovation. What's more, rational sellers will not bother to generate credits unless they cost less to produce than prospective buyers have to lay out in pollution control, and are also competitive with credits produced by other sellers.<sup>152</sup> Emissions trading provides 'equal measure of under-compliance and over-compliance incentives, inducing less innovation than a performance-based standard to which everyone has an incentive to comply.'<sup>153</sup>

*But in most pollution trading systems, the number of available permits is supposed to be gradually ratcheted down over time, isn't it? As allowances become scarcer and the price goes up, so do incentives for companies to reduce pollution themselves rather than buy credits from others. So eventually there are incentives to undertake more expensive or difficult types of technological change.*

That's right. However, the number of allowances available is not reduced by trading, but by the ratcheted-down 'cap' imposed by the state, sometimes through international agreement. Whatever environmental benefits result depend in the end not on trading but on government action: how strict a cap the government imposes, how strictly it ratchets it down, whether it is committed to continue challenging industry to make improvements, and so forth. The US sulphur dioxide trading scheme, for example, is 'no more than a technique to increase the economic efficiency of a classic command-and-control regulatory program'.<sup>154</sup>

*OK, so trading favours cheaper kinds of innovation. What's wrong with that?*

Whether anything's wrong with it depends what kind of change you need. What the climate crisis requires is the fastest, most radical cuts and the most sustainable and environmentally desirable results (see Chapter 1).

*But will the prospect of having to spend a lot of money spur corporations to innovation of a more relevant sort than the prospect of having to spend little?*

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*'Trading is nothing more than a tool to reach an independently established and enforced regulatory objective. Focusing only on the trade is like giving credit for a good haircut to the scissors rather than the barber... [C]redit for pollution reductions properly goes to the... cap, not the trade... The prevailing wisdom is that greenhouse gas emissions can be controlled by instituting an incentive system based on emissions trading, rather than focusing on regulatory basics. But this is a step entirely in the wrong direction.'*<sup>155</sup>

Ruth Greenspan Bell,  
2006

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It's hard to generalise, but the old saw 'necessity is the mother of invention' suggests that it should. So does what economists call the 'induced innovation hypothesis', according to which the lower costs associated with pollution trading schemes should result in less innovation, not more.

Many policymakers and businesses are aware of this. In 2005, the leaders of two dozen of the world's most prominent corporations convened at a G8 Climate Change roundtable acknowledged openly that emissions trading schemes are 'less likely to stimulate major technological change or breakthroughs' than to promote mere 'efficiencies in energy use or manufacturing processes', and that other 'public and private sector programmes' were necessary to 'stimulate the development and commercialisation of new low carbon technologies'.<sup>156</sup>

What this means is that emissions trading may favour emissions reductions that are lower-cost and more 'efficient' over a short time yet militate against approaches that are 'efficient' over a longer period.

*Could you give some examples?*

Suppose a company can reduce carbon dioxide emissions by installing an end-of-pipe technology that requires an initial outlay of USD 100,000 and USD 1,000 a year in operational costs thereafter. But also suppose that for USD 200,000 the company could reengineer its whole industrial process in a way that cut back on its need for fossil fuels, generating a USD 1,000 in cost savings every year.

The more expensive solution would be better for the climate. Over the long term, it would also be more 'efficient'. The cumulative cost of the reengineering solution would decline over time, while that of the end-of-pipe solution would only increase. No matter how high the discount rate was set, the reengineering solution would at some point begin to save the company money.

Yet it would be companies that chose the end-of-pipe solution that would benefit most from an emissions trading system. They could sell allowances more cheaply during the first years of the market than companies that undertook reengineering. They would be the winners of the short-term 'efficiency' sweepstakes.<sup>171</sup>

In a sense, a whole multitude of non-carbon technologies, no matter how expensive, will in the long term prove more 'efficient' than carbon-intensive technologies – insofar as they help prevent a climate catastrophe. Yet emissions trading cannot select for this 'efficiency' over the conventional efficiencies enabled by short-term tweaks that merely reinforce an entrenched fossil fuel-intensive technological

### *Emissions Trading vs. Innovation: A Lesson Not Yet Learned*

In the US, pollution trading schemes, with their bias toward cheaper reductions, have been unfriendly to more interesting, radical and sustainable types of technological change that require long-term, broad-ranging efforts.

Even the better-designed US pollution markets, while encouraging certain technological adjustments, have provided fewer incentives for fruitful innovation than, say, performance standard programmes of identical stringency with no trading. By lowering rather than raising the cost of obeying pollution laws, they have tended to take advantage of differences among technologies that already exist for a particular purpose more than to stimulate the development of new or more broadly effective technologies. They improve current state-of-the-art technology rather than lead to a new state of the art.

The US sulphur dioxide programme instituted in 1990, for instance, produced only one or two main technological responses. These involved old technologies. One was scrubbers – a standard end-of-pipe approach. The program did produce some innovations in scrubber design. But so had previous regulation, so these cannot be attributed to any special innovation-producing power of trading.<sup>157</sup> Another technological change was the wider use of low-sulphur coal. But in addition to not being a real innovation, this change probably came about as a result of railroad deregulation, not trading.<sup>158</sup>

The conclusions of Margaret Taylor of the Goldman School of Public Policy at the University of California, Berkeley and her colleagues are unambiguous:

‘... the weight of evidence of the history of innovation in SO<sub>2</sub> control technology does not support the superiority of the 1990 Clean Air Act (CAA) – the world’s biggest national experiment with emissions trading – as an inducement for environmental technological innovation, as compared with the effects of traditional environmental policy approaches... . In addition, traditional environmental policy instruments had supported innovation in alternative technologies, such as dry flue-gas desulphurisation (FGD) and sorbent injection systems, which the 1990 CAA provided a *disincentive* for, as they were not as cost-effective in meeting its provisions as low-sulphur coal combined with limited wet FGD application.’<sup>159</sup>

There was some tweaking of operating procedures – for instance, plants might run their less-polluting units more frequently than their highly-polluting units in order to generate saleable credits.<sup>160</sup> But there were no radical innovations addressed at, say, supplanting coal-fired capacity or reducing demand and no innovation in technologies such as wind turbines, or conservation programmes that can reduce many different pollutants simultaneously. What the market encouraged, at most, was shrewd use of existing technology to save money to meet an isolated standard for one substance, not the opening of new environmental horizons for society.<sup>161</sup>

The fact that the US’s sulphur dioxide programme overshot its modest target in 1995 may seem to show that trading stimulated innovation. In fact, what happened was that companies wanted to ‘bank’ credits for future use in the next, more demanding phase of the programme.<sup>162</sup> Little trading was in

fact involved<sup>163</sup> and even less innovation. In addition, the overachievement was small in absolute terms. The US programme is expected to cut sulphur dioxide emissions by only about 35 per cent by its 20th anniversary in 2010. In contrast, Germany cut power plant emissions by 90 per cent from the first proposal in 1982 to completion of its programme in 1998, without trading.<sup>164</sup>

Trading does not seem to have encouraged the development of innovative technologies under the US's less well-designed pollution programmes, either. Southern California's RECLAIM market, for instance, appears to have sidelined the development of fuel cells, low-emitting burners and turbines, and so forth, whose development had previously been subsidised by a percentage of car registration fees. At least one innovative entrepreneur making low-NO<sub>x</sub> burners, Alzeta, probably lost rather than gained sales as a result of the programme.<sup>165</sup> An emerging method of reducing NO<sub>x</sub>, SCONO<sub>x</sub>, was also thwarted. SCONO<sub>x</sub> is more expensive than the dominant selective catalytic reduction method, but arguably could have penetrated the market if there had been stringent regulation generating less 'spatial flexibility' about where reductions were made.

Innovations under the 'bubbles' of early US pollution trading programs also tended merely to be rearrangements of conventional technologies rather than the invention, development or commercialisation of the non-obvious technologies necessary for achieving a longer-term social or environmental goal.<sup>166</sup>

Similar lessons can be drawn from the internal system of emissions trading instituted in 2000 by the Anglo-American oil firm BP Amoco, which committed its business units collectively to shaving 10 per cent off their 1990s greenhouse gas emissions by 2010. (The emissions resulting from sales of the hydrocarbons the company extracted and refined were not counted, although they of course are hundreds of times greater than the firm's in-house releases.)<sup>167</sup>

BP Amoco's trading system did help the company make the easy one-third of the cuts required more cheaply. These cuts 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 in attempting to make the rest of the cuts, company divisions were able to avoid more radical change simply by looking 'outside [BP's] operations [to] see what can be done by working with others' – for example, by setting up cheap, low-tech, 'offsite carbon reduction' schemes like allegedly carbon dioxide-absorbing tree plantations in distant locations.<sup>168</sup> By 2002, the company expected half of its so-called 'emissions reductions' to come from credits bought in from outside.<sup>169</sup> At no point was there any move toward genuinely innovative technology.

regime. It fails to register the rising and ultimately overwhelming, but incalculable, costs of continued reliance on fossil fuels to all enterprise and indeed most livelihoods (see Chapter 1). Emissions trading may coax a bit more out of the fossil economy, but it is not going to help the world get past it.

*Why is that?*

Partly because of what is known as ‘lock-in’, or ‘path-dependence.’

*What’s ‘lock-in’?*

A simple example is the order of letters on an English-language computer keyboard. From the upper left, the keyboard reads ‘Q,W,E,R,T,Y’. The reason why the letters were put in this fairly awkward order is that when typewriters were first invented, the keys would often jam and it was advantageous to slow down the speed of typing. Of course, jamming keys are not a problem on modern computers. Yet despite the fact that the QWERTY letter order slows down typing, society is ‘locked in’ to using the system.




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*‘We ought not reflexively to assume that the cheapest method is always the best method. For some environmental problems, we may want to give initially expensive technological transformation more priority than cost-effectiveness.’<sup>170</sup>*

*David M. Driesen,  
Syracuse University  
College of Law, 2006*

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An awkward letter arrangement on English-language keyboards has become too entrenched to change easily.

In general, technologies become ‘locked in’ when, for whatever reason, they gain a historical head start on other technologies and become entrenched in far-reaching technological, political and cultural webs. These webs give them the advantage of economies of scale, synergies with other industries, access to policymakers, accumulated specialist expertise, and subsidies of various kinds. Locked-in systems tend to be able to absorb or deflect incremental attempts to institute



### *'Locking in' Fossil Fuels in the US*

The US is so thoroughly organised, technologically and politically, around a high level of fossil fuel use that even President George W. Bush has acknowledged an 'addiction' that needs to be 'broken.'

By triumphing in early political and cultural struggles, US fossil-dependent technologies got first crack at economies of scale; were able to begin building a base of skills, research and resources that guaranteed rapid development; managed to integrate themselves first into transport, production, consumption and other cultural systems, building up a rich web of new habits and lifestyles; starved competing technologies of research and resources; helped build and ensure demand; and ultimately won adherents in subsidy-providing state bureaucracies.

Petroleum-fuelled internal combustion engines, for instance, were considered the least promising source of automobile propulsion in 1885. But chance events such as the closing of horse troughs used to supply steam vehicles led one manufacturer to shift to petrol engines, providing a mass production base that drove prices down, improved performance, and locked in dominance.

At around the same time, alternating-current (AC) electricity technology, which allowed long-distance transmission and centralised generation close to large fossil-fuel sources, closed out more efficient direct-current technology because it won judicial, political and public relations battles and was more attractive to aspiring monopolists. AC's advantage then snowballed into technological and economic hegemony.

Through such processes, fossil fuels became 'locked in' to the US's transport and electricity generation sectors. Together, these sectors today account for approximately two-thirds of global carbon emissions.<sup>174</sup>

A set of subsidised structures engineered for high fossil fuel use – interstate highway systems, automobile industries, refineries, suburban sprawl, centralised power plants, supermarket-centred food systems and so forth – became inextricable from the livelihoods of millions of people, while a subsidised extraction network employing many more, ranging from military machines to lobbyists to university geology departments,<sup>175</sup> emerged to locate, secure and exploit fossil fuel fields around the world.<sup>176</sup>

It was only as a result of such political and social processes, which included far-reaching changes in both individual and societal goals, that it became possible to talk about fossil-fuelled technologies as cheaper or 'more efficient' than certain other alternatives. Orthodox economics hides this history.

In this situation, higher energy prices are more likely to spur a search for more oil and gas than a search for better sources of energy. And even though the search for more fossil fuels is likely to yield smaller and smaller returns, the market still won't provide enough incentives to lay the groundwork for structural change in the energy sector. On the other hand, if, in response to inflation, interest rates are put up and demand falls, the resulting drop in prices may well only lead to renewed consumption of fossil fuels.

‘Lock-in’ is one reason why addressing the climate crisis requires not just clever inventions that use carbon more efficiently or even get the carbon out of energy entirely, but also political movements that get energy companies out of fossil fuel deposits, Northern military establishments out of oil-rich regions, oil and car manufacturers’ lobbyists out of positions of political power in Washington, and Northern agribusiness out of Southern lands needed for basic local requirements.

broader change because they constrain ‘available’ choices. ‘Very seldom does optimising each component in isolation ... optimise the system as a whole’.<sup>172</sup> An inertia takes hold that is difficult to break.

Fossil fuel-based energy systems are no different. They weren’t chosen because they were a rational, low-cost, efficient means of meeting pre-existing ends, but for other reasons (see box, above: Locking in Fossil Fuels in the US). ‘Timing, strategy and historic circumstance, as much as optimality, determined the winner’<sup>173</sup> of the competition to determine what energy system would be used.

Lock-in is as much social as technological. In the UK, for instance, transport has become locked into what energy consultant Roger Levett describes as a complex ‘vicious circle’ involving habits and community structure as much as fuels and engines (see Figure 3).<sup>177</sup> Without this locked-in structure, Levett estimates that fuel use in the UK could be cut by 87 per cent and carbon-based fuels eliminated altogether using *existing* technologies. Similar assessments have come from the US and elsewhere.<sup>178</sup>

In sum, ‘locked-in’ technologies and social structures – including fossil-dependent energy and transport systems – are likely to be difficult to change in the short term even when they were not originally adopted for efficiency reasons and are economic dead ends in the long term. Conversely, alternative technologies may be expensive or difficult to develop in the short term even when they promise to be cheaper in the long term; many success stories have failed early efficiency tests.<sup>179</sup>

Even when they can provide starting points toward restructuring society away from fossil fuel dependence, they are penalised by being deprived of economies of scale, synergies and political and cultural entrenchment. The economic calculations characteristic of emissions trading work best within a given social and technological regime, and don’t provide good incentives for changing that regime.

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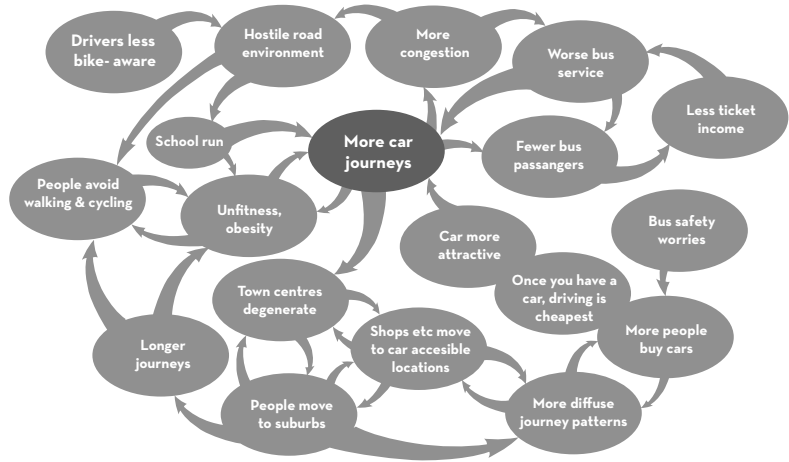
*‘Entrepreneurial discovery consists not in achieving efficiency in dealing with a given situation but in alertness to the possibility that the true situation (with respect to which efficiency would be worth pursuing) is in fact different from the situation that had been assumed to be given.’<sup>180</sup>*

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*Israel M. Kirzner, 1985*

Figure 3. A Vicious Circle in UK Transport

Source: Levett-Therivel Sustainability Consultants



*But won't really steep price increases provide enough incentive for changing locked-in technologies?*

Not if people are highly dependent on them and no clear alternatives are available. For example, because the 'current vehicle stock and the road infrastructure' in Northern countries 'makes individual car ownership and use very easy'<sup>181</sup> and because people still have to go to work, however much it costs, rising petrol prices may leave demand relatively unaffected. According to energy economist Philip Verleger, 'it would take a doubling of petrol prices to reduce American petrol consumption by just 5 per cent'.<sup>182</sup> Citizens in countries such as the US do use less energy when it grows more expensive, but that use changes very slowly.<sup>183</sup> The other side of this coin is popular protests against petrol price increases of the kind that have swept the UK and the US recently.

Beyond a certain point, systems analyst Gar Lipow suggests, commodity prices – including the prices of pollution permits – can't play much of a role in the North's transition to a lower-carbon economy. Public investment and regulation are needed to facilitate better individual choices:

Look at the U.S. – where automobile efficiency more than doubled from around 14 to around 25 miles per gallon when [government] standards were imposed – then stopped rising when trade decisions, congressional actions, and light truck loopholes stalled standards.

Again, look at home insulation in most states; generally average levels of attic insulation hover around the minimum state regulations require; a few people may get more, a few are [allowed to make do with] less; but within a few percentage points, regulatory minimums are a fair predictor of actual insulation. In European Union nations, regulation and public spending (especially on rail) are better predictors of carbon efficiency than price policies. Again, this is not to say that raising the price of energy does not reduce use; merely that regulation and public works do so more quickly, more efficiently and with fewer unintended consequences.<sup>184</sup>

In the EU ETS, prices for emissions allowances are currently being driven by increases in the price of natural gas, or, more fundamentally, the cost of shifting from coal to natural gas – and also by weather.<sup>185</sup> Even relatively high allowance prices can do little more than provide a moderate disincentive to shift from gas to coal in response to high gas prices. The UK firm Enviros says that even carbon permit prices of €50 per tonne are unlikely to ‘provide the stimulus necessary’ for firms to invest ‘to drive down greenhouse gases’.<sup>186</sup>

One weakness of carbon permit prices as drivers of change is that they are likely to be ‘extremely volatile because of the complete inelasticity of supply of permits’ along with ‘inelastic demand for permits in the short run’.<sup>187</sup> In the US, ‘sulphur dioxide trading prices have varied from a low of USD 70 per ton in 1996 to USD 1500 per ton in late 2005. Sulphur dioxide allowances have a monthly volatility of 10 percent and an annual volatility of 43 percent over the last decade’. In Los Angeles’s RECLAIM trading scheme, NO<sub>x</sub> prices suddenly went through the roof in 2001 due to industry procrastination, a hot summer, and a cutoff of supplies of electricity purchased from out-of-state. The price of the right to emit one pound of nitrogen oxide zoomed from USD 0.13 in 1999 to USD 37 in July 2001, before settling back to USD 13 in September 2001.<sup>188</sup> In 2005 and 2006, EU ETS prices for carbon dioxide jiggled over a wide range between €7 and €30 before crashing to €9 in May 2006. According to Vincent de Rivaz, Chief Executive of EDF Energy in the UK, ‘the long-term price of tradable emissions allowances is too uncertain to be a driver of systemic technological change in an industry whose generating capacity investments must be planned over 30-year periods’.<sup>189</sup>

Yale University economist William D. Nordhaus warns that such volatility might make trading ‘extremely unpopular with market participants and economic policymakers’ if it caused ‘significant changes in inflation rates, energy prices, and import and export values’. An analogy would be the volatile prices associated with the ‘peaking’ of oil production, which are not expected to provide signals that could

### *Climate and the Price Signal*

According to economists, prices send out ‘signals’. But what exactly do they contribute to the conversation about climate change?

Prices are notorious for the strange things they say about irreversible events, unknowns and the long term. Even the most orthodox economists’ estimates of the costs and benefits of doing something about global warming differ by many hundreds of billions of dollars per year, depending on variations in the assumptions plugged into conventional economic models.<sup>192</sup>

Sometimes prices are positively tongue-tied. ‘The carbon market is not going to be able to put sustainable development and everything else into one price,’ says Jack Cogen, president of Natsource, the largest private buyer of carbon credits. ‘The carbon market doesn’t care about sustainable development.’<sup>193</sup> Cogen’s view is reinforced by many other carbon businesspeople, who acknowledge privately that their incipient market actually has little or nothing to do with climate.

There are other ways, too, in which prices tend to keep to themselves the information needed to make climate-friendly choices, even in as mundane a matter as home-buying. Says activist and systems analyst Gar Lipow:

‘Levels of insulation that pay for themselves in four months to three years will seem a good deal when buying a house on a 30- or 15-year mortgage, given energy savings alone. But a problem arises when most homes don’t offer that level of insulation. After all, there are more important considerations than energy costs. Is the house close to work, schools and shops? Also, there are the questions of layout, and appearance. If all homebuilders were required to offer this level of insulation they could easily recover their costs and a significant profit besides at a price that would still lower overall cost of ownership to buyers. But in the absence of regulation requiring this, homebuilders may offer homes without such features. So long as most homes don’t offer them, they suffer little loss in bargaining power. The odds are homes with a similar location, layout and appearance won’t be available with the added energy conservation features. Without regulation, builders rationally believe they won’t gain enough bargaining power in selling their product to make extra insulation worth adding. This is so even though the buyer would get a good deal by paying enough for the added energy savings feature to allow the builder a significant extra profit.’<sup>194</sup>

stimulate the development of alternative liquid fuels in time. ‘Waiting until world oil production peaks before taking crash program action leaves the world with a significant liquid fuel deficit for more than two decades’, which would cause problems ‘unlike any yet faced by modern industrial society,’ according to one US study.<sup>190</sup>

Unless the groundwork for fundamental change is laid beforehand, corporations may simply not respond to high prices. They may redouble their pressure on the government not to reduce its allowance handouts. Or they may just pay the fines for not being able to find enough allowances to cover their emissions. In Los Angeles's RECLAIM programme, many polluters continued operating old equipment, didn't have enough allowances to cover the resulting pollution, and simply incurred multi-million dollar fines.<sup>191</sup> In the end, local government had to bring wayward electric generating facilities back under conventional regulation that allowed them to pay a fee per tonne rather than buy credits. Only then was catalytic reduction technology retrofitted into 17 generating facilities. With the trading programme in a shambles, no assessment of whether it had saved money was even attempted.

Emissions trading's blindness to the long term is also damaging in other ways. For example, emissions trading is incapable of taking account of the society-wide economic benefits that can result from letting stiff costs fall on heavily-polluting industrial sectors rather than allowing them to buy cheap pollution permits as a way out. Such costs can lead to savings associated with well-known side benefits of non-fossil technologies, such as relief from the damage caused by pollutants other than greenhouse gases, destruction of land due to oil drilling and coal mining, water pollution, and so forth, but also to innovations that lower the prices of products from cleaner competing sectors.<sup>195</sup> Michael Porter of Harvard Business School argues that innovations spurred by stringent environmental regulation that imposes extra costs in the short term may enhance competitiveness to a greater degree in the long term than merely maximising static efficiency, gaining access to cheaper inputs, or increasing scale.<sup>196</sup>

What's more, individual and societal goals are themselves likely to change as costs come down as a result of new technological and social patterns becoming 'locked in'.<sup>197</sup> That could mean less demand for the things that today only fossil fuels can provide. Such a shift in goals is unlikely to occur within the previous locked-in fossil-dependent system. Again, emissions trading can't help select for it.

*It sounds as if environmentally superior technologies such as solar power are not going to benefit much from emissions trading.*

No. Emissions trading might even slow down their development. Once produced on a large enough scale, photovoltaics would become a far cheaper source of electricity per unit cost than fossil-fuelled technologies,<sup>199</sup> and cheaper still if other parts of the technological and political context were changed – if subsidies were shifted from nuclear

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*'Emissions trading does not stimulate competition to maximise environmental performance. It simply authorises some trading around of obligations the government has created.'*<sup>198</sup>

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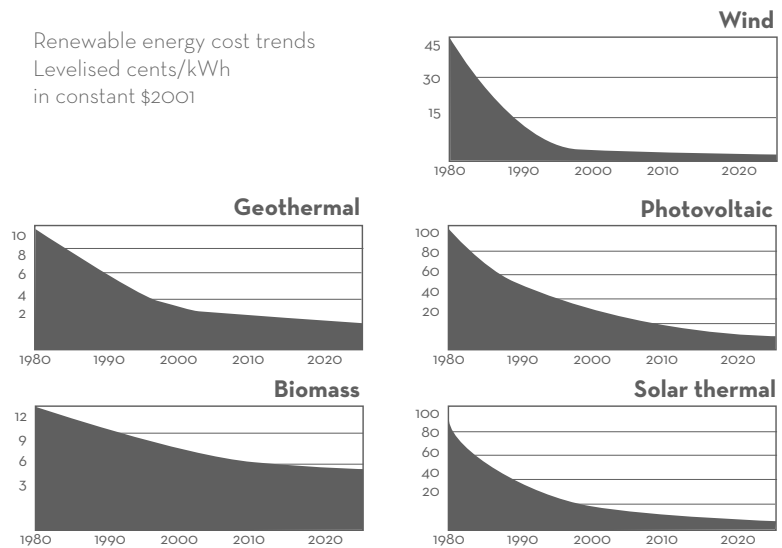
*David M. Driesen, 2003*

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power, for instance. Already, costs of various types of non-fossil energy technology are declining. (See Figure 4.) But without opportunities to get ‘locked-in’ through more state-backed research, public investment, economies of scale, and other processes, solar power is still too expensive to get much of a boost from emissions trading.

Figure 4. Renewable Energy Cost Trends, US

Source: Rocky Mountain Institute



*So there's no way around it. Emissions markets are structurally biased against the kind of radical change needed to tackle global warming.*

That's certainly what the evidence suggests. As the Heinrich Böll Foundation's *Jo'Burg Memo* observes,

[T]he 'polluter pays' principle has been turned into a 'polluter buys his way out' principle. Decarbonisation will not really take place in this manner, since the resource base of Northern economies is not being restructured.<sup>200</sup>

To sum up the story so far, while trading schemes can in theory

- save *participating private firms* money in
- reducing emissions of *specific substances*
- to a *particular degree*
- over *particular time periods* and
- within a *particular larger technological system*,

the same schemes are unlikely to be the best choice if the objective is to

- save money for *society or industry as a whole*, or
- attain a more *general environmental improvement*, or
- make *more drastic reductions*
- with *long-term* goals in mind, or
- bring about a *change in a larger technological system*.

When trading advocates assert that trading systems are ‘cost-effective’ without specifying for whom, in what, and over what time period, they’re being so vague that they court irrelevance.<sup>201</sup>

*But maybe in helping private firms save money on incremental improvements in carbon-intensive technology, emissions trading can help buy time for the research and development that is needed to shift industrialised societies away from dependence on fossil fuels entirely. Maybe the market can help make the world’s fossil fuel technologies state-of-the-art, or moderate their climatic effects, while solar and other renewable technologies are being developed to replace them.*

There are several problems with this argument. First, shifts in technological and industrial structure don’t just happen on their own. Solar energy technology, for example, is not ‘advancing’ busily by itself in a bubble independent of politics, funding and society. Its developers struggle continually to develop a network of research and investment against a structure of large competing subsidies and other encouragement still being given to fossil or nuclear energy and other arguably ‘sunset’ technologies. A shift in this pattern of support won’t be delivered by emissions trading.

Second, emissions trading schemes, even the better-designed ones, rather than buying time for governments or corporations to make structural changes, actually slow or block many technological developments by squandering ingenuity and resources on making small refinements that extend the life of an overwhelmingly fossil-oriented energy and transport structure. And in doing so, they make it more likely that

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*‘Greenhouse gas emissions from aircraft, increasingly implicated in climate change, will continue to grow even if the airlines join Europe’s emissions trading scheme, which is designed to cut them, British Airways’ chief economist admitted yesterday.’<sup>204</sup>*

*News item, London Independent, 2006*

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### *Does Emissions Trading Reward Efficient Actors?*

Emissions trading can help big polluters save short-term emissions-reduction costs. But does it reward companies and countries that are already more efficient, even by conventional standards? Not so far.

Under the EU Emissions Trading Scheme, global public assets which presumably should be used to foster the fastest transition to a non-fossil energy regime worldwide are being handed to the biggest carbon emitters in the most carbon-intensive countries.

So far, these big polluters have responded to the scheme mainly by lobbying for more emissions permits or more advantageous ways of distributing them within their sectors; by massaging baseline figures; by seeking carbon credits from abroad that will help them evade structural change; by looking more closely at gas; and by passing on any costs to customers.

The Kyoto Protocol, meanwhile, awards the most emissions rights per capita to countries that are, even by very conventional economic yardsticks, relatively *inefficient* users of energy.

Australia, for example, is one of the most 'carbon-inefficient' countries in the world. It ranks 109th among 141 nations in its carbon efficiency, or ratio of tonnes of carbon dioxide emitted per US dollar of GDP. Yet under the Kyoto Protocol, Australia, had it signed the treaty, would have been generously granted emissions rights amounting to around 27 tonnes per capita. Other notably carbon-inefficient countries (the Czech Republic, ranked 115th; the US, ranked 100th; Canada, ranked 98th; Finland, ranked 80th; The Netherlands, ranked 78th; Germany, ranked 76th; the UK, ranked 74th) get rights to between approximately 10–17 tonnes of carbon dioxide equivalent per capita.

At the same time, the world's most carbon-efficient countries (including Namibia, the Lao PDR, Nepal and Bangladesh, ranked 1st, 5th, 18th and 23rd respectively) receive zero tradable rights under the Protocol. Sweden, a moderately carbon-efficient nation (ranked 42nd out of 141), gets only about seven tonnes per capita, around the same as Japan and Spain, ranked 61st and 62nd (see Table 3, next page).<sup>207</sup>

when governments such as that of the US are finally panicked into taking action on global warming, they will grasp at extreme, technical-fix solutions such as creating new life forms to produce hydrogen, re-engineer hurricane-prone seas, or absorb carbon dioxide; seeding the oceans with nanoparticles to promote plant growth; dispersing nanoparticles in the upper atmosphere to reflect light; or putting continent-sized mirrors into space (see Chapter 2).<sup>202</sup>

Third, far from being a quick 'stopgap solution' that can be applied immediately while more difficult measures are prepared, emissions trading is the 'most difficult of the economic instruments'<sup>203</sup> available for environmental protection, and requires an enormous amount of legal, institutional and technological stage-setting to get off the ground, even in a country like the US.

Table 3. 'Carbon-Efficient' and 'Carbon-Inefficient' Nations

Country	Carbon Efficiency (Tonnes of CO <sub>2</sub> Emissions per US Dollar of GDP)	Carbon Efficiency Rank among 141 Nations
Namibia	0.00	1
Lao PDR	0.14	5
Nepal	0.30	18
Bangladesh	0.36	23
Sweden	0.70	42
Brazil	0.71	43
Norway	0.74	45
Philippines	0.77	47
France	0.78	48
Italy	0.91	57
Spain	1.00	61
Japan	1.00	62
Denmark	1.08	66
Indonesia	1.11	69
UK	1.17	74
NZ	1.19	75
Germany	1.19	76
Netherlands	1.23	78
Finland	1.28	80
India	1.35	85
Egypt	1.45	86
South Korea	1.51	94
Canada	1.69	98
US	1.77	100
China	2.03	107
Australia	2.07	109
Czech R.	2.43	115
South Africa	2.56	119
Saudi Arabia	3.60	129

### *The Carbon Market as Epicycle*

From about the second century onward, the European astronomical model that placed the earth at the centre of the universe had to add more and more squiggles and refinements ('epicycles') in order to account for observations of planetary movements. Only in the 16<sup>th</sup> century was the whole complex model and all its epicycles finally abandoned in favour of a simpler and more elegant sun-centred model.

The carbon market is like one of the epicycles added to the earth-centred model to preserve it. It helps keep the obsolete fossil-centred industrial model going at a time when society should already be abandoning it.

No empirical evidence exists that current greenhouse gas trading programmes are functioning as transitional solutions on the way to a fossil carbon-free future. In fact, all the available evidence is on the other side. Major oil corporations such as BP and Shell, both enthusiastic initiators of internal trading schemes, have never voiced any serious intention to curb their main activities of oil exploration or production at any time. Although it has changed its name to 'Beyond Petroleum', BP committed itself in 2002 to expand its oil and gas output by 5.5 per cent per year over the succeeding five years. Its emissions in 2001 were equivalent to almost two years' carbon dioxide emissions from the UK.<sup>205</sup> The firm's investment in renewable energy remains at a mere 1 per cent of the USD 8 billion it spends on fossil fuel exploration and production every year.<sup>206</sup>

Similarly, the World Bank treats its carbon trading wing as what one prominent former staff member scathingly refers to as a mere 'epicycle'<sup>208</sup> of an overwhelmingly fossil-oriented approach to energy and transport.

## Efficiency and hot spots



Karl Polanyi

There's another problem with the procedure of creating 'efficiencies' by spreading emissions cuts around so that the cheapest can be made first: it tends to harm the weak and benefit the powerful. That means there are going to be political limits – defined by popular resistance, among other things – to the extent that pollution in location A can be made 'the same as' pollution in location B.

Similar problems arise with the privatisation of land, privatisation of health care and the privatisation of biodiversity. As the great economic historian Karl Polanyi pointed out more than 60 years ago, certain vital things such as land, labour, water and medicine are only 'pseudo-commodities'.<sup>209</sup> They can never become fully tradable without society as a whole ceasing to exist.

*I don't understand.*

Take land. From a narrowly economic point of view, land is all the same, wherever it is, just as emissions reductions are said to be the same wherever they are made. Land creates economic value, wherever it is and whatever it is used for, just as, other things being equal, emissions reductions are good for the climate, no matter where or how they are made.

But suppose land became completely interchangeable with anything else, a completely fluid commodity, so that one piece of land could

be exchanged for another, or become the ‘equivalent’ of a certain amount of money, and thus easier to accumulate in large quantities in the hands of whoever had power, regardless of the land needs of others. Suppose *any* land could be bought and accumulated in *any* amount by *anybody* with the money to do so and then used for *any* purpose. Suppose it could be exchanged *for* anything *with* anybody *in* any amount.

In theory, it would then become possible for one person to own all land and everybody else to own none. It would be possible for any piece of land to be destroyed if whatever it was exchanged for were temporarily a source of greater profit. It would be possible for most land to be treated as a speculative instrument without even being used, while people went hungry. It would be possible, in short, for people who owned the land never to see it or know anything about it. It would be possible for them to do anything with their land regardless of the consequences to their neighbours. Framing land as a commodity in such a thoroughgoing way would require suppressing many of the things that makes a piece of land in location A different from a piece of land in location B. If carried too far, this would have fatal results.<sup>210</sup>

*But no one would ever carry things that far.*

Obviously not. ‘To allow the market mechanism to be the sole director’ of how land is used, Polanyi wrote, ‘would result in the demolition of society.’ That’s why, in the real world, all communities and states possess rules or customs limiting how far land can be exchanged, commodified, or accumulated, what it can be used for, and who can acquire how much of it.<sup>211</sup>

Equally obviously, there are social limits to how far you can go with pollution trading. If there were no limits, ‘averaging’ pollution over a large geographical area through a market would mean you could pollute a few places severely while cleaning up everywhere else, and still say you were ‘improving’ society’s well-being. In the words of National Resources Defence Council attorney David Doniger, ‘If all you had was emissions trading, you could pile up all the pollution in one place.’<sup>212</sup>

This is one thing that critics of pollution trading schemes have always worried about: that if a market makes it easier for companies to put their pollution anywhere they want, it will wind up on the doorsteps of the poor and less powerful. In fact, in the US, as across the world, pollution is already concentrated disproportionately in poor communities or communities of colour. Many people fear that trading will

only make it worse. They fear that the scientific fact that air pollution dumps do not respect political borders is being recruited in the service of economic and physical exploitation. This is the problem of ‘hot spots’.

*Are you saying this actually happened with US sulphur dioxide trading?*

That’s a matter of some controversy. Many factors are involved. Some factors in some emissions markets may actually militate against hot spots. For example, it’s often easier to generate cheap credits from the worst-polluting plants, meaning that those living around them may see more improvements than others.<sup>213</sup> Some researchers say that communities of colour have actually disproportionately benefited from sulphur dioxide trading – except in the US South – although the same researchers add that poor communities have lost out to a small degree.

In geographical terms, though, the effects have clearly been uneven. While sulphur dioxide levels fell in the aggregate during the 1990s, they barely changed in the swath from Columbus, Ohio, to northern West Virginia. Hot spots have persisted east of Erie, Pennsylvania and near Kingston and Oswego, New York and Oak Ridge, Tennessee, according to the National Atmospheric Deposition Program. Since 1995, according to a study by the United States Public Interest Research Group, 300 of the 500 dirtiest plants actually increased sulphur dioxide emissions.<sup>214</sup> The government’s Environmental Protection Agency found that emissions increased in Texas and Alabama, with effects felt in Florida.<sup>215</sup> In the 1990s, some locations, a large majority of which were poor and predominantly communities of colour, reported increased emissions of sulphur dioxide and resultant toxic co-pollutants such as particulate matter and volatile organic compounds.<sup>216</sup> This prompted the National Environmental Justice Advisory Council, a government appointed body, to oppose any expansion of pollution trading schemes in the US and called on the US government to address the environmental justice impacts of emissions trading. Government officials point out that many other hot spots have been ‘cooled’ – as they probably would have been under any reduction scheme – but admit that there have been exceptions.

Proportionally, populated areas have benefited less, because buyers of credits are concentrated in more populated areas. New York state, which is downwind of many power producers, believes that it is disadvantaged by sulphur dioxide trading on a national scale, and has pushed for a regional plan to overcome the dangers of ‘averaging’ over a large geographical area. In 2000, New York attached a financial penalty to the sale of New York sulphur dioxide credits to 14

upwind states believed to contribute to the state's acid rain problem. This was ruled unconstitutional by a US district court in 2002, setting off a high-level legal battle.<sup>217</sup>

Many critics are concerned, similarly, that when fossil fuel users buy rights to continue polluting their local areas, they are buying the right to release toxic substances in addition to carbon dioxide.

*All right. But the problem of 'hot spots' seems pretty minor if it saves big business money in making short-term pollution cuts.*

You may think so – provided it isn't your health or environment at stake. But remember that even in the US, airborne particles of sulphur dioxide, together with particles of NO<sub>x</sub>, cut short the lives of an estimated 30,000 US residents each year as well as causing acid rain.<sup>218</sup>

*Maybe so, but the programme might still have been 'efficient.' You can't tell for sure until you assign an economic value to the lives lost or damaged and do the arithmetic.*

The problem is that for such calculations to be possible, you couldn't assign human lives a value so high that it would automatically outweigh almost any economic gains made elsewhere.

*Well, sure. Making a market is like making an omelette – you have to break a few eggs. You can't assign an infinite value to unbroken eggs, otherwise you won't get your omelette. The eggs have to have a specific numerical value, and not too high.*

And suppose the eggs – er, people – disagree with the statistical value their lives have been assigned? Or suppose they refuse to have any such value attached to their lives at all?<sup>219</sup>

*They're not necessarily qualified to discuss it, if they're not economists, are they?*

Are you suggesting that they don't know how to value their own lives?

*Oops, that doesn't sound very democratic, does it? Let me rephrase that to make it sound better.*

I'm not sure that will do any good. The point is that the new market's need for these calculations to be made leads unavoidably to political arguments – like the one we're having now. There's nothing 'neutral' about the project of making emissions reductions 'efficient' through trading schemes.

And probably you won't be surprised to learn that there are still further political difficulties with that project.

## Conflicts over ownership

A basic requirement of any trading system is that everybody has to agree who the owners are of the goods to be traded. For a car market to work, for example, everybody has to agree that it is the car company that owns the product to be sold – not auto workers, nor communities near sources of raw materials, nor anyone else. In emissions markets, however, not everyone agrees who owns what. Many people claim that countries or firms are using pollution dump space that belongs to others.

The problem was already evident in the US's sulphur dioxide trading system, which granted pollution allowances only to the biggest-polluting private firms. Some environmentalists argued that it was electricity customers, not power companies, who should get the allowances, and that companies should have to buy them. 'It's the public's air that's being used as a waste dump,' observed attorney David Doniger of Environmental Defence in 2002. 'There's a good argument that you ought to pay to use the dump.'<sup>220</sup>

Even deeper and more wide-ranging difficulties about ownership afflict the Kyoto Protocol and the EU Emissions Trading Scheme. As economist Simone Bastianoni and colleagues observe, such programmes require an 'accounting method to create a greenhouse gas inventory which also assigns responsibility for emissions'.<sup>221</sup> To put it more briefly: emissions markets need to know who it is exactly that's warming the globe.

*Sounds like an easy question.*

It's not. It's a little like trying to work out in the courts who is responsible for an industrial accident that takes off a worker's finger. Is it the co-worker who wasn't watching? The manufacturer of the machinery? The contractor who operates it? The person who invented it 50 years ago? The owner of the company hiring the contractor? The owner of the factory site? The government safety board? The worker herself?

Similarly, who's responsible for the burning of fossil fuels in the petrol tank of a particular car? The car owner who drives it? Exxon, who drilled the oil? General Motors, who built the car? The politician who defeated the mass transportation system that would have made the car's purchase unnecessary? The government of the country within whose borders the car is driven? Should countries be held responsible for their

current emissions or for their historical emissions as well?<sup>222</sup> Climatology and economics have no answers to such questions. Different agents will be held responsible in different accounting systems.<sup>223</sup>

Look at what's happened to the EU ETS. The EU decided that private companies burning fossil fuels would be considered, for the purposes of the scheme, the only emitters. These are companies like RWE, Cementa, Scottish Power, Vattenfall, Ineos Fluor and so forth.

*That sounds reasonable enough. What was the alternative?*

In choosing to give rights to the world carbon dump away to corporations, European governments decided *not* to give rights to others, including ordinary citizens. In choosing to give rights to corporate 'downstream' energy users, it chose *not* to give them to 'upstream' producers of oil, gas and coal.

*Was that a problem?*

It created a whole nest of them – economic, political and technical. First, the question arose, as in the US, of why assets in what should be a public good are being channelled into private hands. Then there was the expense involved in distributing rights to thousands or hundreds of thousands of 'downstream' energy users rather than a manageable handful of 'upstream' suppliers of fossil fuels. Added to this was the question of arbitrariness.

*How so?*

For the sake of convenience, only big energy users could be included.<sup>224</sup> The domestic, transport and small-business sectors had to be left out.

Even so, there are so many industrial users that the costs of attempting to monitor and administer the scheme are huge. That does create a lot of lucrative work for financial centres like London and Frankfurt – which may have been one of the attractions of the arrangement. But the public has to foot the bill.<sup>225</sup>

Moreover, if the government finds itself too weak to take away the emissions rights it has temporarily granted the big industrial participants in the market, other sectors – transport, individual homeowners, government institutions – will have to bear more of the burden of meeting emissions targets.

In addition to being inefficient and expensive, the decision to make energy users the owners of emissions allowances failed to address the global warming problem closer to its root. As emphasised earlier in this special report, the main current threat to climatic stability is the



flow of fossil carbon out of the ground. It's both more economical and more logical to curb this flow at the relatively few points it occurs than to attempt to impose centralised control over millions of separate users of coal, oil and gas.

*Maybe so, but by the same token, isn't it true that putting the point of responsibility closer to where fossil fuel flows out of the ground would run against the immediate interests of influential oil and coal companies?*

For sure – unless they were handed a large number of free rights to the world's carbon dump.

*But presumably in that case, they would find themselves under fire for capturing unacceptably large rents from the customers to whom they would pass on their costs.<sup>226</sup>*

I think you're beginning to see why it's not a simple question of expert technique to decide who the owners of emissions rights are going to be. It needs public discussion.

*It seems like everybody's going to be in conflict with everybody else.*

Conflict has already broken out over rights given out by the EU ETS. In a rerun of some of the squabbles that plagued the US sulphur dioxide trading scheme, for instance, the award of carbon credits to various EU energy and chemical corporations merely for having obeyed

### *Whose Carbon Dump Is It?*

Industrial manufacturers aren't the only people caught up in the new conflicts over ownership of carbon dumping space.

In New Zealand, plantation owners joined battle with the government in 2003 over who owns the carbon in 200,000 hectares of trees planted after 1989, which are eligible under the Kyoto Protocol to count as 'carbon sinks' that soak up the country's industrial emissions. The owners claimed the government was trying to steal NZD 2.6 billion from them with a stroke of the pen, 'possibly the largest private property theft in New Zealand's history.<sup>233</sup> They vowed to 'take whatever action is neces-

sary' to ensure just compensation for their purloined property.<sup>234</sup>

In the UK, meanwhile, trouble is brewing between firms that sell rights over the carbon-absorbing capacity of trees to the public and some of the local or state organisations that raise the trees. The marketing firms, it's alleged, are manoeuvring the forest-planting organisations into signing contracts relinquishing these rights for a period of 99 years for a pittance. The marketing firms then sell these rights on to the public for a huge mark-up, claiming falsely that they can make consumers' jet flights or home heating 'carbon-neutral'.

government regulations or having received government subsidies prompted protests and even legal action.<sup>227</sup> As metals manufacturers threatened to stomp out of Germany over having to pay for the EU pollution allowances German utilities got from their government for free,<sup>228</sup> the tiny Saxon village of Heuersdorf challenged the award of free rights to the energy and coal-mining firm Vattenfall, whose operations have troubled local residents. The only reason Vattenfall has been able to gain access to this largesse, Heuersdorf claims, is that it was also the beneficiary of government subsidies for brown coal mining in the 1990s that later made it possible for it to take ‘early action’ on carbon emissions.<sup>229</sup>

Then the European Commission started making plans to bring aviation into the EU ETS, arguing that state-owned airlines ought to be ‘responsible for emissions...rather than alternatives such as airports and fuel suppliers’.<sup>230</sup> Yet the Commission was uncomfortably aware that giving out emissions rights to state-owned airlines ‘could fall foul of state aid rules’.<sup>231</sup> One banker fretted that the continuing debate over the ownership of emissions was becoming ‘increasingly sterile’.<sup>232</sup>

With the Kyoto Protocol, the problems are even more intractable.

*How so?*

Early on, parties to the UNFCCC and their technical advisers singled out national territories (what University of Wisconsin historian Thongchai Winichakul calls ‘geo-bodies’)<sup>233</sup> as the relevant emitters, global warming agents and owners of pollution permits. Anything emitted on Mexico’s territory, say, would be considered to be emitted ‘by Mexico’. But this seemingly ‘neutral’ unit of analysis was immediately entangled in disputes over responsibility, history, politics and exploitation. People pointed out that some of the dump space earmarked for emissions originating on one country’s territory would in effect be used by other nations. One country would wind up using dump space that should belong to another.

*What do you mean?*

Southern negotiators and others argued that ‘inventories should focus on the location of economic demand’ for carbon-intensive practices ‘rather than on the site of production’.<sup>236</sup> Why, for example, should Mexico be held solely responsible for emissions involved in producing goods for the US?

Economists asked why a country should be held responsible for the emissions of (for example) trucks crossing its territory, if it neither produces nor uses the goods that they carry. In extreme cases a country

could even end up being held responsible for high emissions used to produce and transport goods none of which its citizens enjoyed. Yet singling out final consumers as the real emitters might not provide direct incentives for cleaner production.<sup>237</sup>

At the same time, environmentalists questioned whether entities called ‘Russia’, ‘Ukraine’ and ‘the UK’ should be credited with post-1990 emissions reductions that are in fact due to post-Soviet economic collapse or the aggressive anti-unionism of Margaret Thatcher, the resulting collapse of the coal industry and the rise of less-polluting natural gas as a fuel.

Indigenous movements, meanwhile, argued that it is they, not national governments, that have reduced emissions by opposing oil drilling on their territories.<sup>238</sup>

Other activists insisted that colonial history and patterns of imposed development were also relevant to negotiating who the agents were to be in the new carbon emissions market. For example, oil imperialism shaped Saudi Arabia and other Middle Eastern nations as oil-dependent societies, while colonialism shaped Uruguay as a beef producer. Should today’s Saudis or Uruguayans be held responsible for carbon dioxide emissions from gas flares or methane emissions from cattle?

*I see. But in the end didn’t everyone sweep aside all these arguments and agree that nation-states were responsible for emissions within their borders and would be the designated owners of emissions permits?*

The Kyoto Protocol did try to sweep these arguments under the rug, yes. But they’ve never gone away. In fact, controversies over who the owners of rights to the earth’s carbon dump should be – and how many rights they should have – have only increased.

*How’s that?*

Well, take, for example, the UK component of the EU ETS. As shown in Table 2 (on page 89), UK industry, mainly heavy industry, is being granted monetisable access to between approximately two and a half to five per cent of what might be called the ‘available’ world carbon dump (the figure for the EU corporate sector as a whole comes to between 23–45 per cent). UK population, by contrast, comes to only one per cent of the world total.

The dump space granted to the UK, moreover, does not fall, geographically or otherwise, under UK legal jurisdiction as conventionally understood, but is used by all of the earth’s inhabitants. The UK

government has given away to its private corporations something that is not its to give.

The injustice involved is not abstract. It's bound to have concrete political results. Southern countries are just as unlikely to sit still while the new 'resource' of carbon-cycling capacity is given away to Northern industry as Northern countries are unlikely to sit still for proposals for a fairer system.



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*But wait a minute. Is it really all that unfair to award the lion's share of emissions rights to big business in the North? After all, Northern countries and big business didn't know any better when they got into the habit of using so much of the world's carbon dump following the first decades of the industrial revolution. Sure, they know now that their actions are causing global warming. But they didn't know then. You can't hold them responsible.*

Maybe not. But they have benefited from using this capacity, and they continue to benefit today, while everyone is going to pay the price.<sup>239</sup>

*But aren't these big fossil users performing a valuable public service? It's a common belief among US citizens, for instance, that their country's disproportionate use of world resources is justified because the country's economy and foreign assistance programmes benefit the whole world. If that's the case, then perhaps it's a good thing that the US and other industrialised countries be given the lion's share of emissions rights.*

This argument echoes the one usually made for making corporations the beneficiaries of handouts of property rights: that the public gets something in return. For example, when railroads were given land grants by the US government to use or sell in the 19th century, it was expected that they would provide transportation in the public interest. And when mining companies are given free or low-cost concessions, it is expected that society will benefit from the metals made available.

But how much has the South benefited from the North's overuse of the global carbon dump? Most people would argue the benefits have been relatively small and uneven, compared to the harm the South has absorbed in the past and is likely to suffer in the future. As Peter Singer puts it, 'many of the world's poorest people, whose shares of the atmosphere have been appropriated by the industrialised nations, are not able to partake in the benefits of [the resulting] increased productivity in the industrialised nations – they cannot afford to buy its products – and if rising sea levels inundate their farmlands, or cyclones destroy their homes, they will be much worse off than they would otherwise have been'.<sup>240</sup>

## Fixing the market?

*But maybe the market can be made fairer. The government could allocate emissions rights to itself and then auction them off to the highest bidders.*

They would still end up in the hands of big polluters.

*Or fees or profits from the sale or lease of emissions rights could be distributed through a trust to ordinary citizens, or communities, or producers of renewable energy.<sup>241</sup> Or, better, they could be distributed directly to individuals or nations, eventually on a basis of per capita equality.<sup>242</sup> Each Southerner would ultimately get the same assets as everybody else, solving the justice problem at a stroke.*

This is the popular 'Contraction and Convergence' proposal put forward by the Global Commons Institute. Property rights in global carbon-cycling capacity would be distributed to nation-states and their distribution gradually equalised so that, by a certain date, every country would hold an amount corresponding to its population, or, alternatively, every individual would hold an equal amount.

These rights would be traded either by individuals themselves or by the state apparatuses of the countries in which the individuals lived. At the same time, the global 'cap' on emissions would shrink drastically to a level deemed sustainable by the international community. Today's large-emitting countries, after being granted the lion's share of newly-created assets, would thus find their property holdings dwindling over time, as they were redistributed to the world's poor and the total amount of rights was reduced.

Various versions of Contraction and Convergence already have the backing of most governments in the South and many non-government organisations, prominent public figures and political parties in the North.<sup>243</sup>

*Sounds great!*

It does, doesn't it? But the assumption that equity will be furthered in the current economic and political environment by commodification and systems of private property – and that states will be conscientious guardians of the public welfare – looks risky to many observers with experience of similar schemes. (See box: 'Little' People and 'Big' Resources.)

To what extent would Southern governments come under pressure to use their surplus citizens' allowances to attract dirty industries?<sup>244</sup> Would an equal per capita carbon allowance economy be any more successful in fostering equity than Nigeria's oil economy, Mali's cotton economy or the uranium economy of northern Canada or Australia? What scale of reform of local power structures would be necessary to prevent abuses in a system that granted lucrative assets to every local villager? Whose hands would the pollution rights eventually wind up in? A nominally equal-per-capita scheme that encouraged a state to subsidise the development of a high-carbon industrial structure would also pose new problems for citizens fighting fossil-fuel developments in their local areas. Contraction and Convergence's initial grant of a disproportionate chunk of lucrative assets to the rich, in addition, runs into the same difficulties as the Kyoto Protocol and the EU ETS. Under a Contraction and Convergence trading scheme, too, as under every other carbon trading programme, rules aimed at improving integrity and preventing fraud would continuously be threatened by the emergence of new and more ambitious liberalisation initiatives.<sup>245</sup>

*Maybe we just have to abandon the idea that greenhouse gas emissions trading can be made fair.*

Emissions trading's most powerful proponents probably never had that idea in the first place. Equality is not what emissions markets are about. Even the 'total product rule' that Ronald Coase relied on in his justification of pollution markets 'serves primarily as a mechanism for redistributing wealth' from poor to rich,<sup>247</sup> and from future generations to the present.<sup>248</sup>

You can go further and say that one of emissions trading schemes' political selling points is that they preserve *inequality*. And many mainstream environmentalist backers of trading schemes are perfectly willing to sacrifice some 'efficiency' to make them even more unequal.

*How can that be? Isn't the main raison d'être of trading to cut the costs of environmental action?*

### *'Little' People and 'Big' Resources*

Would giving everyone in the world equal rights on paper to the use of the earth's carbon dump make an egalitarian market possible? Would everyone have the power, the resources and the information to benefit? The question is similar to that of whether giving forest peoples paper rights to the biodiversity in their territories will ensure that they benefit from a biodiversity market. Yale University anthropologist and forester Michael Dove offers the following words of caution.

'[W]henever a resource at the periphery acquires value to the centre, the centre assumes control of it (e.g., by restricting local exploitation, granting exclusive licenses to corporate concessionaires, and establishing restrictive trade associations). The pattern is aptly expressed by a peasant homily from Kalimantan, which states that whenever a 'little' man chances upon a 'big' fortune, he finds only trouble. He is in trouble because his political resources are not commensurate with his new-found economic resources. He does not have the power to protect and exploit great wealth and so, inevitably, it is taken from him...the implication [of the proposal to extend a global system of rights to a new commodity] is that the global system that proposes to

extend these rights, and the indigenous communities that are the intended beneficiaries, are structurally similar members of the same, integrated system. I suggest, rather, that the global system and these indigenous communities are structurally dissimilar members of a more loosely articulated system... inattention to this distinction is a function of a paradoxical tendency among scholars and planners to insist that systems are either all-embracing...or unconnected (e.g., indigenous communities). The concept of a differentiated system, with relations obtaining among dissimilar members, is relatively undeveloped in the international science and development community.<sup>246</sup>

The trade in human organs also suggests difficulties with the idea that any equal distribution of tradeable property rights will automatically have egalitarian consequences. No one in the global organ market has ever been allocated any property rights over anyone else's organs. Everyone has an equal right to sell their own organs. Yet it is the poor who wind up selling their kidneys in today's organ-trading schemes, not the rich. 'Free choice' on paper is not the same as 'free choice' in the actually-existing market.

That's what we often hear from government officials and their economic advisers, and we'll continue to evaluate that claim as we go along. But in the meantime, it's important to note that most real-world trading advocates are willing to forget about 'maximising efficiency' if they think that'll help get big business's acquiescence in climate action.

*How so?*

Many economists who have looked into the matter agree that a pollution trading system will be more efficient – and less regressive – if the rights it creates are auctioned, not given away, and the revenue used to make necessary adjustments in the society.<sup>249</sup>

This is not what real-world trading schemes do. As noted above, US pollution trading programmes, the Kyoto Protocol and the EU Emissions Trading Scheme all give away pollution rights – and give them away to the worst polluters. So does the Regional Greenhouse Gas Initiative now emerging in the US,<sup>250</sup> which, like Kyoto, operates on the ‘polluter earns’ rather than the ‘polluter pays’ principle. This arrangement – known in technical jargon as ‘grandfathering’ – is welcomed by many of the same trading advocates who proclaim themselves to be primarily concerned with ‘efficiency’.

Such trading advocates go along with grandfathered trading schemes less because they are ‘efficient’ than because they imagine that buying off the rich with formal rights to the open-access good that they have been using is necessary to get them to agree to reductions.<sup>251</sup>

This, many trading advocates believe, will obviate the need to undertake the difficult job of supporting and building effective popular movements, public leadership and public education around climate change that business and government will then have to follow. Hence the often-heard slogan that emissions trading is more politically ‘realistic’ than other options: by appealing to the powerful, it will supposedly achieve the same goal as mobilising ordinary people, and more quickly and with a lot less effort.

Let us listen, for example, to economists Robert Hahn and Robert Stavins:

[C]ountries and special interest groups will not accept an agreement that substantially shifts the distribution of wealth or political power. This resistance means that market-based approaches... can facilitate the formation of coalitions of support through the grandfathering of rights.

‘Any market-based approach that is implemented to control greenhouse gases’, Hahn and Stavins go on,

will vary dramatically from the textbook applications of these concepts. There are many reasons why market-based approaches will deviate from their ideal; an important one is politics. However, departure of actual instruments from a theoretical ideal is not enough, on its own, for rejection of the approach.<sup>252</sup>



Or the World Resources Institute:

Politically, the issue is not necessarily economic efficiency but how any allocation mechanism will affect the specific interests of a particular participant or stakeholder. Auctions that make regulated sources pay for all allowances are presumably more difficult to implement, due to political resistance. Furthermore, potential new sources that would prefer an auction may not be sufficiently organised (or even exist) to lobby for it. Free historical allocations, or grandfathering, became the norm for the [US] Ozone Transport Commission NO<sub>x</sub> Budget presumably because of political resistance to auctioning.<sup>253</sup>

Social regressiveness and a form of bribery are commonly built into trading schemes, both within and across nations.

## A quick fix?

*But maybe regressiveness, inequality and bribery are necessary evils. After all, surely fighting global warming requires working with the economic system that we have, not solving all the world's problems. Our children can't afford for us to wait for a regime of global equality, the overthrow of global capitalism or even just a more cooperative economic system before we move to rein in greenhouse gas emissions. And if that means we have to accept both unfairness and relative inefficiency, then so be it. Surely to deny this is to play into the hands of US President George W. Bush and others who are trying to obstruct genuine climate action.*

There are several *non sequiturs* here that need a quick reply.

First, pointing out the obstacles to the economic novelty called emissions trading is not the same as calling for a global revolution against capitalism. Up to now, global capitalism – whatever is meant by the term – has got along quite well without emissions trading.

The fact that emissions trading is about ‘creating a new market’, while (say) commons, conventional regulation, and removal of subsidies are conventionally classified as ‘outside the market’ doesn’t necessarily make emissions trading any more ‘capitalism-friendly’ than, say, conventional regulation or the redirection of subsidies. Most observers would argue that the type of enterprise associated with ‘global capitalism’ since the 19th century has actually been dependent for its survival on such types of state action.<sup>254</sup> Some would go even further, urging that no firm boundaries can be drawn between ‘market’ and ‘non-market’, ‘inside the economy’ and ‘outside the economy’, and ‘capitalism’ and a whole raft of supposedly ‘noncapitalistic’ types of

social and environmental control with pedigrees far older than that of emissions trading.<sup>255</sup>

In short, tackling global warming ‘from within our current economic system’ – whatever meaning is attached to that phrase – does not entail emissions trading. Business itself often points out that climate change can’t be addressed without the sort of long-term targets and direction that can only be provided by forces commonly seen as ‘outside the market’. No self-respecting big capitalists are likely to imagine that their survival depends on emissions trading.

Second, emissions trading, as what Ruth Greenspan Bell calls the ‘most difficult of the economic instruments’, is hardly going to be a good choice for anyone who wants speedy and effective action across the globe. In the classroom, where all the stage-setting and messy political and technical work it requires can be sidelined or ignored, it appeared a neat theory.<sup>256</sup> But in the real world, it cannot eliminate the need for hard decisions and hard political organising. Indeed, it makes the decisions and the organising even harder. As trading expert David Driesen writes, ‘Emissions trading, rather than providing an antidote to the problems of complex decision-making that plague traditional regulation, provides a layer of additional complications and occasions for dispute.’<sup>257</sup> It is emissions trading itself that is turning out to require the impossible task of ‘solving the world’s problems.’

The evidence suggests, then, that it’s carbon trading advocates, not trading critics, who are allowing the tail of their political wishes to wag the dog of what is practically possible.



## The special problems of carbon projects

So far this chapter has explained why current large-scale attempts at setting up a market in allowances to emit greenhouse gases don't constitute an effective approach to climate change.

But – as explained in the last chapter – trading in allowances to emit isn't the only kind of carbon trading. Commerce in credits generated by special pollution-saving projects is also growing fast.

*Remind me. What are these projects? How do they work?*

From the beginning, private firms, Northern governments and the United Nations have been fretting that big fossil fuel users in rich countries won't be able to afford even the small cuts in fossil fuel use required by emissions trading programmes such as that of the Kyoto Protocol. As a result, they've hunted around for ways of allowing industry to continue to burn fossil fuels while still keeping their emissions under mandated 'caps'.

The main solution private industry and governments have turned to consists of special carbon-saving or carbon-sequestering projects – schemes that capture greenhouse gases, put them out of harm's way, use fossil fuels more efficiently, and so on. Instead of cutting off flows of waste into the overflowing world carbon dump, they've proposed building 'extensions' of the dump to handle the overflow. Acquiring certificates of 'ownership' of such 'dump extensions' entitles big polluters to emit more greenhouse gases than they have emissions allowances for.

It's a classic 'end of pipe' solution to pollution. Instead of cutting flows of a raw material into an industrial process, you fix the problem after the resulting waste is already coming out of the pipe.

*How do these new projects fit into the world of trade?*

The allowances and the special credits created by carbon-saving projects are all thrown into a big pot and traded one for the other. Everybody is supposed to benefit. Polluters save money by not having to stop polluting, and builders of new carbon dump make money by selling the new dump space they create.

*What kind of carbon dump extensions are we talking about?*

Two types can be distinguished. The first kind is built on using land, forests, soils, water, even parts of the oceans.

Some of these new dumps are literally holes in the ground. Oil companies are eagerly championing schemes that would allow fossil fuel users to capture their carbon dioxide, liquefy it, and park it in leaky geological formations such as old oil wells (Figure 5).<sup>258</sup> Other, even leakier new carbon dumps have been proposed for ocean bottoms (Figure 6).<sup>259</sup>

Figure 5. Storing carbon dioxide in geological formations. (Source: IPCC)

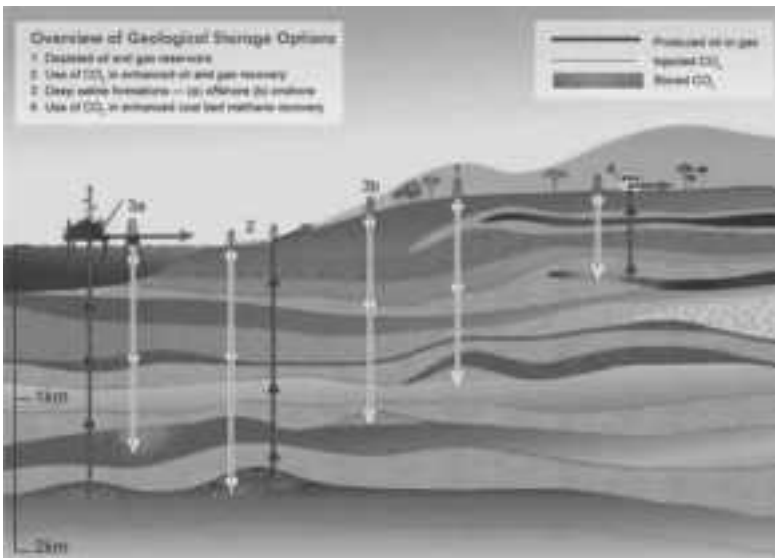
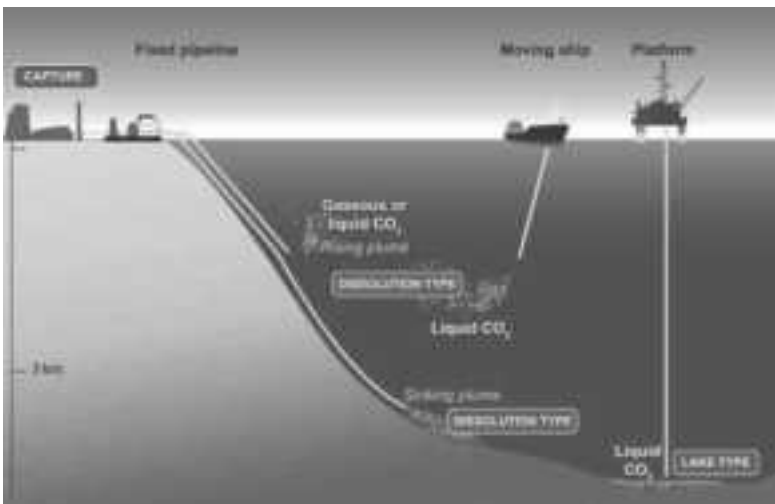


Figure 6. Storing carbon dioxide on ocean bottoms. (Source: IPCC)



Still other dump extensions consist of new trees planted to absorb carbon dioxide<sup>260</sup> or soils where tilling has been halted to allow carbon buildup, or stretches of ocean salted with iron to stimulate plant growth.

*And the second type of dump extension?*



Gas flaring. Companies may soon be able to get carbon credits for using the gas to generate electricity instead.

A second type involves various emissions-saving technologies. For example, companies wanting carbon credits can help retrofit factories in Korea or India to capture or destroy hydrofluorocarbons such as HFC-23 or other powerful greenhouse gases such as nitrous oxide. Or they can invest in hydroelectric dams in Guatemala or Brazil that ‘replace’ electricity generated by fossil fuels. Or they can set up wind farms to generate green electricity, or institute efficiency projects that distribute energy-frugal light bulbs or rearrange traffic signals. Or they can grow biofuel plantations, which are claimed to provide ‘substitutes’ for fossil fuels. Or they can start up a project to feed supplements to Ugandan cows to reduce their methane flatulence.<sup>261</sup> They might even try getting credits for cleaning up debris left by the Indian Ocean tsunami.<sup>262</sup>

Another target for carbon finance is projects that take methane from, say, waste dumps in South Africa, coal seams in China, pig farms in Chile,<sup>263</sup> or flaring towers in Nigerian oil fields, and use it as a fuel for generating electricity. Many such projects release carbon dioxide, but are said to be relatively ‘good’ for the climate, since releases of unburned methane are even worse for the climate than carbon dioxide.

*But wait a minute. Shouldn’t it just be things like energy efficiency measures or solar power – or not building a plant at all – that get carbon money? Aren’t those things all less carbon-intensive than methane combustion?*

It doesn’t matter. As long as a project emits less greenhouse gas than ‘business as usual’, it’s in the money.

*But who figures out what ‘business as usual’ is?*

The project proponent’s private consultants.

*Who gives them the power to decide what is business as usual?*

The UN does. Private businesses do. Government officials do. Individuals who buy carbon ‘offset’ credits do.

Some of these private consultants have also served on intergovernmental panels providing technical advice to the UN on what can be done about climate change and the carbon accounting methods that should be used for carbon projects.<sup>264</sup> That further increases their influence with governments, industry and the UN.

*Isn't that a conflict of interest?*

Yes. But no one's making a fuss. When challenged, UN officials say that the expert qualifications of these consultants, together with the process of peer review, exempt them from charges of conflict of interest.

*But what about the public? Why can't the public have a say over what business as usual should be considered to be?*

The public doesn't play much of a part in these discussions – if they are informed what's going on at all.

*How do these consultants go about their business?*

They identify the 'baseline', or business-as-usual scenario. Then they verify that the existence of the carbon projects is due to the finance generated by the carbon credits they sell. Then they subtract the greenhouse gas emitted under the project scenario from greenhouse gas emitted under the baseline scenario to come up with the emissions 'saved' by the project (see box, p. 61). In claiming that various non-carbon or low-carbon futures are not possible, they are, in a sense, appropriating these futures for their own use.

*Let me get this straight. Under this kind of trading, the carbon accounts of, say, Nigeria, show a debit for carbon dioxide released by the gas flaring that the Western oil industry conducts within its borders. At the same time, that same industry (or an industrialised country sponsoring the technology that captures the gas and puts it to good use), can get carbon credits for whatever the 'climatic' difference is between using that technology and releasing unburned methane.*

That's correct. Nigeria gets stuck with the responsibility for the emissions of a foreign oil company. Foreigners get the credits for some marginal, and probably profitable, efforts to clean up around the margins – efforts that are mandated by Nigerian law anyway.<sup>265</sup> It's a neat way for polluters to earn, while making poorer countries pay. It does no verifiable good for the climate, as we'll see in a moment. And it's all concealed under beautifully complicated accounting mathematics.

Today, dam companies, forestry firms, oil companies and the like are all seeking licenses to sell carbon dumping rights on the ground that their projects result in the emission of less carbon than business-as-usual 'alternatives' identified by experts.

*So in theory, these carbon-'saving' projects could license the removal and burning of all the remaining fossil fuel still underground.*

Yes.

*But doesn't that reduce the whole idea of trading in carbon credits to an absurdity? Because isn't it true that if all the world's remaining fossil fuels are exhausted and burned, the human race is probably finished?*

Yes. Carried to its logical extreme, trading in credits from 'offset' projects would result in a world in which all the coal, oil and gas had been burned up.

That calls up the image of a landscape full of wind farms, solar stations, and the carcasses of biofuel plantations and hydroelectric dams, all baking in an atmosphere hot enough to boil water.

*Not a very nice picture. But presumably trading in carbon credits would never be carried that far.*

No. But no one has ever suggested any ways of stopping it from doing so, either. Or any arguments why credit trading is not incoherent in just the way you've suggested.

*So why are the world's governments still pursuing this idea?*

No one is organised enough politically yet to call a halt to it. Meanwhile, the idea has great short-term appeal for business and governments.

Like 'pure' emissions trading (or cap and trade), trading that includes credits is supposed to save money by finding 'environmentally equivalent' actions that are in the short run cheaper to undertake. In fact, building or buying new carbon dump extensions is supposed to be even cheaper than buying some of other countries' share of the existing dump (assuming any is available).<sup>266</sup>



Centre for Science and Environment

In 1999, the World Bank was promising investors in its Prototype Carbon Fund credits at less than USD 5 a tonne – a bargain price that influenced all succeeding price-setting. In 2005, CDM carbon credits were trading at an average of around €6.7 per tonne of carbon dioxide, JI credits at around €5.1,<sup>267</sup> two to four times less than EU ETS allowances. Some planners had originally hoped that absorbing carbon dioxide by planting trees in poorer countries could be 'between 50 and 200 times cheaper' than reducing it at source.<sup>268</sup> As IPA Energy consultants have recently noted, permitting Northern installations to use Certified Emissions Reductions or CERs (as CDM credits are called) 'effectively constitutes a *second allocation*, at the CER price rather than zero cost'.<sup>269</sup>

*But still, offsets encourage creativity in finding different ways to deal with climate change, don't they? For example, suppose you try to reduce emissions from jet aircraft by taxing short-haul air tickets so that they're USD 25 more expensive.*

*That might have some impact, but it's unlikely to deter most well-off people from flying. But if you encourage the same airline passengers to 'offset' their flights using that same USD 25, they can invest in all sorts of different climate actions on the ground. For example, a British Airways scheme offers schemes to plant trees or subsidise an energy-efficiency programme in rural India.*

The problem is that for such offsets to work, carbon credits have to be climatically equivalent to carbon allowances. In other words, a carbon market that includes credits, like a market that includes only allowances, needs to ensure that the apples and oranges it is trading are climatically equivalent to each other.

## Apples and oranges

*Except that in the case of offsets, the apples and oranges are even more different from each other than they were with emissions trading.*

Exactly. With emissions trading proper, the apples and oranges are, crudely speaking, emissions that come out of pipes in different locations through different processes and contexts. With a market that also involves project credits, the apples and oranges are far more diverse. The credits derived from various 'baseline-and-credit' schemes are different both from each other and from the emissions allowances associated with 'cap and trade' schemes. Destroying the industrial greenhouse gas HFC-23 is not the same as investing in windmills. Making your chemical plant more efficient is not the same as supplying efficient light bulbs to Jamaica. Planting trees is not the same as refraining from flying to the Maldives for a holiday. Yet all of these things need to be verified to be 'climatically equivalent' for credit trading to work.

In fact, the United Nations and other carbon trading advocates go so far as to claim that the carbon projects they are promoting are not only 'equivalent to', or 'compensate for', emissions reductions, but actually *are* emissions reductions. They assert that planting eucalyptus trees, building hydroelectric dams, burning methane or instituting efficiency programmes are 'reducing emissions' just as much as halting the flow of coal into a boiler, even if no emissions are being reduced.

*So is there a problem? All these things are in fact climatically equivalent, aren't they?*

No. That can't be verified.



*So CDM schemes and other carbon projects don't, in fact, 'offset' or 'neutralise' industrial emissions?*

No.

*So they're not emissions reductions after all?*

No. The putative commodity produced by CDM and similar 'carbon-saving' programmes can't be correctly referred to as 'emission reductions', 'carbon' or 'carbon dioxide equivalent', or any similar term. Unlike conventional dumps receiving industrial waste, mine tailings, or nuclear materials, the purported new carbon dumps carved out of the biosphere or the future can't even be verified to be dumps at all.

*So in fact no one should be allowed to trade CDM or JI credits for allowances. And British Airways should not be claiming that its passengers can 'neutralise' their flights by giving money to tree-planters or efficiency programmes in India or South Africa.*

That's right.

*Well, I'm looking forward to hearing how you justify that claim. Because the UN and the IPCC, together with thousands of experts, claim that there are no scientific obstacles to trading credits for allowances.*

The claim, unfortunately, is based more on free-market ideology and wishful thinking than scientific reflection. Just as in emissions trading, the 'baseline and credit' market's requirement that so many diverse things be made numerically equivalent has turned out to be its undoing. The difference is that the problems of trading systems that include project-based credits are even more intractable even than the problems of allowance trading alone.

*OK, give me the bad news.*

## Accountants as storytellers

Let's begin with an insoluble quantification problem that's common to all carbon-'saving' projects.

As noted above, all such projects calculate carbon 'saved' by relying on experts' assessments of 'what would have been the case without the project'. The difficulty is that no expert has either the ability or the right to determine a single scenario describing 'what would have happened without the project'.

For instance, no expert can calculate what role CDM projects have in foreclosing or promoting structurally different long-term low-carbon futures. All they can do is calculate the role they might have in making certain more or less arbitrarily chosen ‘business-as-usual’ pathways marginally more carbon-efficient.

*You’d better explain that in words of one syllable.*

The credits that a carbon project generates are calculated by subtracting the emissions of the world that has the project in it from the emissions of an otherwise-identical possible world that doesn’t. This last world is called the ‘baseline’. Industrialised countries or corporations can then buy credits representing the emissions that are claimed to have been saved over the ‘baseline’ in lieu of reducing their own fossil fuel use.

*Right...*

To make this work, however, the market needs a single number. You can’t very well say that your wind farm or HFC-23 project generates ‘either 10 tonnes in carbon dioxide equivalent credit or 100,000 tonnes, depending on which baseline you choose.’ That would mean chaos. Sellers wouldn’t know how much of their commodity they were selling. Buyers wouldn’t know how much they were buying. So you can choose only one baseline.

*OK, I’m with you so far.*

The problem is that it’s impossible to isolate this single baseline and thus fulfil the requirement of a market for a single number. Even many trading proponents acknowledge the ‘impossibility of measuring or even defining savings that are additional to those that would have occurred in the absence of emissions credits.’<sup>270</sup>

*What’s the difficulty?*

Many without-project scenarios are always possible. The choice of which one is to be used in calculating carbon credits is a matter of political decision rather than economic or technical prediction.<sup>271</sup>

The evidence usually cited to support claims that various schemes would not have been undertaken without carbon investment, moreover, is riddled with irresolvable uncertainties. One study of six proposed carbon plantation projects in Brazil couldn’t come to any more definite conclusions than that ‘at least one and possibly five’ of the six were ‘non-additional.’ The evidence was ‘completely unreliable’ about which project would be profitable or go forward without

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*‘Free-rider credits from non-additional CDM projects threaten to undermine the environmental integrity of the Kyoto Protocol. Some CDM regimes could lead global emissions to increase by as much as 600 million tonnes of carbon relative to the Kyoto Protocol target, if credits awarded spuriously to projects that would have happened anyway are used in place of real carbon reductions ... These free riders would amount to a multi-billion dollar cross-subsidy to CDM project participants at the expense of the global environment.’<sup>284</sup>*

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*Steve Bernow et al., 2000*

carbon money. Depending on discount rates, baseline vegetation estimates, carbon accounting systems and expected price variations, calculations of the value of the carbon credits to be generated differed by as much as an order of magnitude.<sup>272</sup>

*So measuring carbon credits is completely different from measuring emissions.*

Yes. While scientists can usually agree about how to read dials, calibrate gas detectors, and perform the other tasks necessary for directly measuring real emissions (assuming the necessary instrumentation is present), no consensus is attainable anywhere about how to isolate one single hypothetical storyline from among many possible storylines and measure the hypothetical emissions associated with it.

So while some scientific basis exists for markets in emissions, none exists for markets in project-based ‘offset’ credits, or markets in which emissions allowances and project-based credits are interchangeable.

*So there are likely to be differences of opinion about how many credits any particular project generates, or whether it generates any at all.*

That’s putting it mildly. Try to imagine, for example, what would have happened without a given tree plantation project in Brazil. Suppose you hire an expert to extrapolate what kind of vegetation would grow on the site without the project over the next 100 years. People are going to disagree with your findings. Suppose you hire someone to find out how the project will affect future investment at the company receiving the carbon credits. People are going to disagree with what you conclude. Suppose you hire someone to find out how the absence of the project would change local carbon use over the next century, looking into things like land speculation and land prices, land reform, road building, logging, soybean production, oil palm markets, changes in inflation rates, the profitability of beef production, alternative investments, prices and times for transport, and so on.<sup>273</sup> People are going to disagree with those findings, too.

Experts who back this market have themselves long admitted that estimates of hypothetical ‘emissions reductions’ for many projects can be expected to differ by hundreds of percent given only small changes in initial assumptions.<sup>274</sup> Michael Schlup of the Gold Standard, an organisation that hands out a special certificate to CDM projects it considers of high quality, has claimed that up to 50 per cent of projects are not really ‘additional’ but merely relabelled business as usual. CEE Bankwatch, in a study of a World Bank Prototype Carbon Fund’s JI project supporting small hydropower plants in the Czech Republic, recently argued that only six of the 16 installations involved repre-

sented anything other than business as usual.<sup>275</sup> Strife has also broken out in the UN and in the corporate world. Most CDM carbon accounting methodologies proposed to date have been rejected by the CDM methodological panel for having implausible baselines.<sup>276</sup> DuPont has accused its rival Ineos Fluor of overstating emissions ‘reductions’ from abatement projects (using a methodology that was approved by the CDM Executive Board) by a factor of three due to inflation of baselines.<sup>277</sup> Germany’s Steinbeis Foundation has started a public campaign protesting CDM Executive Board decisions on permissible baselines for municipal waste projects.<sup>278</sup> Project certifiers have expressed concern that UN rulebook’s inability to screen out ‘business as usual’ CDM projects makes it hard to calculate carbon credits.

According to Mark Trexler, a carbon businessman with 15 years’ experience, the resolution of the debate about how to decide whether a project would have happened anyway ‘seems as elusive as ever’. ‘There is no technically “correct” answer’, Trexler concedes. ‘Never has so much been said about a topic by so many, without ever agreeing on a common vocabulary, and the goals of the conversation.’<sup>279</sup>

*This lack of verifiability would seem to open up a lot of possibilities for corporations or governments to employ creative accounting in order to claim the maximum number of carbon credits.*

You can come up with almost any number you want. Both the incentives and the opportunities are huge.

As trading expert Michael Grubb and colleagues observed years ago, ‘every government and every company<sup>280</sup> wanting carbon credits has an incentive to try to get them for projects that it is already implementing or had planned even before carbon markets came along. All you have to do is hire an expert who is willing to make ‘business as usual’ appear as bad as possible. ‘The more conventional the baseline, the more additional funds or credits... can be recovered’ from your carbon project, note Hermann Ott and Wolfgang Sachs.<sup>281</sup>

The result, as one barrister and banker, James Cameron of Climate Change Capital, notes bluntly, is that many carbon project proponents ‘tell their financial backers that the projects are going to make lots of money’ at the same time they claim to CDM officials ‘that they wouldn’t be financially viable’ without carbon funds.<sup>282</sup>

In 2003, for example, the Asian Development Bank funded the proposed Xiaogushan dam in China, portraying it as the cheapest and most economically robust alternative for expanding electricity generation in Gansu province. Construction went ahead without any



Speakers at an event arranged by the International Emissions Trading Association (IETA) during international climate negotiations. IETA is a coalition of private companies including AES, Barclays Capital, ChevronTexaco, ConocoPhillips, DuPont, EcoSecurities, Gaz de France, Goldman Sachs, Gujarat Fluorochemicals, J-Power, KPMG, Lafarge, Lahmayer, RWE, Shell, Total, Toyota, TransAlta and Vattenfall.

mention being made of the need to secure CDM funding beforehand, and was scheduled to be completed in 2006. Yet in a June 2005 application for Xiaogushan to be considered as a CDM project, the World Bank claims that without CDM support, the dam ‘would not have been able to reach financial closure, mitigate the high project risk, and commence the project constructions’.<sup>283</sup>

Similarly, CDM credits are being sought for the Bumbuna hydroelectric project in Sierra Leone on the grounds that the project is unviable without them, although the project was approved for financing by the World Bank in 2005 as the least-cost project for the country’s power sector.<sup>285</sup> In one Latin American country, consultants tippexed out the name of a hydroelectric dam from a copy of a national development plan in an attempt to show that the dam was not already planned or ‘business as usual’ and therefore was deserving of carbon finance.<sup>286</sup>

At an event arranged by the International Emissions Trading Association in Milan in 2003, a representative of the Asian Development Bank confided that his institution’s first reaction to the CDM was to go through its existing portfolio to see which projects’ funding might be topped up with carbon finance. No one was under any illusion that carbon money would be used for anything other than what the bank itself acknowledged to be business as usual. (For more examples, see Chapter 4.)

In announcing its withdrawal from CDM projects in 2004, Holcim Cement went as far as to warn that CDM carbon-accounting methodology ‘will create other Enrons and Arthur Andersens’,<sup>287</sup> referring to recent accounting scandals at the two firms. A year and a half later, even Einar Telnes, a Det Norske Veritas executive representing the forum of private firms that profit from validating and verifying carbon projects, was publicly fretting that the big differences between how different carbon accountants tallied up credits ‘could lead to a lack of confidence in the market as such... . We don’t want an Enron scandal where excess CERs [CDM carbon credits] are issued without the actual reductions taking place... . It is crucial that those verifying have the necessary knowledge. Many of them don’t’.<sup>288</sup>

A UK Parliamentary Committee was less guarded, lambasting the experimental UK Emissions Trading Scheme, which had paid more than GBP 100 million to four companies ‘for keeping emissions down to levels they had already achieved’, as ‘bullshit’, ‘stupid’, a ‘mockery’, and an ‘outrageous waste of public money’ that undermined government emissions reduction policies.<sup>290</sup>

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*‘The CDM will be prone to fraud and fluctuations beyond control of the developer or the CDM board.’<sup>293</sup>*

*O.P.R. Van Vliet et al.,  
2003*

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Baseline accounting procedures also set up perverse incentives for carbon project proponents to emit as much greenhouse gas as possible today in order to make projects appear to be saving as much carbon as possible tomorrow. Why not step up pollution or degrade more forests today in order to make more carbon money later? Throughout the South, the CDM is creating incentives for emissions-related environmental laws not to be enforced, since the greater the ‘baseline’ emissions, the greater the payoffs that can be derived from CDM projects. Even sincere unfavourable predictions about ‘what would happen’ without a CDM project may function as self-fulfilling prophecies.<sup>291</sup> With a bit of judicious accounting, a company investing in foreign ‘carbon-saving’ projects can increase fossil emissions both at home and abroad while claiming to make reductions in both locations.<sup>292</sup> The calculational machinery that would be necessary for a market in CDM credits, in other words, is itself undermining predictability and the possibility of market calculation.

Perhaps understandably, a few years ago, developers, brokers, Northern government ministers, the World Bank and others frustrated by the sluggish pace of carbon project development tried to float the idea that CDM schemes should not even need to show that they would not have happened without carbon investment.<sup>294</sup> Other experts suggested that the question of ‘what would have happened without a project’ should simply be decided arbitrarily, to save trouble.<sup>295</sup> That was as much as to admit that the carbon credits your project is going to sell can’t be proved to have anything to do with climate. You might as well call them ‘schmarbon credits.’

*Do carbon market advocates think that people are really going to pay money for these ‘schmarbon credits’ if they can’t be verified not to be a sham?*

You have to remember that in this market it’s in the interests of both buyers and sellers to inflate the number of carbon credits a project generates. So there are a lot of incentives on all sides to keep quiet about what’s going on.

As yet, Northern businesses and ministries don’t need to worry whether the market has anything to do with climate or not. Their job is only to get hold of cheap credits. And many individual consumers buying ‘offset’ credits on the voluntary market tend to rely on carbon traders’ glossy brochures, which are better at salving consciences than providing balanced analysis. There aren’t many checks and balances built into the system.<sup>296</sup>

In a sense, today’s carbon credit market is about appearances and public relations. At present, it doesn’t matter whether what the project-



CDM carbon-credit accounting ‘will create other ENRONS’, according to one carbon-credit buyer, referring to the accounting fraud that devastated the energy-trading firm. Not surprisingly, perhaps, the disgraced firm was a staunch backer of the Kyoto Protocol’s carbon trading systems.<sup>289</sup>

based credit market sells is ‘carbon’ or ‘schmarbon.’ Nor does it matter that no one knows what schmarbon is. In this market, image is as saleable as reality.

*But if this ‘schmarbon market’ isn’t about climate, then what is it about? Aren’t people eventually going to want to know what is being bought and sold?*

Very likely. To survive for very long, the market will ultimately have to deal in something more concrete whose quality can be verified. It won’t be enough of a guarantee of product quality that buyers and sellers agree to label their commodity ‘carbon’ or ‘emissions reductions’, if in fact it’s only schmarbon. To put it another way, sooner or later the quality of the image will have to be measured by the reality.



George Akerlof

At that point, the project-based credit market begins to run the risk of becoming what economist George Akerlof calls a self-destructing ‘lemons market’.<sup>298</sup> In such a market, because the quality of goods can’t be proved, buyers can neither locate, nor create demand for, quality products, if any exist at all. ‘Lemons’ are loaded onto the market, and buyers won’t pay the prices demanded by any sellers of higher-quality products. Better projects are penalised and bad ‘free-riders’ subsidised. Transaction volume and quality both decline, further lowering prices and quality in a cumulative process which ultimately destroys the market.

Notes Francis Sullivan of HSBC, the Hong Kong and Shanghai Banking Corporation, ‘there is little incentive for a small company, or even a big business’ to spend a lot of time looking for high-quality carbon credits ‘when there is a risk of losing credibility and wasting money’ due to lack of a credible standard. Sullivan relates that when HSBC put out a tender for carbon credits in the voluntary market, suppliers came forward with credits with a huge price range between USD 3–25 per tonne. ‘If there’s an eight-fold difference in price, you can’t be talking about the same product,’ Sullivan points out.<sup>299</sup>

Of course, when sellers can’t verify commodity quality any better than buyers, and know it, the situation is even worse. And it’s worse still when not even buyers are concerned about verifiable quality, but only about fulfilling legal commitments at the cheapest possible price.

Yet such are the demands of the market – and the self-defeating determination to ignore logic in order to ‘keep Kyoto going’ – that consultancies, UN bodies and technocratic NGOs such as the World Resources Institute continue relentlessly to try to develop techniques for isolating unique, quantifiable counterfactual baselines.<sup>301</sup>

*‘Better than the Alternative’*

Development professionals have often tried to justify failed projects and policies by claiming that at least they were better than ‘what would have happened otherwise’.

World Bank officials consistently used this reasoning to justify their agency’s decades-long political intervention in Zaire in sup-

port of the dictator Mobutu Sese Seko, who openly stole hundreds of millions of dollars from his country.<sup>300</sup>

Justifying climatically-damaging carbon ‘offset’ projects using the same reasoning is child’s play by comparison.

*Why didn’t the marketeers see this coming? Were the signatories of the Kyoto Protocol asleep? And what’s the excuse of the European governments who decided to accept project-based carbon credits in the EU ETS?*

Those are all good questions. The impossibility of measuring pollution ‘offset’ credits was already plain to see in the US’s earlier pollution trading programmes.

*Oh, no. You mean this is another case of ‘lessons unlearned’?*

I’m afraid so. In the US, they even had a term for meaningless pollution credits handed out to industry for actions that would have happened anyway. They called them ‘anyway tonnes’.

*Could you give some examples?*

One instance was the Los Angeles Regional Clean Air Incentives Market (RECLAIM) described above. The South Coast Air Quality Management District (SCAQMD) allowed factories and refineries to avoid installing pollution control equipment if they purchased credits generated by licensed car scrappers who destroyed old, high-polluting cars. The idea was that it would be cheaper to reduce overall pollution by buying up and destroying old cars than by forcing stationary sources to make technological changes in their plants. It was an early example of the ‘offset’ reasoning that’s now so prominent in the Kyoto Protocol’s carbon market.

*In other words, they were claiming that getting rid of cars was just as good for the air as making factories cut down their pollution?*

Exactly – and that the two could be traded for each other. Unfortunately, car scrappers often generated fraudulent pollution credits by crushing car bodies without destroying the engines, which they then sold for re-use. More to the point, the pollution credits generated by scrapping cars were based on the assumption that if they were not

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*‘In all the excitement over the imminent arrival of a fully-fledged carbon market, we may be losing sight of one fundamental question – what, exactly, are we trading in?’<sup>297</sup>*

Environmental Data  
Services Report

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scrapped, the cars would be driven 4,000–5,000 miles annually for an additional three years and that their owners would then replace them with automobiles with ‘average’ emissions.

Yet a SCAQMD audit found that many of the cars were at the end of their useful lives, and would have been destroyed through natural attrition. Some 100,000–200,000 old vehicles are scrapped or abandoned in the Los Angeles area annually in this way without the intervention of pollution trading programmes. Most of the 23,000 cars that were destroyed under the pollution trading scheme during its first five years were arguably among those that would have been destroyed even without the programme. After all, why sell your old car for its USD 50 value as scrap metal when you can obtain USD 600 for it through a pollution trading scheme?<sup>302</sup>

Moreover, of the cars that were not at the end of their lives, in addition, many were not regularly driven and would not have been driven for another three years. Inoperable cars were often brought to car scrapping facilities and minor repairs made solely for the purpose of obtaining the USD 600 payment from the scrapping program. Such cars were not generating any pollution, but merely collecting dust. Non-existent automobile pollution was transformed, through the market, into real pollution released from oil tankers or other sources. The end result was to increase aggregate emissions across the region.<sup>303</sup>

In the ‘bubble’ trading system instituted by the US Environmental Protection Agency, similarly, polluters almost never undertook fresh pollution control projects to satisfy regulations. Instead, they claimed credits for reductions that presumably would have occurred without the regulation. For example, polluters often claimed credits for routine business decisions to slow down production or shut down facilities.<sup>305</sup>

In the 1970s, states lured new industry by providing firms with ‘offsets’ that the states themselves created – in one case credits for ‘an asphalt substitution process that already was occurring for non-environmental reasons’.<sup>306</sup> In the 1980s, similarly, Ashland Oil didn’t want to comply with a requirement that it lower emissions from certain storage tanks. Instead, it petitioned to be allowed to reduce the allowable emission rate from a gasoline truck loading facility from 50.7 to 19.0 tonnes per year – even though the facility was already emitting only 4.4 tonnes per year.<sup>307</sup> Not surprisingly, such gambits were heavily criticised by environmentalists.

Nor were such absurdities confined to the US. The Global Environmental Facility, which serves as a financial mechanism for both the UNFCCC and the 1992 UN Convention on Biological Diversity, early on ran into similar accounting problems. The GEF was supposed to fund only that element of a project that resulted directly in the reduction

### *Communities Fight Back in the Courts*

In 2002, two environmental groups, Our Children's Earth and Communities for a Better Environment, sued nine Los Angeles organisations for purchasing pollution 'offset' credits, including the city of Burbank, Southern California Gas and United Airlines. The groups pointed out that the credits had not been approved by the Environmental Protection Agency.

The offset credits – awarded for activities such as replacing standard buses with vehicles fuelled by natural gas – had be-

come particularly attractive when prices for credits from stationary sources climbed as high as USD 62 per pound during the California energy crisis of 2000–01. Prior to the crisis, stationary source credits had cost around USD 1 per pound.

The NGO plaintiffs argued that allowing such credits into the market defeats its fundamental purpose. 'Credits are supposed to become so expensive that it forces some companies to put on controls,' they said. 'We're just enforcing the programme.'<sup>304</sup>

of greenhouse gas emission and so would yield a 'global environmental benefit'. Under this methodology, a project proponent had to describe what would have happened in the Southern host country 'but for' the GEF investment. Only then could the GEF provide the funding that made the alternative or additional climate-friendly activity possible.

But this approach turned out to be 'fraught with political and methodological difficulties'. For one thing, it 'excluded the participation of recipient country officials in most cases, because of the lack of understanding of the concept and methodologies'.<sup>308</sup> For another, it 'tempted governments to lower a domestic environmental baseline to become eligible for a larger GEF grant'. The result was that Northern governments decided that no one could receive GEF funding just by claiming their project was better than 'what would have happened otherwise'. They had to try to show that it was better than what *should* have happened in the project's absence.<sup>309</sup>

*But haven't there been any 'offset' success stories?*

The one pollution trading scheme generally cited by carbon trading advocates as a success story – the US's sulphur dioxide trading programme – had the advantage that it *excluded* project-based 'offset' credits.<sup>310</sup> What were measured and traded were emissions, not purported 'emissions reductions' derived from projects claimed to be improvements on 'business as usual'.

This is in sharp contrast to the Kyoto Protocol (a programme that is supposed to have been inspired by the sulphur dioxide scheme), which has fully embraced 'offset' projects in its trading programme.

## Sinks, biophysics and the unknown

Some of the worst trouble that carbon market planners have landed themselves in has come about as a result of credit-generating schemes that purportedly soak up carbon dioxide through tree-planting or other biotic means. There are even more verification problems with these ‘carbon sink’ projects than with other ‘offsets.’

*Don't tell me. How could things be any worse?*

From the beginning, climate technocrats have been under heavy pressure to try to operate a ‘system of credits and debits wherein emission or sequestration of carbon in the biosphere is equated with emission of carbon from fossil fuels’.<sup>311</sup> They’ve been pushed into trying to prove that a world which closes a certain number of coal mines or oil wells will be climatically equivalent to one which keeps them open but plants more trees, ploughs less soil, fertilises oceans with iron, and so forth.

*So the idea is that if you plant enough trees, you can go on mining and burning fossil fuels forever.*

Well, not exactly. Even the biggest fans of tree ‘offset’ projects admit that there’s not actually much scope for using tree-planting to deal with the climate crisis.

As Chapter 1 noted, the pool of carbon stored in living biomass is dwarfed by the pool of remaining fossil carbon awaiting exploitation. Under the most favourable assumptions, using trees even to try to ‘compensate’ for current emissions would require protecting impossible continent-sized plantations rigorously for decades.<sup>312</sup> Trying to counteract a single year’s emissions in the UK would necessitate covering Devon and Cornwall with trees.<sup>313</sup> Doing the same for a single year’s global emissions would mean, at a minimum, setting up and protecting industrial plantations on all ‘available’ land in Brazil for the next 40 to 50 years.<sup>314</sup> Attempting to absorb the carbon dioxide released by the burning of the fossil fuels still in the ground would require additional planets full of trees. As a distinguished group of scientists writing in *Science* concluded:

Prospects of retrieving anthropogenic CO<sub>2</sub> from the atmosphere by enhancing natural sinks are small... There is no natural ‘saviour’ waiting to assimilate all the anthropogenically-produced CO<sub>2</sub> in the coming century.<sup>315</sup>

A similar point applies to projects producing biofuels to replace petroleum. Gigantic plantations would be required just to replace a tiny

fraction of the fossil fuels used for transport. It is estimated, for instance, that even if the entire US maize crop were used for ethanol, it would replace only about 20 per cent of domestic petrol consumption.<sup>316</sup> To power 10 per cent of the US's cars with home-grown maize-based ethanol, according to the Organisation for Economic Co-operation and Development, would require almost one-third of US farmland.<sup>317</sup> A study sponsored by the European Environment Agency and the German Environment Ministry doesn't see it as desirable to plan for more than 10 per cent of the EU's transport fuel demand to be met by biofuels.<sup>318</sup> Biofuels can make up no more than 5 per cent of petrol or diesel consumption in the US and the European Union without causing environmental damage, according to a report from Bank Sarasin.<sup>319</sup>

What's more, there is no guarantee that the huge takeover of land would slow in any way the exploitation of the fossil fuels still remaining underground. Such so-called 'renewable' fuels are not, in fact, going to be renewable if today's industrial, transport and military structures remain locked in place. As columnist George Monbiot explains, 'every year we use four centuries' worth of plants and animals' in the form of coal, oil and gas. 'The idea that we can simply replace this fossil legacy – and the extraordinary power densities it gives us – with ambient energy is the stuff of science fiction. There is simply no substitute for cutting back.'<sup>320</sup> Julia Olmsted of the Land Institute in the US concurs: 'Pushing biofuels at the expense of energy conservation today will only make our problems more severe, and their solutions more painful, tomorrow.'<sup>321</sup>

But it can't be verified anyway to what extent a tree plantation or other biotic project 'compensates' for fossil fuel use.

### *Why can't it?*

The problem – as described in Chapter 1 – is that above-ground biotic carbon and below-ground fossil carbon are connected to the atmosphere in different ways. Geologically, socially, politically, biologically and climatically, fossil carbon can't be equated with biotic carbon.

These differences are so great that they make nonsense out of the carbon market's claim that tree plantations or similar schemes 'sequester' carbon on the earth's surface in a way that is quantifiably comparable to the way coal and oil 'sequester' carbon underground. 'Sequestering', after all, means separating, and there are many degrees of separation. The carbon in a cigarette, in the fluid in a lighter, in grass or a tree trunk, in furniture or paper, in the top seven inches of soil, in coal deposits a kilometre underground, in carbonate rock dozens of

kilometres beneath the surface – all are separated from the atmosphere, but in different ways, for different average time periods, and with different risks of the carbon being released unexpectedly into the atmosphere. While fossil carbon flows into the biosphere/atmosphere system are pretty much irreversible over non-geological time periods, those from the atmosphere into the biosphere are easily reversible and not so easily controlled. A tonne of carbon in wood is not going to be ‘sequestered’ from the atmosphere as safely, or as long, as a tonne of carbon in an unmined underground coal deposit.

*You mean that a tree plantation might burn.*

Or it might be made into paper that will wind up in landfill and degenerate into greenhouse gas, or be made into furniture with a lifespan of only 50 years. Or it might be cut and left on the ground to rot by angry local villagers.

*But surely carbon traders know this.*

Of course. They acknowledge that one tonne of carbon in a tree is climatically not the same as one tonne of carbon in a deep coal deposit. But they hope that fossil carbon and biotic carbon can be made comparable by taking the amount of carbon in wood or soil and multiplying it by some fudge factor that takes into account its impermanence and the complexities of carbon circulation in the above-ground carbon pool.

*So, say, five tonnes of carbon to be sequestered in trees by a carbon project established today would be assumed to be ‘climatically equivalent’ to one tonne of carbon left in coal deep underground.*

Something like that. There are all sorts of schemes for applying discounting formulas or ‘risk-spreading’ factors to sequestration credits based on how long trees survive. There are all sorts of proposals for making sequestration credits temporary or available only for rental, insuring trees against fire, and so forth. Means have also been suggested for identifying and quantifying precisely how much carbon ‘leaks’ from various kinds of biotic projects (through fires, soil erosion, fossil emissions from transport required for the project, evictions leading to forest encroachment elsewhere, etc.).<sup>322</sup>

None of these methods work, however.

*Why not? What’s the problem?*

You might remember that Chapter 1 introduced Frank Knight’s distinction between risk – a situation in which the probabilities of

everything that can go wrong actually going wrong are well-known – and uncertainty – in which they aren't.

The trouble with 'carbon sink' projects that attempt to commensurate biotic with fossil carbon is that, to do so, they have to confuse uncertainty with risk – and try to convert the one into the other.

But that's not all. These projects also confuse risk with ignorance – a situation in which not even all the things that can go wrong are known. And, like other carbon-saving projects, they confuse risk with indeterminacy, which applies in situations in which comparison with counterfactual scenarios makes the calculation of probabilities inappropriate.

*Hang on a minute. Let's start at the beginning. What do you mean when you say carbon sink projects confuse risk and uncertainty?*

In order to derive the single number the market requires, carbon sink accountants have to look at all the things that might result in carbon being released from trees into the atmosphere and calculate their probability. But they can't do this.

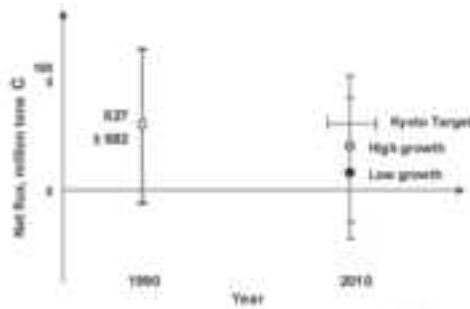
*Why not?*

Straightforward inadequacy of data is one obstacle. To get an idea of the size of the problem, consider one detailed study done by the respected International Institute for Applied Systems Analysis (IIASA). According to the study, mean net Russian carbon balance in 1990 (including flows into and out of the biosphere) can be pinned down only to the range of minus 155 to plus 1209 million tonnes per year. That swamps probable changes in total Russian carbon flux balance between 1990 and 2010, which are expected to be only 142 to 371 million tonnes (Figure 7).<sup>323</sup>

The IIASA concludes that knowledge of carbon flows among the atmosphere, biosphere and lithosphere is inadequate 'to form the basis for...any viable trading scheme.' That makes the Kyoto Protocol 'completely unverifiable' and a 'cheat's charter'.<sup>324</sup> Climatologist R. A. Houghton, similarly, has suggested carbon errors 'as large as 500 per cent in the forest inventories of northern mid-latitudes'.<sup>325</sup>

Figure 7. Possible Range of Carbon Fluxes in Russia

Source: IIASA



By the same token, estimates of carbon sequestration rates in China's forests have recently been found to differ by up to 89 per cent<sup>326</sup> and in a pine forest in The Netherlands by 46 per cent,<sup>327</sup> depending on the method used. In 2006, in addition, it was revealed that pine plantations in the southern US were responsible for large increases in carbon dioxide emissions, since they were replacing hardwood or indigenous pine forests.<sup>328</sup> World methane sources have meanwhile been found to be uncertain by '20 to 150 per cent.'<sup>329</sup> In 2001, the UK's Royal Society cited an 'urgent need' to reduce uncertainties before land carbon sinks are used.<sup>330</sup>

Similarly, although some of the mechanisms that will affect the ability of trees to sequester and store carbon as the world warms up are known, the probability that any particular wooded region will maintain any given carbon balance over the next 50 or even 10 years can't be calculated.<sup>331</sup>

With regard to many such uncertainties, it's possible, to borrow the words of economist Douglass North, to 'acquire more knowledge and therefore convert uncertainty into risk'. When it comes to ignorance, however, 'one not only does not have a probability distribution of outcomes, but (using a Keynesian definition) one may not even know what the possible outcomes are, much less have a probability distribution of them'.<sup>332</sup>

*For example?*

For example, the past decade of research has provided continual surprises about how carbon in the biosphere affects climate, and vice versa, and how nonlinear and unpredictable relations can be between the two:

- Since the turn of the century, evidence has been emerging that possible climatic ‘tipping events’ such as the rapid release of greenhouse gases from permafrost, peat, ocean floors or dried-out tropical or boreal forests could be as unpredictable in their timing as in their impacts.<sup>333</sup> Meanwhile an enormous ‘missing sink’ in the biosphere has yet to be definitively located.<sup>334</sup>
- In 2000 scientists were startled to learn that the heat absorbed by dark-coloured tree plantations in Northern regions might cancel out their ability to absorb carbon dioxide.<sup>335</sup> A review article in *Science* warned that unanticipated ‘feedback effects between carbon and other biogeochemical and climatological processes will lead to weakened sink strength in the foreseeable future.’<sup>336</sup> The possibility was mooted that that lengthening of dry seasons could abruptly result in catastrophic releases of carbon through fires in Amazon, pushing temperatures up 6–8 °C in 100 years.<sup>337</sup>
- In 2002, scientists warned that soils’ or forests’ ability to function as sinks under different conditions is nonlinear and ‘limited.’<sup>338</sup>
- In 2004, experiments called into question the effectiveness of increasing the oceans’ uptake of carbon by seeding them with iron, demonstrating that the organic carbon increased by the technique is not transferred efficiently below the permanent thermocline.<sup>339</sup> Global warming was shown to intensify insect infestations that can damage the carbon-storing ability of forests.<sup>340</sup>
- In 2005, new research suggested that carbon releases from soils in a warming world may ‘be even stronger than predicted by global models.’<sup>341</sup> It was then revealed that since 1978 there had been huge surprise carbon releases from warmed soils in the UK.<sup>342</sup> New research showed that in many circumstances ‘creating carbon offset credits in agricultural soils is not cost effective because reduced tillage practices store little or no carbon.’<sup>343</sup> Reduced-tillage soil carbon sequestration was found to result in unexpected releases of nitrous oxide, a powerful greenhouse gas.<sup>344</sup>
- Also in 2005, an ensemble of general circulation models assuming a doubling of levels of atmospheric CO<sub>2</sub> and a selection of conditions considered plausible by experts showed that the range of possible warming (and thus effects on carbon-storing ecosystems) was far greater than expected (from less than 2 to more than 11.5 degrees Celsius).<sup>345</sup> Unexpected carbon dioxide releases from biological matter in Amazonian rivers were traced for the first time.<sup>346</sup>

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*‘It’s a working principle of the Head Bureau that the very possibility of error must be ruled out of account. This ground principle is justified by the consummate organisation of the whole authority, and it is necessary if the maximum speed is to be attained... Is there a Control Authority? There are only control authorities. Frankly it isn’t their function to hunt out errors in the vulgar sense, for errors don’t happen, and even when once in a while an error does happen, as in your case, who can say finally that it’s an error?’*

*‘The Superintendent’  
in Franz Kafka,  
The Castle, 1926*

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- In early 2006, climate researchers were stunned when new research revealed terrestrial plants emit methane, a greenhouse gas, under normal growing conditions through mechanisms that are as yet mysterious.<sup>347</sup>

There's no reason to expect such surprises are over. And any of them could play havoc with the possibility of doing the accounting that a market in credits from sinks projects would require.

Even worse news for the carbon market is the fact that setting up a measurable equivalence among emissions and biological sequestration would require quantification of the effects of social actions and institutions that mediate carbon flows. Carbon transferred from underground to the atmosphere enters not only the biosphere but also social and cultural spheres. Physical actions (for instance, planting biomass for power plants) bring about social effects (for example, resistance among local farmers, diminished interest in energy efficiency among investors or consumers, loss of local power or knowledge), which in turn bring about further physical effects (for instance, migration to cities, increased use of fossil fuels) with carbon or climatic implications. Calculating how much carbon a new tree plantation actually 'offsets' would require not only looking at soils and adjacent plots and streams, but also estimating how much the plantation has delayed the adoption of a technologically different energy-generation path on the part of carbon credit buyers, observing the 'carbon behaviour' of farmers evicted from the plantation site and their descendents for unspecified periods of between 42 and 150 years (estimates of the atmospheric lifetime of carbon dioxide emissions vary),<sup>348</sup> and so forth. No basis exists in either physical or social science for deriving numbers for the effects on carbon stocks and flows of such social actions.<sup>349</sup> 'Risk' models and what Douglass North calls the 'static theory' of orthodox economics are simply unhelpful in these circumstances 'of continuous change in many dimensions,' including 'change in the social structure and behaviour of human beings'.<sup>350</sup>

## Reality and fantasy

*What effect have concerns about the credibility of these carbon-saving projects had?*

Carbon sink projects like plantations had a rough ride from the beginning. A majority of environmentalists and NGOs have opposed them strongly in a stream of declarations and position papers,<sup>358</sup> and some governments have also been intermittently sceptical. The Verification Research, Training and Information Centre stated unequivocally in 2000 that forestry and land use 'must not be used to meet emissions

## Carbon Offsets and the Ghost of Frank Knight



Frank H. Knight (1885–1972), a University of Chicago economist recognised as one of the deepest thinkers in 20<sup>th</sup> century US social science, is famous for his distinction between *risk* and *uncertainty*.<sup>351</sup> Although he

could never have anticipated all the ways it could be applied, Knight's 1921 distinction helps explain why it's confused to put any faith in a market for emissions credits generated by carbon-saving projects.

*Risk*, in Knight's sense, refers to situations in which the probability of something going wrong is well-known. An example is the flip of a coin. There is a 50–50 chance of its being either heads or tails. If you gamble on heads, you risk losing your money if it turns out to be tails. But you know exactly what the odds are.

*Uncertainty* is different. Here, you know all the things that can go wrong, but can't calculate the probability of a harmful result. For example, scientists know that the use of antibiotics in animal feed induces resistance to antibiotics in humans, but can't be sure what the probabilities are that any particular antibiotic will become useless over the next 10 years.

Still worse, as Knight's successors such as Poul Harremoës and colleagues have pointed out,<sup>352</sup> are situations of *ignorance*. Here you don't even know all the things that might go wrong, much less the probability of their causing harm. For example,

before 1974, no one knew that CFCs could cause ozone layer damage. Obviously, this ignorance would have invalidated any attempt, at the time, to calculate the probability of ozone depletion.<sup>353</sup> Here, as with uncertainty, talk of 'margins of error' is inappropriate.

In situations of *indeterminacy*, finally, the probability of a result cannot be calculated because it is not a matter of prediction, but of decision. For example, it might be 'implausible' for subsidies for fossil fuel extraction to be removed within five years, but you can't assign a numerical probability to this result, because whether it happens or not depends on politics. In fact, trying to assign a probability to this outcome can itself affect the likelihood of the outcome. In such contexts, the exercise of prediction can undermine itself.

Problems posed by risk, uncertainty, ignorance and indeterminacy each call for different kinds of precaution. Risk fits easily into economic thinking, because it can be measured easily. Uncertainty, ignorance and indeterminacy, however, call for a more precautionary and flexible, and less numerical, approach.<sup>354</sup>

Take the carbon credits to be generated by tree plantations. If these credits were threatened by nothing more than risk, calculating techniques associated with insurance or discounting would be enough to create a viable commodity. You could insure carbon credits from a plantation just as you take out fire insurance for a building. If you knew the margin of error associated with a carbon calculation, you could play it safe by applying a discount factor.

But such credits are subject not only to risk, but to uncertainty, ignorance, and indeterminacy as well. For example:

- How long will plantations last before they release the carbon they have stored into the atmosphere again, through being burned down or cut down to make paper or lumber, which themselves ultimately decay? This is not simply a risk, in Knight's sense, but involves uncertainties and ignorance that can't be captured in numbers. For example, it is still not known what precise effects different degrees of global warming will have on the cycling of carbon between different kinds of trees and the atmosphere.
- To what extent will plantations affect the carbon production associated with neighbouring ecosystems, communities, and trade patterns? Again, uncertainty and ignorance, not just risk, stand in the way of answers.

- How many credits should be subtracted from the total generated by plantations to account for the activities that they displace that are more beneficial for the atmosphere in the long term, for example, investment in energy efficiency or ecological farming? No single number can be given in answer to this question, since 'it is inherently impossible to verify what would have happened in the absence of the project'.<sup>355</sup> That is, the answer is indeterminate.

Uncertainty, ignorance and indeterminacy are three reasons why it's not ever going to be possible to trade trees for smoke. By mixing up 'the analytically distinct concepts'<sup>356</sup> of risk, uncertainty, ignorance and indeterminacy, schemes such as the Clean Development Mechanism and Joint Implementation have blundered into what Knight would have called a 'fatal ambiguity'.<sup>357</sup> In this case, the fatality is the very climate commodity that carbon credit markets hoped to deal in.

reductions commitments' since changes to carbon stocks will 'rarely be verifiable'.<sup>359</sup> In the end, despite industrialized countries' efforts, credits from forest conservation projects were not allowed into Kyoto Protocol markets<sup>360</sup> and carbon sink project credits barred from use in the EU ETS, though they remained prominent in the Protocol.

However, the fundamental impossibilities of carbon-sink credits haven't ever been faced squarely by business, UN specialists, or most governments.

For example, during its deliberations on land use, an Intergovernmental Panel on Climate Change committee<sup>361</sup> stubbornly professed high confidence in certain global estimates of biotic carbon fluxes despite its being pointed out that estimates of net global terrestrial carbon uptake had a factor-of-five error bar (200 million tonnes give or take a billion tonnes). Similarly, because acknowledging the huge error bars surrounding estimates of tropical deforestation would

have undermined the possibility of generating CDM credits through ‘avoided deforestation’, the existence of the bars was referred to only in a footnote. When delegates discovered that the IPCC panel had changed already-approved estimates regarding sequestration by factors of up to 10 times in a way that made biotic carbon sequestration seem more plausible, panel chair Robert T. Watson offered the excuse of a ‘simple typing mistake’. Throughout, IPCC scientists have been careful to avoid putting themselves in a position in which they might be forced to assess carefully the threat various risks and uncertainties pose to the Kyoto market’s accounting system.<sup>362</sup> The carbon-trading tail was wagging the scientific dog.

The wagging has continued. Recently, several European governments, desperate for cheap credits, have let slip that they plan to try to allow carbon sink credits back into the EU ETS. In addition, carbon sink credits continue to be popular in the voluntary market. And there has recently also been a renewed push to include forest conservation projects in the CDM.<sup>363</sup>

*But maybe these governments and their expert advisers just don’t understand the issues.*

It’s unlikely that’s the entire explanation.<sup>364</sup> Trading advocates such as Michael Grubb are very clear that it is ‘impossible’ to measure or define the climatic difference between with- and without-project scenarios. It’s just that they later backtrack to the position that it’s merely ‘difficult’.<sup>365</sup> In this same way, another expert admitted that carbon savings ‘cannot be measured’ only later to slip into the claim that ‘accurate’ or ‘inaccurate’ measurements can be made.<sup>366</sup>

Baselines that are at first admitted to be ‘inherently impossible to verify’ are often then treated as merely imprecise, with error bars of, say, ‘45 per cent in either direction’ that can be ‘managed’ by ‘putting in place safeguards and taking a conservative approach’.<sup>367</sup> In 2003, carbon project proponents were forced to admit that some projects that had been CDM candidates – and rejected for being business as usual – were indeed going forward without carbon money. The response from some trading proponents was that even if such projects were not business as usual ‘at the time of application,’ perhaps they became so later – or that perhaps it was only initial CDM interest that enabled them to find the finance that allowed them to proceed.

Similarly, many carbon consultants at first denied the need to quantify socially-mediated carbon effects of CDM projects, or protested that it was ‘not their job’ to do so.<sup>368</sup> Others tried to float the idea that (for example) the indirect and long-range effects of establishing

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*‘The Kyoto Protocol to the UN Framework Convention on Climate Change may be the most important economic agreement penned in the 20th century.’*

*Aaron Cosbey,  
Royal Institute of  
International Affairs,  
London*

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subtropical carbon plantations on timberland management in temperate regions could be satisfactorily quantified years in advance.<sup>369</sup> The IPCC's panel on land use once tied itself in knots trying to figure out how carbon credits might be given out for good conservationist policies. Eventually the panel decided that since 'quantifying the impact of policies themselves is unlikely to be feasible', measurement attempts should confine themselves to the apparently easier task of finding out how much carbon is taken up in specific projects. This, of course, landed them back in trouble, since the emissions baseline of any given project will vary under different policies.

*But surely reality must be catching up with these fantasies of quantifying the unquantifiable?*

Yes, but it's taking a while. Because the job of measuring the climatic benefits of carbon-saving projects is permanently impossible, the more seriously experts try to carry it out, the more complicated and fanciful – and hard to untangle – their techniques get.<sup>370</sup> Like rogue trader Nick Leeson trying to cover his tracks at Barings Bank, carbon consultants pile complexity on complexity in an ultimately fruitless attempt to evade the inevitable reckoning. That, of course, jacks up the 'transaction costs' of doing the projects.<sup>371</sup>

### *Sequestering Carbon or Fiddling Data?*

In 2005, a template document for BioCarbonFund project developers to use to estimate sequestration rates was posted on the World Bank's carbon finance website. Examples were helpfully provided to illustrate how to fill in certain fields.

In the field 'contact (preferably email)' appeared the sample entry  
'fred@data\_fiddling\_Inc.jail.com'.

## Small projects lose out

The escalation of transaction costs is one reason that community-friendly renewable-energy carbon projects that generate few credits lose out. Particularly threatened are CDM projects attempting to compensate for less than 50,000 tonnes of CO<sub>2</sub>-equivalent emissions per year.<sup>372</sup> Transaction costs for some prospective micro-schemes would run to a prohibitive several hundred Euros per tonne of CO<sub>2</sub> equivalent, at a time when the average price of CDM credits is running at less than €7.

As a result of this and other factors, the CDM is dominated by big, non-renewable projects that generate a lot of cheap credits but are not leading to structural change – in particular a handful of schemes to capture and destroy greenhouse gases called HFC-23 and N<sub>2</sub>O. HFC-23 (a by-product from the manufacture of HCFC-22 and a substance used in air conditioners and refrigerators) is an extremely potent greenhouse gas estimated to be 11,700 times as climatically damaging as carbon dioxide. N<sub>2</sub>O, another very harmful greenhouse gas, is emitted during the industrial production of adipic acid, a raw material for nylon.

Capturing and destroying the two gases is relatively convenient and easy. You do it all in one place – the factories where the gases are generated. The technique is uncomplicated, politically speaking – you just bolt extra bits of machinery onto an existing plant. And, because these HFC-23 and N<sub>2</sub>O are so potent climatically, the dividends are huge.

*Could you give an example?*

The Gujarat HFC-23 project in India, set up to supply credits to Japan, will prevent the emission of only 289 tonnes of HFC-23 annually. Yet because HFC-23 is such a potent greenhouse gas, this single quick fix will yield a whopping 3 million carbon credits per year, more than double the yield of all 20 CDM renewable energy projects registered with the CDM by May 2006. As of the same date, a single HFC-23 decomposition project, the Shandong Dongyue scheme in China, represented 19 per cent of all the credits generated under CDM. A consortium of Japanese, Italian and Chinese partners is meanwhile investigating a project spread across 12 HCFC-22 plants in China that would yield 60 million credits a year from 2008. Just seven of the 265 projects registered by August 2006 accounted for nearly three-quarters of all CDM credits. All were gas capture projects.<sup>373</sup> Renewable energy projects make up only 2 per cent of CDM credits (see Figure 8). The current proportion of world market investment in renewable energy or energy efficiency due to the CDM – also a mere 2 per cent – can only shrink.

Even so, the cost and inconvenience of having to come up with carbon accounting documents irritates business, Northern governments, and agencies such as the World Bank, who want as many cheap credits to be flowing into the market as fast as possible so that fossil fuels can continue to be burned at their accustomed pace. In 2005, for example, the World Bank pushed for the CDM Executive Board to be sidelined, claiming it was being too meticulous about reviewing methodologies at a time when thousands of projects had to be approved in a hurry. As a result, the pressure is on technocrats and consultants

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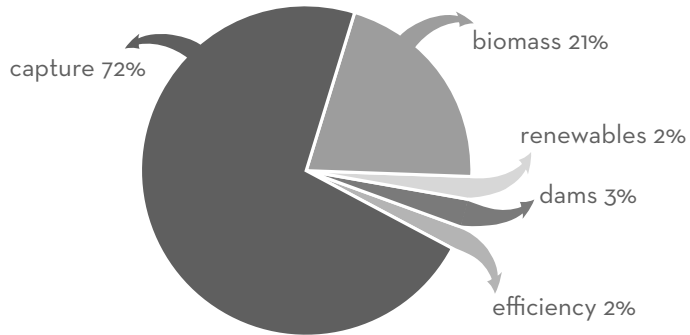
*The Clean Development Mechanism (CDM) 'is not encouraging companies to devote funds to renewable energy sources... to the extent...hoped.'*

*Wall Street Journal,  
11 August 2005*

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Figure 8. Share of Total Registered CDM Credits Generated by Project Type, May 2006

Data analysis by Adam Ma'anit, Carbon Trade Watch



to simplify or streamline carbon accounting procedures as much as possible – for example, to come up with standardised techniques for validating projects *en masse* to save on costs.<sup>374</sup>

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*While 'there were high hopes that the CDM would usher in climate-friendly foreign direct investment...this remains largely to be seen.'*<sup>375</sup>

R. A. Alburo Guarin,  
Development Bank of the  
Philippines

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Organisations attempting to develop higher-quality CDM projects are frustrated for different reasons. Emily Tyler of the South African-based organisation SouthSouthNorth concludes that 'the CDM actually adds little value (indeed, it adds costs) to the very sorts of projects it was designed to encourage'. Tyler claims that what with its credit prices, contract terms, and transaction costs, the CDM adds 'no financial value' to 'the project types which most closely fit the CDM's avowed objectives'. She suggests that good-quality projects will be able to break even only by bypassing the bureaucracy required for quality control at the CDM, seeking extra donor funding, and selling credits on the higher-priced voluntary market to offset emissions from corporate travel, conventions, personal lifestyle and so forth.<sup>376</sup>

The catch is that the simpler, faster and more standardised carbon accounting procedures get, the less possible it is to justify the claim that the projects have anything to do with climate, and the more 'free-rider' credits are created for companies seeking subsidies for their existing operations.<sup>377</sup> It's an irresolvable dilemma – and one which, once again, was already familiar from the US, where attempts to reduce the risk of 'paper credits . . . increased transaction costs to a point where many trades were discouraged'.<sup>378</sup>

## A side issue?

*OK, I can see that offsets don't work. But surely offset credits are only a minor part of carbon trading – so minor that we can perhaps just ignore them?*

It's not so easy. Some countries have contemplated using carbon credits bought from abroad to cover as much as half their (already minimal) emissions reduction obligations under the Kyoto Protocol. Countries such as Japan, Canada, Spain, The Netherlands, the UK, France, Sweden and Italy are expected to be among the biggest buyers.

In October 2005, one London financial consultant went so far as to proclaim that the EU carbon market was 'betting the house on CDM/JI credits.' So keen is Japan on gaining access to foreign carbon credits, meanwhile, that it is giving Japanese companies 50 per cent of start-up investment costs for CDM projects, as well as 50 per cent of validation and legal documentation costs, together with other subsidies for feasibility studies and design documents. A World Bank official has claimed that Northern countries as a whole will need to find between 750 and 2,200 CDM projects in the next few years, or on the order of 1.4 billion tonnes of credits. Only 265 projects had been officially registered by August 2006, accounting for only about 84 million credits, and Northern governments and corporations alike are desperately pushing for more to be produced.

The fact that offset credits form a large part of the carbon market's volume makes them central to carbon trading's overall problems. Carbon credits contaminate any trading system they are used in by adding another layer of unverifiability to the hybrid commodity being trafficked.

*All right, maybe credits from carbon projects are important in the market. But at least you have to admit that carbon sink projects, which surely have the most technical problems of all, are only a trivial part of the market. After all, they constitute less than 10 per cent of the credits from CDM projects. So perhaps we can afford to be relaxed about the fact that they aren't doing any verifiable good for the climate.*

Carbon sinks credits may be a small part of the *market*. But, as can be seen in the case studies of the next chapter, they have a disproportionate effect on *land* and people's use of it. Remember how many trees and how much territory is needed in order supposedly to 'offset' a minimal amount of emissions. With sinks, it doesn't take many credits to damage people's lives.

Which perhaps makes this a good time to turn to the topic of the particular property rights conflicts associated with carbon saving projects.

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*'It is widely recognised that...[the end-of-pipe developments that so far constitute the bulk of CDM projects] have no direct development benefits.'*

Holm Olsen, United Nations Environment Programme

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## Ownership again

*I thought we already talked about this.*

No, our previous discussion was about the difficulties created by the need of *emissions trading* to create and distribute property rights. Carbon-saving *projects* such as those created under the Clean Development Mechanism raise property rights problems of their own. As the next chapter will document, the new carbon dumps that large polluters need usually have to appropriate someone else's land, someone else's water, or someone else's future. Conflicts over ownership are inevitable.

Some of the easiest examples are carbon projects that involve tree planting.

Jayant Sathaye of the US's Lawrence Berkeley National Laboratory once observed breezily that anxieties about the rich cleansing their emissions by taking over the poor's land for forestry projects could be relieved simply by 'ensuring that the title to the land is separated from the title to carbon.'<sup>379</sup> The reality is not so simple. First, most plantations that are candidates for carbon finance are already in the hands of powerful corporations or state bureaucracies. Many of these corporations or bureaucracies are already embroiled in conflict with local people over their takeover of local land and water. In such circumstances carbon finance is likely to be viewed merely as another subsidy for an exploitative status quo. Second, land whose tree and soil carbon has been signed over to a utility is going to be less able to provide livelihood goods to local people.<sup>380</sup>

Carbon is not some unexploited 'extra' product that is simply lying around unused, waiting to be plucked and sold to fossil fuel users, with no other social effects. Its presence is intimately bound up with other uses of the land. Since, under the CDM, the land in question lies in the South, carbon plantation projects are likely to magnify existing North-South inequalities.

The case of bioenergy plantations presents an interesting case study. Bioenergy schemes are increasingly attracting carbon finance (including over 100 projects registered with the CDM by May 2006). Insofar as they are expected to replace a substantial percentage of the oil or coal used in today's industry and transport systems, however, they foreshadow a future in which vast tracts of land in the South are turned over to producing biofuel for export.

That raises the question of whether such plantations would be any more successful for the countries that establish them than traditional agricultural export monocultures, given familiar problems of

overproduction, declining terms of trade, failure to diversify the production base, land degradation and so on.

Biofuel plantations also raise the question of ownership in a broader and more far-reaching sense. Industrially-produced agricultural commodities such as sugar, soya, rubber, bananas, maize, coffee, cotton, pulpwood and palm oil have already, in a sense, dispossessed millions in the global South. Why should biofuels be any different?

*I thought I was supposed to be the one asking the questions.*

Examples like biofuels also remind us that carbon projects not only take over land and water, but also stake a claim on the future. They divert not only present but also future resources to licensing and prolonging fossil-fuel use.



Plantation of oilseeds for biofuel.

*How does that work?*

The UK's Carbon Neutral Company (CNC) presents one clearly documented example. CNC sells carbon credits on the unofficial, 'voluntary' market to consumers, claiming thereby that it can make their activities 'carbon-neutral'. In return for a small amount of extra funding to woodland owners or forestry managers for tree plantings that are taking place already, CNC assumes ownership of the associated carbon rights, which are then sold on to customers at a huge mark-up.

According to one 2001 contract, a forestry enterprise established on public land in North Yorkshire in the UK agreed to 'allocate and assign' to CNC (then called Future Forests) and not 'to anyone else' the 'greenhouse gas absorption capacity of the tree biomass on the land

identified in the plan for 99 years from the date you countersign this letter.’ While the agreement specified that CNC did not thereby acquire ownership of ‘individual trees’, it did ‘entitle’ CNC to ‘individual separable enforceable...carbon sequestration rights in the land.’ The land could not be sold during that 99-year period unless the buyer also agreed ‘to observe the terms of this agreement’:

...this agreement shall be treated as a burden on the land and will accordingly be binding (so far as legally possible) on your successors in title to the land.<sup>381</sup>

In 2002, meanwhile, the Western Australian government introduced a Carbon Rights Bill governing biological carbon sequestration as a ‘first step’ toward setting up a carbon trading regime. The bill defined a ‘carbon right’ as separate from other rights in land and specified that it ‘can be owned by a person unrelated to the owner of the land’.<sup>382</sup>

*But what do the British voluntary offset market and domestic Australian trading arrangements have to do with the international Kyoto offset market?*

They work by the same principles – and appropriate people’s land and futures in similar ways. And they can provoke some of the same reactions.

Local people in Minas Gerais, Brazil, for example, explicitly oppose the way a plantation charcoal project helps obliterate possible futures they wish to build:

The argument that producing pig iron from charcoal is less bad than producing it from coal is a sinister strategy... What we really need are investments in clean energies that at the same time contribute to the cultural, social and economic well-being of local populations...<sup>383</sup>

Indigenous Peoples’ organisations were among the first to spot the land grabs and mortgaging of the future involved in Kyoto’s carbon sink projects. The Indigenous Peoples’ Statement made at the Ninth Conference of the Parties to the UNFCCC in Milan in December 2003 noted that:

Sinks projects do not contribute to climate change mitigation and sustainable development. The modalities and procedures for afforestation and reforestation project activities under the CDM do not respect and guarantee our right to lands, territories, and self-determination.<sup>384</sup>

In May 2006, representatives of all of Ecuador’s indigenous nationalities, meeting at Puyo in the Ecuadorian Amazon with other indigenous groups and national and international NGOs, declared:

We reject the use of the Kyoto Protocol's so-called Clean Development Mechanism in projects affecting the communities, such as hydroelectric dams, monoculture tree plantations and others. We reject the signing of further contracts in our communities for the sale of environmental services with national or international NGOs, municipalities or individuals. We exhort CONAIE and CONFENIAE [confederations of indigenous peoples in Ecuador] to submit the corresponding complaints to the courts [and] to have punitive measures taken against the notaries, contract promoters and NGOs that participate in these activities.

*We've been talking about who owns the land and water used by carbon projects. But who owns the carbon credits produced by these projects?*

It's not always clear. As late as 2004, Baker and McKenzie, an international law firm specialising in carbon trading, was still asking, 'Who is entitled to legal ownership of emissions reductions?'

Could legal title to emission reductions [sic] which are being traded be challenged by another party to the project (i.e., the lessor of the land, the government, another shareholder in the project) or limited by concession arrangements?... What if foreign involvement in a project is limited to the purchase of credits – would this constitute a transfer of 'property rights' to the foreign investor?<sup>385</sup>

Only in 2005 did the Chinese government, to take one example, clarify what percentage of the benefits from the sale of carbon credits it would take and how much it would leave to implementing enterprises.

Not surprisingly, businesses interested in buying carbon credits are obsessed with property rights. While EU emissions allowances are 'real property', noted one Dutch banker recently, CDM credits 'don't have such a solid status yet'. As international commercial lawyers gear up for disputes over title, one European carbon fund manager was heard to remark in October 2005 that 'there are just not enough guarantees . . . I'm not going to spend my life in the court of Belo Horizonte to get my credits. We're placing bets here. CDM credits will always be discounted.'

*What's the problem? People who invest in carbon projects should own the carbon savings. And everybody else should just accept this.*

People who have arguably 'invested' for generations in land and other goods used for carbon projects yet do not own, and cannot sell, the credits they produce, are likely to take a different view. Indigenous peoples, for instance, may have preserved forests and soils for

centuries, yet are likely to have no share in the carbon profits that a formal landowner can reap.

Similarly, indigenous communities, environmental groups, policy-makers and even national governments have ‘invested’ in, and continue to invest in, innumerable carbon-saving activities such as preventing oil extraction or maintaining energy-efficient activities in their territories. As Hermann Ott and Wolfgang Sachs point out, ‘a country which, for reasons of equity, promotes biodiversity habitats, resource-light production, livelihood agriculture or the institution of community rights, may already avoid a great deal of emissions,<sup>386</sup> yet may not own, or be able to sell, carbon credits for doing so. Douglas Korsah-Brown of Friends of the Earth Ghana once argued along similar lines that while Southern countries have effectively ‘loaned their ecological space to developed countries’, they ‘have received no credit for avoiding emissions to date’ and ‘should be rewarded for not having adopted dirty technology in the first place’.<sup>387</sup>

*Well, but you can't just give credits to somebody for not doing something.*

The Kyoto Protocol does it all the time. *All* CDM credits are generated by not doing something. Remember that every project has to show that it does not do ‘what would have happened without the project.’ Some even have ‘avoidance’ in their name.

Look, for example, at the Lages Methane Avoidance Project in Brazil, which was registered by the CDM board in April 2006. This project generates credits by *not* landfilling wood waste and burning it instead. Or, to take another example at random: Japan gets carbon credits from the Graneros Plant Fuel Switching Project in Chile, registered in July 2005, because the plant does *not* use a certain amount of coal or oil, having switched to gas instead.

If Japan gets credits for industries that do not use coal, and a Brazilian company gets credits for not leaving wood to decay, then Costa Rica should get credits for having prevented US companies such as Harken Oil from exploiting oil on its territory.<sup>388</sup> Indigenous communities should get credits for having won the revocation of fossil fuel concessions in their territories.<sup>389</sup>

In fact, why stop there? Nepal should put in an application to the CDM to get credits for not building a superhighway system. Cameroon should get credits for not undertaking a space programme. Anybody in a Southern or Eastern European country should be able to generate credits for choosing to ride a bicycle instead of investing in a car.<sup>390</sup>

*Stop being silly. Nepal was never going to build a superhighway system. Cameroon was never going to invest in a space programme. And presumably Costa Rica would have stopped Harken Oil from drilling for reasons other than the promise of carbon credits. How could you possibly verify and measure the carbon credits from such projects?*

As demonstrated above, the CDM already cannot verify how many credits its projects generate, and for just the same reason: it can't prove that its projects are not business as usual. In accounting terms, there should be no difference between them and these other speculative projects. The silliness is all on the side of the CDM and other carbon-offset programmes themselves. To cite these hypothetical examples is only to throw that silliness into sharper relief.

In fact, in the case of indigenous communities and the Costa Rican government preventing oil exploitation, measurement is arguably a good deal easier than in the average CDM project, involving only quantification of the unexploited oil deposits.

What qualifies you to be a carbon credit owner, in sum, is not that you are saving carbon. It is, rather, that you have the money to invest in various piecemeal technical fixes in specific industries and to hire consultants to calculate and 'verify' carbon credits, crunch numbers, fill in forms, monitor projects and so on. Carbon credits go to well-financed, high-polluting operations capable of hiring professional validators of counterfactual scenarios. They do not go to non-professional actors in already low-emitting contexts or social movements actively working to reduce use of fossil fuels. (See box, p. 61.)

Few rural communities in Northeast Thailand or the Peruvian Amazon, for example, are going to be able to afford the services of the expensive private carbon consultants designated by the United Nations – such as Norway's Det Norske Veritas, Germany's TÜV, Britain's SGS or Japan's JQA – to document, 'validate' and 'verify' their community-friendly energy schemes, even if the UN encouraged such projects.<sup>391</sup> In the distribution of property rights over carbon savings, there's a clear bias in favour of wealthy corporations and governments and against communities, the poor, non-professionals and certain ethnic groups.

It hardly needs to be added that this prejudice – which often deserves the title of 'structural racism' – badly serves the cause of climatic stability. It reinforces a system in which, ironically, the main entities recognised as being capable of making 'emissions reductions' are the corporations most committed to a fossil-fuel-burning future, such as Shell or Tokyo Power, while indigenous communities, environmental movements and ordinary people acting more constructively

### *Who Owns Forest Carbon?*

The United Nations has never been able to work out a convincing way of deciding who owns the carbon-recycling capacity of forests – and therefore who should be able to cash in on it in a carbon market.

Early in the Kyoto Protocol negotiations, the EU and some Southern countries were eager to prevent industrialised countries from using regrowth of their forests as an excuse for not reducing industrial emissions. They demanded that marketable biotic carbon assets be limited to those resulting from ‘direct human-induced’ carbon uptake, and not include ‘natural fluxes’.

Awkwardly, this opened up the entire terrestrial biosphere to carbon property claims. Every part of the globe has been affected by human activity over millennia, from Australia’s fire-moulded landscape to North America’s forest mosaic.<sup>393</sup>

Not even the Intergovernmental Panel on Climate Change has been able to factor out ‘direct human-induced’ effects from ‘indirect human-induced and natural effects’ such as those due to enhanced CO<sub>2</sub> concentrations and nitrogen deposition. ‘The phrase “human-induced”’, it admits,

‘has no scientific meaning’.<sup>394</sup> Hence it’s been hard to identify which biotic carbon dumps should be regarded as belonging to human beings at all.

The IPCC’s suggested way out – to define ‘directly human-induced’ activities arbitrarily as those resulting from the decisions of contemporary ‘land managers’, including, most obviously, professional ‘afforesters and reforesters’ – tends to exclude historical actors who often have better claims to conserving carbon.

As one of Tuvalu’s negotiations once pointed out, a government or company that hires an aeroplane to scatter a few particles of fertiliser over its land-holdings could gain the right to claim credit for the carbon in the forests below, while indigenous and settler peoples who had a hand in the earlier shaping of such ecosystems – or farmers who happen to look after lands classified by experts as ‘unmanaged’ – might get no credit at all.<sup>395</sup> That would make property ownership pretty much entirely dependent on professional and economic status, together with technical measurement capability.

to tackle climate change are tacitly excluded, their creativity unrecognised, and their claims suppressed. As Janica Lane and colleagues observe, ‘Most climate change aid goes to current or future polluters in developing nations, while people conducting relatively climate-friendly practices are ignored.’<sup>392</sup>

*In other words, carbon offset trading is treating the worst climate offenders as climate heroes, while failing to support many of those who are addressing the problem at its roots.*

Exactly. And a final injury of carbon offset trading is that, by licensing more pollution in already-polluted areas, it reinforces a pattern of inequality worldwide.

*How does that happen?*

Some of the biggest buyers of carbon credits are industries that badly pollute their local communities – utilities, oil refineries, chemical firms, pulp and paper companies and the like. In fact, throughout the world, polluting industries and poor communities suffering discrimination of various kinds tend to be found together, for reasons including weak pollution zoning restrictions and low real estate costs. Cheap carbon offsets help allow these industries to go on damaging their local environments.

*But the credits they buy are carbon dioxide credits. Carbon dioxide is not a toxic pollutant in itself.*

No, but, as mentioned earlier, the same processes that produce carbon dioxide also produce a lot of co-pollutants that are toxic. By helping industries to go on producing carbon dioxide, cheap carbon credits also allow them to go on producing a range of toxic substances.

Worse, a polluting industrial installation often gets a new lease on life by buying cheap carbon credits from a project that damages the lives and livelihoods of local people elsewhere. In this way, the trade in carbon credits can use the oppression of local people whose land is being used for industrial plantations in Brazil, say, to prolong the oppression of other local communities in the vicinity of oil refineries or power plants in Europe. Communities that should be uniting in their battles for a transition away from the hydrocarbon economy are being pitted against each other by the trading system that pretends to offer a solution. In the future, it may even happen that an indigenous community fighting an oil company's exploitation of its territory will find itself at odds with another indigenous community down the river providing carbon sink credits to the same company.

Once again, the experience of offset markets in the US should have provided some lessons for the carbon trade. In Los Angeles County, for example, minorities are more than twice as likely as Caucasians to be living in a census tract located within a one-mile radius of at least one large-capacity toxic site,<sup>396</sup> and a majority of facilities emitting toxic pollutants are in 'Hispanic-dominated' census tracts.<sup>397</sup> The Los Angeles RECLAIM offset trading programme described above reinforced this pattern.



*How?*

The pollution prevented by RECLAIM's programme of destroying decrepit cars would have been spread over a wide four-county region. But the industries that bought the resulting 'offsets' are densely clustered in only a few communities, or 'hot spots'. So the car 'offset' scheme effectively concentrated more pollution in communities surrounding stationary sources, particularly those associated with the four oil companies who were the biggest buyers of the offset credits generated by scrapping cars: Unocal, Chevron, Ultramar and GATX.

All these companies used their 'offsets' to avoid installing pollution control equipment that captures toxic gases and vapours released during oil tanker loading at their marine terminals, including benzene, which can cause leukaemia, anaemia, respiratory tract irritation, dermatitis, pulmonary oedema, and haemorrhaging.<sup>398</sup> The surrounding communities were overwhelmingly Latino, three of them populated between 75 to 90 per cent by people of colour (compared to a figure of 36 per cent for the entire South Coast Air Basin).<sup>399</sup>

Much of the historical pollution burden of these underprivileged communities was thus maintained through a programme advertised as 'controlling' pollution.<sup>400</sup> In a trade of like for unlike, the continued release of highly toxic chemicals into certain communities was exchanged for small area-wide reductions in much less toxic chemicals.

Nor is this case unique. A trading programme in the San Francisco area 'unfairly gave up toxic emissions reductions from a petroleum refinery in a community of colour facing high cancer risk, in exchange for credits from reductions in auto use throughout the Bay Area'.<sup>401</sup>

## How offsets block change

If trading in carbon credits worsens the problem of hot spots, it also adds to the forces blocking the technological and social innovation needed to address climate change. Again, this is a pattern evident from 'offset' projects in earlier US pollution trading schemes that is being repeated in today's carbon-'saving' projects – including the Kyoto Protocol's CDM.

*What's the US experience, then?*

One example is, again, the RECLAIM pollution market set up in Los Angeles.<sup>402</sup> Beginning in 1997, the local air quality management authority offered to award marketable credits to businesses or individuals who repaired emissions-related components in high-emitting vehicles, bought clean buses or other vehicles, electrified truck stops and tour bus

stops to prevent engine idling, bought battery-operated lawn mowers and so on. Whether or not these ‘offset’ technologies are themselves regarded as innovative, they were used to relieve pressures on large emitters to make other, more substantial technological changes.

Similarly, as also mentioned above, ‘offsets’ used in the US Environmental Protection Agency’s ‘bubble’ programmes removed big polluters’ incentives to innovate to control their own emissions, usually through use of credits generated by an already-existing technology. Firms also claimed credits for shutting down emissions sources or for production slowdowns, even when such actions were undertaken for business reasons. Writing of such ‘paper credits,’ environmental lawyer David Doniger wrote in 1986 that ‘in practice...there has been far more innovation in shell games and sharp accounting practices than in pollution control technology’.<sup>403</sup>

In a similar way, the Kyoto Protocol’s credit-generating mechanisms – JI and CDM – are designed in a way that allows industries in the wealthiest countries to avoid or delay innovation in their own technological systems as long as they fund the installation of off-the-shelf technology in Southern or Eastern European countries.

These mechanisms have been a particular failure in promoting renewable energy, in which innovation is especially desirable. Older industrial plants whose emissions are supposedly ‘compensated for’ by carbon credits bought from abroad will more easily undercut newer, more efficient technology, reducing incentives for change. And in addition to failing to promote innovation in the North, they also fail to promote innovation in the South.

### *Why?*

There are several reasons.

First, the more a Southern country makes it a matter of policy to promote renewable energy or climate-friendly technology generally, the harder it is for it to attract CDM projects. The more serious it is about weaning its technological structure off fossil fuels, the harder it becomes to prove that good projects would not have happened without the CDM.<sup>405</sup>

The CDM, in other words, gives governments perverse incentives for choosing the short-term benefit of CDM revenues aimed at plucking ‘low-hanging fruit’ over the long-term benefits of environmental policy promoting climate-friendly technological change. For example, high-level government bureaucrats in South Africa’s Department of Mines and Energy have admitted that they have faced pressure from

### *Innovation, the Atmosphere and Economics*

Because it allows the North to delay urgently-needed social and technological change, every block of carbon credits from the South has a long-term climatic cost.

Carbon accountants need to quantify such ‘opportunity costs’ when adding up the effects on the atmosphere of each carbon project. Logically speaking, that’s a prerequisite for accurately calculating how many carbon credits a project should be allowed to sell.

However, no CDM project validators or verifiers ever make such calculations. No one has any idea how to figure out how

much carbon a project will ‘lose’ by depriving a company in the North of an immediate incentive to innovate. Nor is it possible they ever will, although in the long term the amount could be enormous.

This failure of the carbon ‘offset’ market is only one example of the many paradoxes which result when conventional economic thinking is uncritically applied to issues such as climate change mitigation. As legal scholar Robin Paul Malloy explains, efficiency analysis ‘is incapable of adequately addressing creativity because creativity is indeterminate.’<sup>404</sup>

the private sector not to make renewable energy targets too stringent, for fear future CDM projects will not be able to prove they are better than what would have happened otherwise.<sup>406</sup>

Pressures for holding off on innovation are increased by the fact that credit buyers and consultant validators seeking future contracts have incentives to postulate, and try to bring about, business-as-usual scenarios which are the highest-emitting possible, in order to make the projects that they back appear to be saving as much carbon as possible.

Second, some proposed CDM projects claim carbon credits simply for obeying the environmental laws of the host country. One example is a proposed project to divert the natural gas now being flared into the sky by Chevron, Shell and other corporations in Nigeria to a productive use. Flaring is already prohibited in Nigeria, and the companies have been paying a penalty for non-compliance.<sup>408</sup> Indeed, the Nigerian High Court recently affirmed that flaring is illegal and unconstitutional.<sup>409</sup> Another example is South African regulations that methane emissions from landfills be captured once they reach a certain level.<sup>410</sup>

Proponents of carbon projects often claim that they help ensure that environmental laws are obeyed. However, the prospect of carbon finance gives both host countries and project proponents incentives for ensuring that those laws – including those that create incentives for structural change and innovation to lower emissions – are normally

not enforced. The climatic ‘balance sheet’ for such projects would thus, logically speaking, have to be debited for the climate effects of the associated damage done to the rule of law in the host country. In addition to undermining important incentives for structural change and innovation, this type of proposed CDM accounting raises questions about the commitment of the international community involved in CDM projects, including the World Bank and Northern governments, to what the Bank calls ‘good governance’.

Third, and perhaps most important, the cheapest and most secure carbon credits that the CDM has to offer – and thus the ones most in demand by industrialised countries – will be those, like the HFC-23 and N<sub>2</sub>O projects mentioned above, that do the least to help develop a structure of renewable energy and transport in Southern countries.<sup>411</sup>

While such projects (assuming they would not have been implemented anyway) do carry environmental benefits, they are essentially only end-of-pipe add-ons to single, existing plants; could have easily been carried out through traditional regulation; and don’t help bring about structural change in critical climate-related sectors such as energy or transport through research and development, technology sharing, training and so on.

As the US lead and sulphur dioxide programmes demonstrate, because this type of market-oriented project ‘focuses solely on reducing a single pollutant by an exact date and a precise amount at least cost, techniques and practices that deliver multiple benefits – e.g., new ways of energy conversion, as well as conservation, and renewable forms of energy – are frozen out of the market’.<sup>412</sup>

As a 2004 overview of the CDM by the Organisation for Economic Co-operation and Development, a band of 30 industrialised countries, noted:

[A] large and rapidly growing portion of the CDM project portfolio has few direct environmental, economic or social effects other than greenhouse gas mitigation, and produces few outputs other than emissions credits. These project types generally involve an incremental investment to an already-existing system in order to reduce emissions of a waste stream of GHG (e.g. F-gases or CH<sub>4</sub>) without increasing other outputs of the system.<sup>413</sup>

Coal-bed methane schemes are another example of business-friendly projects that do have environmental benefits, but don’t promote climate stability when part of a trading scheme. Gas capture projects in oil fields similarly contribute little toward the innovations needed for a transition away from fossil fuels, yet also yield conveniently large chunks of cheap carbon credits.

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*Many national-level CDM authorities ‘do not care about additionality of CDM projects... There is a real risk of a backlash against the CDM if its sustainability performance does not improve.’<sup>407</sup>*

*Axel Michaelowa  
(CDM Methodology  
Panel) and Katharina  
Michaelowa, Hamburg  
Institute for International  
Economics*

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*I don't agree with your criticism of projects that capture gas from coal mines and oil wells and then burn it off to generate electricity. Surely these are efficiency measures that need to be undertaken at every such installation. Why are you against them?*

No one's against preventing this kind of waste. Considered on their own, such projects are needed and should have been done from the start. The difficulty comes when they become tradable for increased fossil fuel use elsewhere. As part of a trading system, they become not just much-needed efficiency schemes but also licenses for accelerated carbon-dioxide release.

*We've been talking about what, from an environmental point of view, are admittedly rather dodgy schemes. But aren't there at least some renewable energy projects in the CDM?*

There are a fair number, but they were never going to generate many credits. Often small capital- or labour-intensive greenfield developments that provide low rates of return,<sup>414</sup> are less able to shoulder the burden of the documentation, validation, ongoing monitoring and verification of emissions reductions required of CDM projects. An additional handicap for renewable energy projects, which have to pay more of their costs upfront than many other projects, is the commodity transaction model overwhelmingly followed by CDM and JI projects, in which credits are bought as they are delivered over a 10- or 21-year crediting period.<sup>415</sup>

HFC-23 and N<sub>2</sub>O projects had a head start in getting their methodologies approved, too, and are likely to maintain their advantage over renewable energy projects for which carbon accounting is more cumbersome and tests of whether a project 'would have happened without carbon credits' are especially difficult to apply.<sup>416</sup> Significantly, none of the nine renewable energy projects being developed under the Dutch-funded CERUPT carbon-trading programme in 2004 was able to demonstrate that it 'would not have happened otherwise.'<sup>417</sup> Similarly, the large renewable-energy Darajat III geothermal project in Indonesia and the Zafarana wind farm in Egypt have failed to get their baseline methodologies accepted by the CDM due in part to their inability to demonstrate that they are 'additional'. Investment by Japan – whose Bank for International Cooperation provided a soft loan to Zafarana in breach of CDM rules against using overseas development aid money – has accordingly shifted more and more toward landfill gas and gas capture projects.

In short, no market system that prioritises price per unit of carbon credits will be of much good to renewable energy, as the World

Bank, among others, recognised early on. Only months after the 2001 Marrakech Accords laid down the rule book for the CDM, the consultancy Ecofys had already concluded that there would be only a ‘limited role for renewable energy projects under... Kyoto Mechanisms dominated by least-cost approaches’.<sup>418</sup> More recently, the World Bank explicitly called attention to the ‘the non-economic’ nature of the renewable projects in the CDM portfolio, noting that the current proportion of renewable energy projects is bound to diminish in the ‘mature CDM market’.<sup>419</sup>

Among registered CDM project types, only energy efficiency schemes have produced fewer credits (less than 1 million tonnes of CO<sub>2</sub> equivalent) than renewables. Calculations by the World Wide Fund for Nature (WWF) show that the amount of financing expected to be mobilised by the CDM for renewable energy is a fraction not only of existing investment and Overseas Development Assistance (ODA) flows, but also of Global Environment Facility (GEF) financing for renewable energy. WWF estimates that the CDM will account for less than 0.5 per cent of the annual renewable energy market in Southern countries if current trends continue.<sup>420</sup>

When investors do put money into renewable energy schemes, they are treating them mainly as green decorations for portfolios dominated by conventional energy rather than as sober market investments. The Finnish government, for example, submitted four micro-hydro projects in Honduras to the CDM, yet their credit generation is so small – one project is claiming to generate only 9,000 tonnes of CO<sub>2</sub> credits over 10 years – that it is difficult to see how credit sales could even cover transaction costs.<sup>421</sup> Similarly, the minimum price tag for certifying a CDM project in South Africa – estimated at around 40,000 RAND/USD 6,300 – puts carbon finance out of reach of most small-scale renewable energy project developers.<sup>422</sup>

*But don't the Southern governments hosting CDM projects want them to be of more long-term value to their peoples?*

Some might like it to be that way, but that's not how the market works. If host countries started trying to enforce ‘sustainable development’ criteria, transaction costs would go up and their projects would be less likely to attract investment. Unsurprisingly, CDM host countries haven't been very insistent on promoting renewable energy or other ‘high-quality’ CDM projects capable of driving innovation and strategic change.

In sum, CDM is not a renewable energy promotion instrument or a ‘sustainable development’ fund. It identifies and funds low-cost



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carbon credits rather than investments that drive strategic change in energy and transport.

*Still, it must be better than nothing.*

‘A mechanism designed to promote climate protection,’ as CDM expert Ben Pearson puts it, ‘should be reducing the number of coal and oil projects, not providing them with a new revenue stream and diverting financing from renewable projects.’ The technology the CDM promotes merely embroiders an overwhelmingly fossil-oriented approach to energy and transport. Nearly every institution that invests in the CDM market is investing far more in the fossil fuel market.

It’s useful to return once again to the example of the World Bank. Many corporate investors in the Prototype Carbon Fund (PCF) – the Bank’s flagship carbon fund – are in fact receiving far greater amounts of Bank financing for fossil fuel projects that *produce* emissions (Table 4).

Table 4

Corporation	PCF contribution for CDM and JI projects 1999–2004 <sup>423</sup> (USD million)	Received from WB for fossil fuel projects 1992–2002 (USD million) <sup>424</sup>
Mitsui	17 <sup>481</sup>	1,807.5
BP	5	938.8
Mitsubishi	5	403.6
Deutsche Bank	5	165.6
Gaz de France	5	138.9
RWE	5	138.9
Statoil	5	242.3
Total	46	3,834.6

The involvement of BP and Statoil in the PCF is particularly notable given the ongoing financial support by the Bank’s International Finance Corporation (IFC) for their efforts to open up the massive Azerbaijan oil fields for consumption in Western Europe and the US. In October 2003, BP and Statoil were part of a group of corporations who received USD 120 million from the IFC for development of the Azeri-Chirag-Guneshli oil fields in Azerbaijan. Greenhouse gas emissions from the oil produced by this project will be over 2,000 million tonnes carbon dioxide over 20 years. In November 2003, the IFC approved another USD 125 million for the Baku-Ceyhan pipeline between Azerbaijan and Turkey, whose investment consortium is again led by BP. An estimated three billion tonnes of carbon dioxide will be released to the atmosphere through the burning of the oil that will be transported by the pipeline.

Similarly, just five months after the PCF was launched in 2000, the Bank approved over USD 551 million<sup>427</sup> in financing for the Chad-Cameroon oil pipeline. The financing package for the pipeline came to about three times the capitalisation of the PCF, and the expected lifetime emissions of approximately 446 million tonnes of carbon dioxide<sup>428</sup> generated by the pipeline's oil amount to roughly three times the 142 million tonnes that will allegedly be 'saved' by PCF projects in total.<sup>429</sup>

Significantly, PCF investors get carbon *credits* from PCF projects, but no *debts* for their Bank-supported projects involving fossil fuel extraction or use.

Finally, technology 'transfer', CDM-style, has been implicated in technology *displacement* – in particular, displacement of superior low-carbon technologies (see Chapter 4, 'India – A taste of the future'). It is not as if, through the CDM, the North is somehow bringing technology to technology-free places. Promotional brochures may show shiny, seemingly benign technologies being peacefully 'transferred', but the technologies being disrupted in the process are typically less visible. 'Technology transfer' often also centralises political control.

'Technology transfer' is a highly ideological phrase denoting a highly political process. When used with the CDM, it tends to stand for a pattern of fossil fuel-oriented corporate incursion that can exclude types of informal technology exchange between communities that are often more climate-friendly.

In general, the CDM is impeding constructive action not only in the North (where it allows government and industry to avoid investment in long-term change), but also in the South (where, by and large, it channels resources into non-renewable projects that sustain the fossil fuel economy).

*But if we can't fix the damage the CDM has on the North's transition to a post-fossil era, maybe we can still fix the CDM in a way that helps the South toward more renewable sources of energy. What we need are standards that will tell buyers which CDM carbon credits come from responsible, renewable energy and energy efficiency projects that really do something for the climate and for people. Buyers could well stampede to buy these premium credits. Finally the market would start working for a liveable climate instead of against it.*

Somebody's already thought of that idea. It's called the Gold Standard, and was developed by World Wide Fund for Nature and other NGOs in collaboration with governments, corporations and experts around the world.

The Gold Standard attempts to ensure that carbon credits are 'genuine,' 'credible,' and provide 'real emissions reductions' and 'real

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*If the CDM continues to operate within the current policy perversity in which the Kyoto Protocol and CDM exist alongside massive North-South financial flows to fossil fuels, then it will fail.<sup>426</sup>*

Ben Pearson,  
CDM Watch

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Segments of the  
Baku-Ceyhan  
pipeline await  
assembly.



increases in sustainable energy investment'.<sup>430</sup> It claims to be able to do this by 'exceed[ing] the environmental standards demanded by the market regulator and governments', which it admits are unsatisfactory. Forestry and fossil fuel projects are excluded and projects must try to 'prove' once again that they are not 'business as usual' and that they have 'sustainable development' benefits.

Of course, Gold Standard credits cost more. But, it's argued, they help buyers avoid dodgy products.

*Sounds perfect. Has the idea worked?*

No. Why should it? It can't change the market fundamentals. The underlying dilemma remains: the harder you try to make your offset project have a positive long-term impact on climate, the more it will price itself out of the market. You can't have it both ways – good,

small projects and cheap credits. A few buyers may be interested in good Gold Standard projects as window dressing, but they can never become the main stock in trade at the CDM. But if the Gold Standard tries to accommodate business' wishes too closely, it risks a credibility already in question.

Thus one common business complaint against the Gold Standard is that it is too 'rigorous' to supply a steady stream of cheap credits. By the same token, 'good' Gold Standard projects – such as the Kuyasa scheme in South Africa – can't survive in the market and have to be propped up with large subsidies (see Chapter 4, 'South Africa – Carbon credits from the cities'). Gold Standard credits make up an insignificant fraction of the total CDM trade, and there are few expectations this will change in the future.

*So there's no way around it. The carbon 'offset' market is actually frustrating environmentally superior outcomes by pointing investment in the wrong direction.*

That's about the size of it. As with emissions trading, the focus on short-term 'efficiency' without fostering radical innovation and local sensitivity is leading, paradoxically, to ineffectiveness.<sup>431</sup>

*Why wasn't this foreseen?*

A lot of it was. Even a carbon trading proponent, Michael Grubb, admitted early on that the CDM had the potential to turn into a 'sink for the intellectual as well as some of the physical resources of the developing world, and a distraction from the fundamental goals of sustainable development'.<sup>432</sup>

But such warnings were not heeded. It was simply assumed that fixes could be concocted that would make carbon trading compatible with constructive climate action. Once again, free-market ideology – and the hope that the fundamental contradictions of the Kyoto Protocol would simply go away if they were ignored – have occupied the space that should have been taken up by a careful weighing of the evidence and an investigation of the existing institutions, infrastructure, and traditions of different countries and regions. Many officials and environmentalists – including many NGOs – have been looking for 'positive solutions' in the wrong place. In the words of Ruth Greenspan Bell, they have prescribed the cure before examining the patient.<sup>433</sup> A lot of time has been wasted.

*Still, suppose I'm a renewable energy developer with a strong interest in working closely with small communities. Frankly, why should I care? This market, wacky as it is, is already here, and maybe I can get some money out of it for my*

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*The CDM is 'not working.'*

*Gold Standard  
staff member*

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*pet schemes, even if its overall tendency is destructive. After all, there aren't all that many opportunities to get funding for renewable energy around, and I've got to take them where I can find them.*

If you still think this market is going to provide support for the pains-taking work you do, good luck. As one Dutch banker involved in the carbon credit market put it recently, '[F]ew in the market can deal with communities.' Economic carbon projects are not going to be the ecologically- or socially-beneficial ones.

The problem is not just that only 2 per cent of CDM money is going into renewable energy. It is also, as Ben Pearson stresses, that the CDM is *diverting* finance that should be going into renewable energy into easier projects that merely prop up an outdated, fossil fuel-dependent industrial structure. As a renewable energy developer, you stand to lose from the CDM in the long term.

*All right, let me adopt an even more cynical attitude. Suppose I'm not a responsible renewable energy developer but rather a Southern government. Surely the CDM will be useful to me and my ministries as a source of new investment in my country. The investment may not do any good for global warming, and it may be economically and socially useless.<sup>434</sup> But it might, if I'm lucky, at least provide a few new capital flows to development projects – and my business sector.*

It's hard to argue this point. But notice that we've now left the climate debate behind entirely, by admitting that the CDM has nothing to do with tackling global warming. The fact that the conversation has collapsed into a general discussion of international investment and development shows to what extent the institutions concerned have taken over and diverted the climate debate. And that should give us pause.

Even if CDM projects are considered merely as 'foreign direct investment through construction' with no climatic benefits, they still hold the same sort of risks as any other foreign direct investment. As Yin Shao Loong and Ben Pearson point out, these include 'shift of capital ownership from domestic to foreign and high transfers of surplus away from host countries'.<sup>435</sup>

*If carbon credit investors are mostly interested in high-volume industrial projects, or those with low transaction costs, doesn't that mean they're going to wind up discriminating against smaller, poorer Southern countries anyway, and favouring only a few, well-prepared ones?*

Yes. The World Bank has admitted that most Southern countries can deliver only small projects. The risks and high per-credit transaction costs involved in delivering carbon from these projects makes it unlikely that smaller, poorer countries will be able to attract much carbon finance.

Indeed, the Bank’s response to the problem – setting up a special-purpose Community Development Carbon Fund that pays higher than market prices for small projects in Southern countries – is an implicit admission that ‘the market’ will not work in the hoped-for way in the South, and that a carbon market that revolves around private capital and low-cost carbon credits will bypass the smallest countries.

As of August 2006, just four countries – China, Brazil, Korea and India – were hosting over 61 per cent of the 265 CDM projects registered by that date, and producing an overwhelming 86 per cent of the associated CDM credits (see Figures 9 and 10).

Figure 9. Expected Average Annual CDM Credits from already registered projects, August 2006

Source: UNFCCC

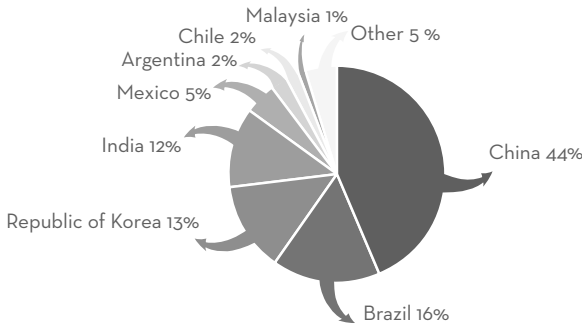
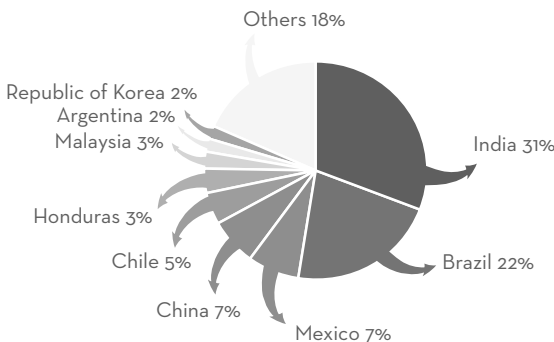


Figure 10. Number of Already-Registered CDM Projects by Country, August 2006

Source: UNFCCC



## Where's the enforcement?

One of the most important lessons of US pollution markets is that trading requires not only a credible system of measuring emissions but also a system of strict enforcement of the rules under a single governmental jurisdiction.<sup>436</sup>

As argued above, these conditions are not present under either the Kyoto Protocol or the EU ETS. Measurement is inadequate or impossible. Monitoring is insufficient or impossible. Penalties would have to be made far more serious than they are today. And without a world government, signatories to treaties such as the Kyoto Protocol may simply renege on their agreements if they find that meeting their targets are inconvenient.

Both Los Angeles's RECLAIM and the US sulphur dioxide programme were instituted under single governmental jurisdictions that were able to impose tough and enforceable penalties.<sup>437</sup> The Kyoto Protocol, by contrast, is an international agreement that will be easy for any country to disobey, or withdraw from, if its pollution allowances prove insufficient. Former Canadian Finance Minister John Manley recently reassured Canadians that they should not worry about international penalties if the country falls short of its Kyoto targets, because the treaty is 'not binding'. Countries that do stay in the agreement but overshoot their targets in 2012 are required to find only an extra 0.3 permits over the next five years on top of each permit they 'owe'.

The EU ETS may appear to have more enforcement power at its disposal than Kyoto does. However, it's revealing that it dares to impose only a paltry penalty of €40 per tonne of carbon dioxide on those who use more than their entitlements, compared to an April 2006 carbon price that had reached €30 per tonne. This effectively caps the carbon price at a level not much higher than it started out at – a level everybody agrees is not going to provide an incentive for structural change. Even then, Germany proposed halving the penalty in 2006.<sup>438</sup> By contrast, the US sulphur dioxide programme imposed a penalty 20 times the permit price.

*But will it really come to the point that countries simply default on their Kyoto targets?*

Well, it's already clear that many industrialised countries won't achieve their targets – even if they take advantage of what economist Cornelius van Kooten calls the 'smoke and mirrors' of purchases of 'hot air' from Russia and the Ukraine, 'carbon offset credits for

business-as-usual forest management’, ‘temporary carbon sinks’ and bogus emission ‘reductions arising from a “fortunate” choice of base year.’<sup>439</sup> Carbon trading hasn’t made the bullet of emissions reductions much easier to bite than it was to begin with.

Each Kyoto signatory knows, moreover, that both it and its fellow signatories have strong short-term economic incentives to look the other way when firms exceed their emissions targets. That makes default even more tempting.<sup>440</sup> Many observers have doubts whether Kyoto-like agreements can survive after 2012 anyway.

As pollution trading expert Ruth Greenspan Bell observes, it is ‘highly unlikely that anything approximating the rigour of the US [sulphur dioxide] trading system can be devised to control climate change worldwide’ in the future even if measurement of emissions were possible, since countries tend to see international oversight as a ‘threat to their sovereignty’.<sup>441</sup> They are likely to withdraw from a treaty whose conditions are too onerous, or simply accept the penalties imposed by a lax agreement.

*Not that the US itself is exactly a model for ‘rigour’ in this respect.*

No. As economist William D. Nordhaus notes, ‘the accounting scandals of the last decade have not been limited to dollar scandals,’ but ‘have also spilled over into emissions markets.’<sup>442</sup> Greenspan Bell herself has documented the case of PSEG Fossil LLC, the biggest player in New Jersey’s emissions trading system, which apparently had not installed necessary pollution controls or obtained proper permits:

The US Justice Department discovered this and brought an enforcement action, which was resolved in the form of a consent decree. PSEG, without admitting any wrongdoing, agreed to stop selling its credits to other firms and to stay out of the trading system. When PSEG was forced to withdraw, its sheer size and status as one of the largest “suppliers” of credits in New Jersey brought that state’s system close to collapse.<sup>443</sup>

*It makes you wonder what kind of fraud lies ahead for the world carbon market.*

Yes. ‘Such cheating,’ Nordhaus concludes, ‘will probably be pandemic in an emissions trading system that involves large sums of money.’ He observes that whereas in a tax system, the government has an incentive to try to ensure taxes are paid, in an emissions trading system, both buyers and sellers can afford to be indifferent to whether reductions have actually been made. Tax evasion in the US is on the order of 10 or 20 percent of taxes due. Given the incentives and the lack of adequate means of quantification, it is hard to put an upper limit on the extent

of cheating possible in a global emissions trading system. As Greenspan Bell remarks, ‘keeping companies honest is hard enough in a robust legal and regulatory environment, as Enron’s sham energy trades and WorldCom’s balance-sheet fraud amply demonstrated. In a weak legal system, the potential for emissions trading fraud is enormous.’<sup>344</sup>

The lack of an adequate measurement system for either carbon emissions or so-called ‘emissions reductions’ only adds to that potential, making cheating not only easy but almost irresistible.

*What about the legal systems of various countries? How will they respond when US-style pollution trading systems are pushed on them?*

Greenspan Bell emphasises that many Southern countries will be unable to ‘manage or enforce complex intangible property rights concerning goods such as polluted air escaping from a factory’ or provide enough incentives for businesses to run pollution control equipment even if it is installed. International standards governing CDM projects

### *Carbon Trading’s Unconscious Cultural Assumptions*

The theory behind carbon trading is that factories, power plants, and anyone else that generates carbon dioxide will be eager and capable partners in deals to buy and sell emissions. Nothing seems more obvious to many middle-class Westerners.

But the theory rests on several faulty assumptions. The first is that all industry everywhere wants to save on the costs of obeying environmental laws. But where pollution laws are little more than paper, industry knows it need not worry much about these costs. Plants that aren’t being forced to comply with requirements may not see the point in elaborate trading regimes.

A second assumption is equally intuitive for many Westerners, but equally wrong: that the opportunity to trade will reveal a natural instinct to make a profit and to do so in the most efficient way possible. In much of the world, efficiency and profit

are secondary to production or employment goals, or the need to maintain valuable traditions, and supposedly ‘uncompetitive’ companies are kept afloat through government support.

A third weak assumption behind carbon trading is that even if plants around the world are not themselves motivated to embrace clean technologies, they will accept them if they are offered free through the Kyoto Protocol’s flexible mechanisms. Maybe so, but what incentives do they have to keep the equipment on and pay its running costs? That doesn’t happen anywhere without disinterested enforcement.

In short, carbon trading rests on unexamined cultural assumptions many of which are unrealistic in most of the world.

*Source:* Ruth Greenspan Bell, ‘The Kyoto Placebo’, *Issues in Science and Technology*, Winter 2006.

are even less likely to be obeyed (see Chapter 4) – particularly since carbon accountants' inability to verify that such projects 'compensate' for any given quantity of industrial carbon dioxide emissions is not a problem that can be fixed by improvements in technique.

'Survey the world', Greenspan Bell says, 'and few countries can demonstrate dependable legal systems and an independent judiciary ready to stand behind contracts such as environmental trading agreements'.<sup>445</sup> Pursuing violators is going to be hard when one party to a transaction is a state-owned enterprise that is 'clearly more powerful than the regulatory body that supposedly supervises it, or when the ultimate beneficiary of the sale of emission credits is the party in power. When the scale of the regulatory effort is global, no world court exists to litigate the trustworthiness of the pollution reductions that become emission credits.'<sup>446</sup>

Many countries also have legal traditions and conceptions of the relationship between government and industry which are a far cry from those of the US.

## Narrowing the discussion

*All right, I admit carbon trading may not have much potential for helping us to address climate change directly. But it's valuable at least in that it encourages the public in Northern countries to discuss and educate itself about the global warming issue.*

How does it do that?

*Well, look at business. When carbon has a price, business has to pay attention. For the first time, the climate crisis speaks to corporations in a language they can understand. As a result, the business world begins buzzing with concern and ideas for action. And that's bound to have a positive long-term effect on climate. If only it were possible to calculate that into the monetary value of carbon credits!*

Let's look at these claims carefully. First, do carbon prices direct business's attention and ingenuity toward the climate crisis – or away from it? As documented above, the European market for carbon so far hasn't pushed corporations into creative long-term undertakings to do something about global warming. Instead, it has taught them how to lobby for more emissions permits, find ways of passing on costs to customers, game the system, locate cheap carbon credits abroad, present a green



face to the public, keep gas as an option, and make marginal efficiency improvements. Responding to carbon prices is one thing; taking practical long-term action on climate change quite another.

The truth is that carbon prices are a pretty inferior way of educating corporations about climate change and its importance for their work. Insurance companies are already learning fast through other means – including Hurricane Katrina’s devastation of New Orleans – that global warming threatens their business. Power utilities, technology developers and retailers are already asking governments for longer-term signals than those that are provided by a market. There are more credible ways of entering into a dialogue about climate with corporations than by appealing to a new commodity system whose flimsy basis they are only too well aware of. As University of London geographer John Adams notes in a similar context, ‘[T]reasuries and big business are better equipped than most to notice when someone is speaking nonsense in their own language.’<sup>447</sup>

*Maybe so, but how about the case of individual consumers?*

You mean people buying carbon credits in the ‘voluntary market’ to make up for the carbon dioxide emitted during their jet flights or international conferences?

*Yes. Admittedly, these carbon credits – the ones you buy from firms like the Carbon Neutral Company, Climate Care, Atmosfair, Natsource, Terrapass, DrivingGreen, Drive Neutral, carbonfund.org, MyClimate, AtmosClear Climate Club, Carbonfund.org or Climate Friendly – don’t really make your jet flight or home or daily driving verifiably ‘carbon-neutral’ or ‘zero carbon’. But when you buy these ‘offsets,’ at least you have to calculate how much carbon you emit in your daily life. That can’t help but improve your awareness of the causes of climate change.*

*Take a simple example. An executive trainer from Reading, UK named Charlotte Robson recently learned for the first time from the Carbon Neutral Company’s carbon calculator that her personal carbon ‘footprint’ was 24 tonnes of carbon dioxide per year. ‘I am astonished I have been such a monster,’ Robson wrote in the London Daily Telegraph.<sup>448</sup> Isn’t it great that people like her are discovering the real impacts of their actions?*

It’s not clear what is really being discovered here. Is the cause of climate change really that individuals like Charlotte Robson are ‘monsters’? Is Charlotte Robson personally responsible for the historical lock-in of heavy fossil fuel use in industrialised societies? Does she choose for the UK government to use her tax money to subsidise oil extraction and road and airport construction rather than renewable energy? Did she

have a say in the invasions of Iraq in 1991 and 2003? Somehow it's hard to imagine Charlotte Robson being as bad a person as she says.

The deeper difficulty is that if you blame yourself as an individual for climate change, then you're likely to think that, by the same token, you can also discharge all your responsibility for solving the problem simply by making a few different personal lifestyle choices. If you blame 'consumers' for global warming, then you'll probably think that the solution lies in reforming their individual consciousnesses and purchasing habits.

*Now that you mention it, Charlotte Robson did report being pleasantly surprised to learn from the Carbon Neutral Company that all she had to do to 'neutralise' the effect of her carbon-emitting ways was to make out a cheque to the firm for around GBP 156 a year for planting trees and building non-CO<sub>2</sub> emitting energy-generation plants. 'A cost of GBP 156 is nothing,' she exulted. 'Think of the money you spend on lipstick and magazines.'*

Exactly. Thanks to the Carbon Neutral Company, Robson was able to feel that she had gone from 'monster' to makeover in a heartbeat.<sup>449</sup> The question is to what extent this sort of cathartic individual drama helps move society toward understanding the urgency of change in the policies that feed global warming. Does it help anyone understand that most remaining fossil fuels are going to have to be left in the ground? Or that choosing a better brand of consumer product may have limitations as a strategy for dealing with climate change? It would seem that it does just the opposite.

*Well, but surely customers of the Carbon Neutral Company and similar firms, once they're sensitised to the issue, will go on to try to reduce their use of fossil fuels as well as try to 'offset' them. As companies selling 'voluntary' carbon credits to the public often point out, they're bound to begin thinking more about how they might save carbon in their daily lives.*

*For example, after calculating her individual carbon emissions, Charlotte Robson decided to try to minimise business travel: 'If a client wants two programmes in Singapore, they have to be at the same time, so we don't stack up CO<sub>2</sub> by flying in twice'. Surely there's nothing wrong with that!*

The problem is that the misleading term 'carbon neutral' conveys a completely different message: that any emissions that people happen to be personally unable or unwilling to reduce can be compensated for by buying carbon credits instead, since buying credits is climatically 'just the same' as reducing fossil fuel use.

You can use carbon credits, the Carbon Neutral company says, for those areas in which your emissions are 'unavoidable'.<sup>450</sup> But what

are those areas? What are the criteria for being ‘unavoidable’? Who decides what is ‘unavoidable’? What is it about the way society is organised that makes these emissions ‘unavoidable’? How might they ultimately be made ‘avoidable’ through political action and planning? The answers to all these questions are left mysterious. Indeed, the questions themselves go unasked.

What’s left is a feeling of personal guilt and resignation, not a sense of history, politics or economics. In addition to propagating the falsehood that carbon credits can ‘neutralise’ emissions, such corporations convey a message that nothing can be done about what they call ‘unavoidable’ emissions. That’s disempowering, to say the least.

*But maybe the awareness that comes with buying carbon credits from firms like the Carbon Neutral Company will someday lead customers to other, more engaged kinds of thinking and action on global warming.*

Maybe, but it’s difficult to see how. The main message such firms provide today is that individual consumers can relieve their guilt through purchases. It’s a classic instance of helping to shape demand for a new product while simultaneously offering to supply that demand.

This commercial recasting of climate politics as a narrative of individual guilt and redemption tends to poison public discussion, not promote it. It makes criticism of, say, air travel or car-centred societies seem like a moral critique of the ‘rich and privileged’ for being ‘self-indulgent’ and a call for government to ‘punish’ them. That only provokes defensive reactions against calls for long-term social action.<sup>451</sup>

In reality, the climate crisis doesn’t require people to feel guilty. What it requires is for them to be aware of the deeper roots of the problem, and to join with others in political action. It requires not buying and selling ‘offset’ credits, but social responsibility.

*All right, but what about the public discussion encouraged by official emissions trading programmes? Emissions trading helps the public decide how much they want to invest in action on climate change, by enabling it to focus on how strict the emissions ‘cap’ should be, rather than arcane questions about what technologies industry should be required to adopt to meet that goal, which are best left to industry itself. Emissions trading opens up an intelligent, democratic debate about questions about overall goals, such as ‘How important is a healthy environment anyway? When should we stop pouring money into the environment in order to make room for more spending on education, health or foreign aid?’*

That’s not what happened in the US. When promulgating the sulphur dioxide trading programme, as Georgetown University law profes-

As Lisa Heinzerling points out, the US Congress didn't debate how much emissions should be cut or how badly sulphur dioxide was affecting forests, streams and lakes. Instead, Congress merely accepted the emissions cut originally proposed to it and occupied itself with dividing up the rights to pollute that it was giving away in a way that would best satisfy influential business interests. Along the way it handed out special favours to, among others, the high-sulphur coal industry, a powerful lobby group, by providing extra incentives to use scrubbers – thus contradicting the claim of trading enthusiasts that the scheme would give polluters the freedom to choose means of controlling their pollution. As Robert Glicksman and Christopher H. Schroeder note, legislators seemed to see 'little distinction between the Clean Air Act and a fight over which defence installation to close, or an appropriation for public works project. The pork tastes as good, from whichever barrel it comes.'<sup>452</sup> Alternatives to giving rights away free to high-polluting corporations were also little discussed, though if they had been, the controversy could have been intense.

As noted above, discussion of social goals has also taken a back seat to horse-trading during the implementation of the EU Emissions Trading System. And the market in CDM and JI credits is likewise unfriendly to democratic discussion of social goals, including emissions cuts.

*Unfriendly in what ways?*

Well, for one thing, anyone wanting to comment on planning documents for CDM projects (for example) has to learn English, find a computer, log onto a website, register, and then navigate hundreds of pages of technical jargon, usually under a tight deadline. CDM comment forms provide no spaces for discussing the reliability of the implementing companies or the indeterminacy and scientific ignorance that stand in the way of the projects' being verifiably climatically effective. Nor are there spaces for questioning the ubiquitous assumption that such projects produce 'emissions reductions'.<sup>453</sup> As one Indian social activist remarked on being confronted with an official UN form for submitting comments on a CDM project, 'the form for public input is so full of technicalities there seems to be no space for general comments'.<sup>454</sup>

By their sheer bulk and repetitiveness, such documents entrench a 'mainstream' discussion about climate change that sidelines thinking about how to halt the flow of fossil fuels out of the ground and limits the political choices a society can make to small, incremental variations on business as usual. As Adil Najam and colleagues concluded in 2003, 'There is a danger that Kyoto has now become so much of a mechanism for managing global carbon trade that emission cuts for

atmospheric carbon stabilisation could be neglected, or at least delayed.<sup>355</sup>

*But surely the Kyoto Protocol has focussed public attention on overall emissions targets. That's what Kyoto means for most people – a set of targets – even if everybody agrees they're inadequate.*

That's true. But Kyoto's success in making emissions reduction targets a matter for political debate isn't due to the market that the treaty sets up. Emissions targets were going to be a public issue whether or not carbon trading was involved.

*I'm still a bit confused by this discussion. Politicians and economics professors are always telling us that markets reduce centralised decision-making and bureaucracy, and allow people to think and act for themselves. Are you saying that isn't always true?*

The charitable response would be that politicians' press conferences and economics classrooms are perhaps not the best places to learn about these issues.

After 60 years, Karl Polanyi's perspective is still the more balanced one: that trading schemes are 'opened and kept open by an enormous increase in continuous, centrally-organised and controlled interventionism'. The Kyoto Protocol's market has set up one of the most centralised, opaque, complicated and jargon-ridden international processes ever seen, while the EU ETS is perhaps the most complex, impenetrable piece of environmental legislation Europe has ever known.

True, the Kyoto market does not dictate to anybody the technologies they must adopt to reduce emissions. And it has opened up all sorts of discussions about the means by which countries might meet their minimal emissions reductions obligations. But at the same time, it has created large bureaucracies remote from ordinary people at both global and national levels in order to try to create a market commodity – to inventory emissions; divide up emissions rights; register trades; protect property rights; approve, validate and verify projects; establish exchanges; enforce compliance; ensure reporting and so on.

Not even the US's sulphur dioxide scheme actually decentralises decision-making to firms. Since power generation is highly regulated, it merely pushes certain decisions back onto state public utility commissions. At no point was the price of pollution rights ever determined by anything describable as a 'market' separable from 'government'.

*Are you saying that the carbon market isn't, after all, increasing transparency and giving ordinary people more choices?*

Well, look around you. Few members of the general public have any inkling of what is going on in the bureaucracies that govern either the UN's or the EU's climate market, or what evasions, abuses and conflicts are afoot. Few are even aware how far the attempt to set up a giant global carbon market has gone. Few, too, can make sense of the swarm of acronyms and technical terms Kyoto has spawned and continues to spawn, including AAUs, CERs, ERUs, DNAs, DOEs, NAPs, PDDs, AIEs, SBIs, COPs, MOPs, SBSTAs, LULUCF, additionality, model rules, meth panels, supplementarity, leakage, and so on. Not even many journalists covering climate know what's going on.

*No wonder I haven't heard about all this stuff before.*

Yes. That's not to say that there hasn't been a lot of debate about the shortcomings of pollution trading. But it rages largely among affected communities and an expert elite with its own interests. The public at large, whether in the US or worldwide, has tended to be fooled by the complexity of trading systems into believing that they are reducing pollution more than they are. On the whole, public debate has not been enhanced, but rather blocked, by the schemes. And, as will be detailed in the coming chapter, the carbon market has not expanded, but rather contracted, ordinary people's choices, in case after case.

Nor is the discussion helped when NGO trading proponents insist that emissions markets have nothing to do with assets and property. 'The Kyoto Protocol and the EU ETS do NOT create property rights,' one large Washington environmental NGO staff member proclaimed indignantly in late 2005. 'The EU ETS created the "allowance" specifically to make clear that it constitutes a discrete permit under a regulation, not a property right.'<sup>456</sup> Kyoto units are merely 'unitised and divisible embodiments of promises,' insists another environmentalist.<sup>457</sup> To warn the public that assets are being given away to the rich, fumes still another, is 'ideological claptrap'.

Such dismissive views block intelligent public debate about what kind of property rights emissions trading schemes involve; whether those rights are defensible; how they might be distributed or transferred and to whom and for whose benefit; and so on. Such a debate is crucial. Whose atmosphere is it, and whose earth? This is a question for everybody, not just for government ministries, lobbyists, experts and large environmental NGOs.

Indeed, one of the reasons the EU ETS has run into such difficulties is that there has been no open debate on allocation of allowances. No newspaper or television programme appears to have covered the 'choices involved in setting up the system during the period in which

it would have been possible for the plans to have been changed.<sup>458</sup> Even the brief debate on the system in the European Parliament on 10 October 2002 was unreported in any major British broadsheet or financial newspaper. Nor did many Members of the European Parliament understand the ramifications of the scheme, since the official summary they had been given did not discuss who owned the rights that the permits represented, but only which industrial sectors would be covered, how many allowances should be given out free, and so forth. The last thing that is needed is more such suppression of debate.<sup>459</sup>

*But are conventional regulation or taxes any more transparent to public scrutiny or conducive to public discussion?*

In many ways, they are. As law professor and emissions trading expert David Driesen remarks,

With a little work, citizens can understand whether an Environmental Protection Agency or state regulation will force a factory in their neighbourhood to meet emission limitations, including technology-based limitations, that similar factories meet elsewhere, or that can be met with known technology. Understanding the myriad potential games that can be accomplished through emissions trading requires expertise that very few possess.

The fact that emissions trading, unlike more conventional forms of regulation, allows each factory to ‘emit at a different level from its peers’, makes public scrutiny and comparison even harder. Keeping track of trades in the ‘invisible, intangible commodity’ that consists of ‘the right to emit a given amount of CO<sub>2</sub>’ is going to be difficult for ordinary people even in a country like the US. Imagine the problems for nations with different understandings of property rights and property law, whether in Europe or the South.<sup>460</sup>

*Maybe what you say is true. But isn't too much public discussion sometimes dangerous, too? For example, by exposing problems with carbon trading, you're exposing problems with the Kyoto Protocol. And isn't that, again, just playing into the hands of George W. Bush and other obstructionists?*

No. It's precisely to insist on the respect for evidence that Bush lacks, by seeking answers to global warming that work while trying to avoid those that don't. The ‘trading fix’ for global warming currently promoted by many governments and mainstream NGOs, in fact, is similar in many ways to the ‘technological fix’ that Bush is seeking. Both fixes fail because they pretend to be able to avoid the unavoidable: politics.

## Summing up – Market ideology vs. climate action

Many people of strong environmentalist convictions and democratic spirit genuinely believe that if the earth's carbon-cycling capacity is to be respected and preserved, it is inevitable that it be treated as a commodity. 'Given the logic of capitalism', says Peter Barnes, one thoughtful US environmentalist and egalitarian, treating carbon-cycling capacity as a 'scarce resource' and an 'asset' to be marketed 'is the best way to save it'.

Not, Barnes hastens to add, that the 'sky has no value other than its exchange value... . If anything we know can be called sacred, the sky is such a thing... . It has incalculable intrinsic value.' Yet, at the same time, he argues:

[W]e need to communicate with markets because markets determine how resources are used. All our preachings and sermons will be for naught if we don't inscribe them on tablets that markets can understand... [The market] is a great system for managing scarcity... If you ask a market to determine price of a thing someone owns, it will do so quickly and efficiently. Transactions will then follow... [The price] is not the equivalent of the intrinsic value, nor an editorial comment on it. It's merely a proxy, a useful numerical substitute. And it's a much better proxy than the one markets currently use – namely, zero... . To achieve the ends of Chief Seattle, we must use the means of Dow Chemical. The world has come to that, and it's sad. But... selling the sky is not an end in itself. It's a means for achieving a higher end – the preservation of our planet.<sup>461</sup>

This chapter has provided concrete materials to help show that this appealing argument – which today is encountered in politics, in international development, in the UN, in think tanks, in the academy and in environmentalist circles – is both invalid and unsound. That is, it has helped show both that its conclusion does not follow from its premises, and that the premises themselves are mistaken.

The argument is *invalid* because even if the premise that the 'logic of capitalism' necessitates or encourages pollution markets were true, it would not follow that carbon trading is a sensible regime for addressing global warming. By the same token, while it is true that some 'markets' do partly determine how some resources are used in some circumstances, and that having a 'zero price' does result in the



inadequate valuation of some resources in certain limited contexts, it doesn't follow that a trading system of the type currently being set up is capable of improving the 'scarcity management' of the earth's carbon dump in a way that could foster a liveable climate.

Price is *not* a 'useful numerical substitute', in any context, either for the 'intrinsic value' of carbon-cycling capacity (whatever that might be) or its survival value. To suggest that it could be reveals fundamental misunderstandings of climate, scientific as well as social, economic and political. The purported carbon commodity is different from established commodities such as wheat or silver. For governments to take it upon themselves to make it an economically scarce good is not encouraging, but rather hampering, practices that could increase the chances of a liveable climate in the future. The price assigned by carbon markets in the course of 'managing' that scarcity, accordingly, and the resulting incentives and 'transactions', are moving the world away from that goal rather than toward it. This is particularly so in view of the facts that the market 'management' of this scarcity involves providing extensive property rights to corporations, is biased mainly toward short-term cost reductions for industry, and involves a commodity that is an incoherent amalgam consisting both of 'emissions' and of credits generated by carbon projects.

The argument is also *unsound* in that its premises are false. In truth, 'markets' do not, in most circumstances around the world, 'determine how resources are used,' in any sense in which markets can be distinguished from, or do not depend on, commons regimes, state agencies and other social organisations that don't revolve around the price mechanism. To put this another way, it is empirically false that no market price entails less responsible stewardship than a positive price. Only if, *per impossibile*, commodification somehow became all-pervasive, and the price mechanism the sole and all-powerful coordinating mechanism for all transactions involving land, water, life and so forth, could this assertion even become possible to evaluate. Carbon trading, in addition, is no more congenial to anything that might be called the 'logic of capitalism' than a multitude of other types of regulation, taxation, planning and stewardship that private corporations themselves have always depended on – and in this case, given the increasingly obvious contradictions of carbon trading, may wind up preferring.

As in so many areas of contemporary social life, a vague ideology of market effectiveness and market inevitability is concealing a regressive, confused, contested and environmentally dangerous political and technical project. The ideology and the project both badly need to be opened to wider public criticism.

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- 142 Dallas Burtraw *et al.*, 'Economics of Pollution Trading for SO<sub>2</sub> and NO<sub>x</sub>' Resources for the Future Discussion Paper 5-05, Resources for the Future, Washington, 2005.
- 143 Moore, *op. cit. supra* note 61.
- 144 Hernando de Soto, *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else*, Black Swan, London, 2000.
- 145 Paul Hawken, Amory Lovins and L. Hunter Lovins, *Natural Capitalism: Creating the Next Industrial Revolution*, Little, Brown and Company/Back Bay, Boston, 2000, p. 117.
- 146 The EU advertises its ETS as 'an open scheme promoting global innovation to combat climate change' in the title of one of its pamphlets - without offering any argument for the claim or even mentioning the word 'innovation' in the text. See 'EU Emissions Trading', European Commission, Brussels, 2005, <http://europa.eu.int>.

- 147 Adam B. Jaffe *et al.*, 'Environmental Policy and Technological Change', *Environmental and Resource Economics* 22, 2002, pp. 41-51, p. 51; Richard B. Stewart, 'Controlling Environmental Risks through Economic Incentives' (1988), *Columbia Journal of Environmental Law* 13, 1988, p. 160. Under the EU ETS, companies are not formally allowed to bank leftover allowances from one phase of the programme to the next. However, they can achieve the same effect through what traders call 'trading the spread': selling, say, their 2007 allowances while buying 2008 allowances. See 'Backwardation Allows and Incentivises EUA Banking into Phase Two', *Point Carbon*, 23 September 2005, <http://www.pointcarbon.com>.
- 148 See, e.g., Jeff Romm, *Cool Companies*, Island Press, Washington, 1999; F. Krause, 'The Cost of Mitigating Carbon Emissions: A Review of Methods and Findings from European Studies', *Energy Policy* 24, 10/11, pp. 899-915; Ernst von Weizsacker and Amory B. Lovins, *Factor Four: Doubling Wealth, Halving Resource Use*, Earthscan, London, 1997. The US Department of Energy has found that the US could cut its predicted energy consumption by 20 per cent by 2020 and its carbon dioxide emissions by a third, bringing them close to 1990 levels, all the while saving USD 124 billion on its energy bill (US Department of Energy, Office of Energy Efficiency and Renewable Energy, 'Scenarios for a Clean Energy Future', Washington, 2000. See also P. Raeburn, 'It's Perfect Weather to Fight Global Warming', *Business Week*, 11 December 2000, p. 36). According to energy expert Amory Lovins, the US is failing to make many reductions in carbon emissions not because they would be expensive but because of capital misallocation, organisational and regulatory failures, lack of information, perverse incentives, and so on. See 'Climate Protection for Fun and Profit', *Rocky Mountain Institute Newsletter*, 13, 3, Fall/Winter 1997, p. 3 and Amory B. Lovins, 'More Profit with Less Carbon', *Scientific American*, September 2005, pp. 74-82.
- 149 Working Group III contribution to Third Assessment Report, IPCC, Cambridge University Press, Cambridge, 2001.
- 150 Henrik Hasselknippe and Kjetil Reine, eds., *Carbon 2006: Towards a Truly Global Market*, Point Carbon, Copenhagen, 2006, [http://www.pointcarbon.com/wimages/Carbon\\_2006\\_final\\_print.pdf](http://www.pointcarbon.com/wimages/Carbon_2006_final_print.pdf).
- 151 David A. Malueg, 'Emissions Credit Trading and the Incentive to Adopt New Pollution Abatement Technology', *Journal of Environmental Economics and Management* 16, 1987, p. 52; A. Denny Ellerman *et al.*, *op. cit. supra* note 93, p. 14.
- 152 *Ibid.*
- 153 Margaret Taylor *et al.*, 'Regulation as the Mother of Invention: The Case of SO<sub>2</sub> Control', *Law and Policy* 27, 2005, pp. 348-78, p. 372.
- 154 Ruth Greenspan Bell, 'What to Do about Climate Change', *Foreign Affairs* 85, 3, June 2006, available at [http://www.weatherwane.rff.org/solutions\\_and\\_actions/International/What\\_to\\_Do\\_About\\_Climate\\_Change.cfm](http://www.weatherwane.rff.org/solutions_and_actions/International/What_to_Do_About_Climate_Change.cfm).
- 155 Greenspan Bell, *op. cit. supra* note 1, pp. 28, 30.
- 156 'Statement of G8 Climate Change Roundtable', World Economic Forum and Her Majesty's Government, UK, London, 9 June 2005. Even the oil corporation Shell admits that carbon efficiency measures are more likely when market solutions such as emissions trading are limited, globalisation has been restricted in favour of national laws and standards, and cross-border economic integration is limited. Under a regime of greater cross-border integration, regulatory harmonisation and voluntary codes, it concludes, there may be higher economic growth, but an 'absence of security-driven investment in indigenous renewable energy sources' (Royal Dutch Shell, 'The Shell Global Scenarios to 2025. The Future Business Environment: Trends, Trade-Offs and Choices', 2005, [www.ukerc.ac.uk/component/option,com\\_docman/task,doc\\_download/gid,346/](http://www.ukerc.ac.uk/component/option,com_docman/task,doc_download/gid,346/)). It was for such reasons that the low-emissions vehicle program enacted by several US states to stimulate innovation and secure emissions reductions didn't require merely that emissions standards be met. That goal could have been achieved merely by tweaking existing technology through, for instance, introducing very efficient catalysts. Rather, the program recognised that some economically-'unjustified' zero-emissions vehicles had to be introduced as well, in order to jump-start more serious technological change. The most efficient short-term solution, it was understood, would not necessarily deliver environmentally-superior technological innovation (David M. Driesen, 'Does Emissions Trading Encourage Innovation?', *Environmental Law Reporter News and Analysis* 33, 2003, p. 10094).
- 157 Margaret Taylor *et al.*, *op. cit. supra* note 153; David Popp, 'Pollution Control Innovations and the Clean Air Act of 1990', *Journal of Policy Analysis and Management* 93, 2003, p. 390.
- 158 David M. Driesen, Syracuse University School of Law, personal communication, 2005. But see also Curtis A. Moore, *op. cit. supra* note 61, p. 11, who states that the market did have a role, but writes dryly that the 'innovation' it stimulated was 'in new railroad tracks, on- and off-loading systems and other ways of bringing lower-sulphur coal from the Powder River Basin to market'.

- 159 Taylor *et al.*, *op. cit. supra* note 153, p. 23.
- 160 N. Madu (ed.), *Handbook of Environmentally Conscious Manufacturing*, Kluwer Academic Publishers, Boston, 2001, pp. 32–33.
- 161 David Driesen, *The Economic Dynamics of Environmental Law*, MIT Press, Cambridge, 2003, pp. 79–80.
- 162 Ellerman *et al.*, *op. cit. supra* note 93, p. 14.
- 163 Once the trading scheme got under way, many installations managed to cut emissions without trading at all. Most of those who did trade traded only within their own firm. Inter-firm trading came to only two per cent of total emissions (Moore, *op. cit. supra* note 61, p. 26).
- 164 Moore, *op. cit. supra* note 61, pp. 7–8.
- 165 Curtis A. Moore, 'RECLAIM: Southern California's Failed Experiment with Air Pollution Trading', Health and Clean Air, 2003, [www.healthandcleanair.org/emissions/reclaim.pdf](http://www.healthandcleanair.org/emissions/reclaim.pdf), p. 24.
- 166 Richard A. Liroff, *Reforming Air Pollution Regulation: The Toil and Trouble of EPA's Bubble*, Conservation Foundation, Washington, 1986, p. 100.
- 167 'BP's Credibility Gap over Carbon Emissions', *ENDS Report* 326, March 2002, p. 4. 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](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.
- 168 Shaun Harley, 'Outback to the Future', *Shield* (BP Magazine) 1, 2000, p. 38.
- 169 'BP's Credibility Gap over Carbon Emissions', *ENDS Report* 326, March 2002, p. 4.
- 170 David Driesen, 'Trading and Its Limits', *Penn State Environmental Law Review*, forthcoming 2006.
- 171 *Ibid.*, pp. 83–4.
- 172 Gar Lipow, *op. cit. supra* note 2.
- 173 Gregory C. Unruh, 'Understanding Carbon Lock-In', *Energy Policy* 28, 2000, pp. 817–30.
- 174 *Ibid.*, p. 820.
- 175 Estimates of military and foreign aid costs associated with ensuring the flow of oil to major consumer countries from the Arabian Gulf vary dramatically. One study in 1990, when Saudi Arabian oil was selling at around USD 15 a barrel, argued that another USD 60 should be added to yield the real cost to the US. More recently, the director of the Earth Institute at Columbia University reckoned that the 'dollar costs of US military operations in the Middle East attributable to policing the energy flows are tens of billions a year, if not 100 billion or more. This amounts to a hidden subsidy to oil use of USD 10 or more per barrel exported from the region'. See Toby Shelley, *Oil*, Zed Books, London, 2005, pp. 162–3. For universities, see PLATFORM *et al.*, *Degrees of Capture*, PLATFORM, London, 2003.
- 176 J. Pershing and J. Mackenzie, 'Removing Subsidies: Levelling the Playing Field for Renewable Energy Technologies', lecture presented to the International Conference for Renewable Energies, Bonn, June 2004. Subsidies, of course, are difficult to quantify, as they may involve not only direct financial transfers but also trade restrictions, regulatory instruments, preferential tax treatment, police and military budgets, legal changes, company bailouts and publicly-funded research and development.
- 177 See also Amory Lovins, 'Soft Energy Paths', *Foreign Affairs*, 1973; Ivan Illich, *Energy and Equity*, Penguin, London, 1971; Ricardo Carrere and Larry Lohmann, *Pulping the South: Industrial Tree Plantations in the World Paper Economy*, Zed Books, London, 1996. If a broader range of political issues is not addressed, fuel efficiency will not cause fossil fuel use to decline. It may simply lead to incentives to warm more rooms or buy bigger cars.
- 178 Lipow, *op. cit. supra* note 2.
- 179 In its first years, FedEx lost money building the infrastructure necessary to implement reliable overnight mail delivery. Once it had put the necessary infrastructure in place, however, it began to profit by offering the service. Venture capitalists financed Jeff Bezos's 'inefficient' Amazon.com for years in the hope that the company would eventually turn a profit, even though it lost hundreds of millions of dollars to start with. By contrast, venture capital for environmental technologies in the US has dropped in recent years at a time when emissions trading has gained unprecedented prominence. See Driesen, *op. cit. supra* note 161, pp. 93–97.
- 180 Israel M. Kirzner, *Discovery and the Capitalist Process*, University of Chicago Press, Chicago, 1985, p. 157.
- 181 Tim Denne, 'Aggregate versus Gas by Gas Models of Greenhouse Gas Emissions Trading', Centre for Clean Air Policy Scoping Paper No. 6, 1999, p. 19.
- 182 Philip Verleger, the Institute for International Economics, quoted in George Monbiot, 'Crying Sheep', *The Guardian*, 27 September 2005.



- 183 Lipow, *op. cit. supra* note 2. See also Dermot Gately and Hillard G. Huntington, 'The Asymmetric Effects of Changes in Price and Income on Energy and Oil Demand', Economic Research Reports, New York University, 2001, <http://www.econ.nyu.edu/cvstarr/working/2001/RR01-01.PDF> and Jerry Taylor and Peter Van Doren, 'Evaluating the Case for Renewable Energy: Is Government Support Warranted?', *Policy Analysis* 422, Cato Institute, 10 January 2002.
- 184 Corporations, for their part, often rationally prefer investing in technologies that increase their power over labour over those that improve productivity per unit of energy (Michael Perelman, *Class Warfare in the Information Age*, Palgrave Macmillan, New York, 2000).
- 185 Henrik Hasselknippe and Kjetil Reine, *op. cit. supra* note 150.
- 186 'Emission trading "no good without targets"', *Environment Daily* 1739, 4 October 2004.
- 187 William Nordhaus, 'Life after Kyoto: Alternative Mechanisms to Control Global Warming Policies', Yale University, 2005, <http://www.fpfif.org/fpifxt/3167>.
- 188 Ellerman *et al.*, *op. cit. supra* note 93; Moore, *op. cit. supra* note 61.
- 189 Vincent de Rivaz, 'Short Term Strategies Can Distort Emissions Progress', *Financial Times*, 28 July 2005, p. 19. See also Fiona Harvey, 'Market Begins to Influence Behaviour of Generators', *Financial Times*, 10 October 2005; and Jean Eaglesham, 'Business Attacks Government's Short Term Target on Global Warming', *Financial Times*, 6 October 2005, p. 2).
- 190 Robert L. Hirsch *et al.*, 'Peaking of World Oil Production: Impacts, Mitigation and Risk Management', February 2005, [www.hilltoplancers.org/stories/hirsch0502.pdf](http://www.hilltoplancers.org/stories/hirsch0502.pdf).
- 191 Moore, *op. cit. supra* note 61, p. 23.
- 192 For example, the Competitive Enterprise Institute states that the costs of complying with the Kyoto Protocol alone would cost the US USD 300 billion per year, losing 28 per cent of GDP over 10 years (cited in Vijay V. Vaitheeswaran, *Power to the People*, Earthscan, London, 2005). Energy expert Amory Lovins claims, by contrast, that reductions in carbon emissions would save USD 300 billion annually given better capital allocation and correction of organisational and regulatory failures, lack of information, perverse incentives, and so on ('Climate Protection for Fun and Profit', note 168). The US Department of Energy also predicts billions of dollars in savings ('Scenarios for a Clean Energy Future', *supra* note 148). Differences in assumptions even among conventional economic models can 'easily lead to cost estimates that differ by a factor of ten or more', notes Stanford economist John Weyant. 'If you ask the broader question of how much tackling climate change will cost over this century', concludes Vaitheeswaran, 'the honest answer must be that we simply do not know'.
- 193 Jack Cogen, presentation at the side event arranged by the International Emissions Trading Association and the World Bank at the Conference of the Parties to the UNFCCC, Montreal, 5 December 2005.
- 194 Lipow, *op. cit. supra* note 2.
- 195 Driesen, *op. cit. supra* note 161, p. 24.
- 196 Michael E. Porter and Claas Van der Linde, 'Toward a New Conception of the Environment-Competitiveness Relationship', *Journal of Economic Perspectives* 9, 1995, p. 97.
- 197 Driesen, *op. cit. supra* note 161, p. 86.
- 198 *Ibid.*, p. 68.
- 199 Commission on Sustainable Development, *Report of the Secretary General*, UN Doc.E/CN.17/2001/PC/20, 2000, p. 4; Driesen, *op. cit. supra* note 156.
- 200 Wolfgang Sachs *et al.*, *The Jo'Burg Memo*, Heinrich Böll Foundation, Berlin, 2002, p. 38.
- 201 See, for example, Barbara White, 'Coase and the Courts: Economics for the Common Man', *Iowa Law Review* 72, 1987, pp. 577-635; Larry Lohmann, 'Making and Marketing Carbon Dumps: Commodification, Calculation and Counterfactuals in Climate Change Mitigation', *Science as Culture* 14, 3, pp. 1-33; Nick Johnstone, 'Efficient and Effective Use of Tradable Permits in Combination with Other Policy Instruments', OECD, Paris, 2003, <http://www.oecd.org/dataoecd/11/55/2957650.pdf>.
- 202 Pat Mooney, *What Next? Trendlines and Alternatives for Civil Society over the Next 30 Years*, Dag Hammarskjöld Foundation, 2006, <http://www.dhf.uu.se>; Ken Nealson and J. Craig Venter, 'Summary' of Workshop on The Role of Biotechnology in Mitigating Greenhouse Gas Concentrations, 23 June 2001, US Department of Energy, Office of Biological and Environmental Research; Alun Anderson, 'Craig Venter', *Prospect*, April 2006.
- 203 Greenspan Bell, *op. cit. supra* note 1, p. 21.
- 204 Michael McCarthy and Michael Harrison, 'Carbon trading will not cut airline emissions, says BA', *Independent*, 30 June 2006.
- 205 'BP's Credibility Gap over Carbon Emissions', *ENDS Report* 326, March 2002, p. 4.
- 206 Paul McGarr, 'Capitalism and Climate Change', *International Socialism* 107, 2005, <http://www.isj.org.uk/index.php4?id=119&issue=107>.

- 207 These figures are taken from the US's Carbon Dioxide Information Centre.
- 208 Personal communication.
- 209 Polanyi, *op. cit. supra* note 15.
- 210 'Robbed of the protective covering of cultural institutions, human beings would perish from the effects of social exposure; they would die as the victims of acute social dislocation ... Nature would be reduced to its elements, neighbourhoods and landscapes defiled, rivers polluted, ... the power to produce food and raw materials destroyed.... A self-adjusting market ... could not exist for any length of time without annihilating the human and natural substance of society; it would have physically destroyed man and transformed his surroundings into a wilderness' (Polanyi, *op. cit.*, p. 3).
- 211 The grandfather of emissions trading, Ronald Coase, himself pointed this out: 'The rights of a landowner are not unlimited. It is not even always possible for him to remove the land to another place, for instance, by quarrying it. And although it may be possible for him to exclude some people from using 'his' land, this may not be true of others. For example, some people may have the right to cross the land. Furthermore, it may or may not be possible to erect certain types of building or to grow certain crops or to use particular drainage systems on the land. This does not come about simply because of governmental regulation. It would be equally true under the common law. In fact, it would be true under any system of law. A system in which the rights of individuals were unlimited would be one in which there were no rights to acquire' (Coase, *The Firm, the Market and the Law*, University of Chicago Press, Chicago, 1988, p. 155).
- 212 Daniel Altman, 'Just How Far Can Trading of Emissions Be Extended?', *New York Times*, 31 May 2002.
- 213 Torres, *op. cit. supra* note 5, p. 227. In addition, under conventional regulation, richer communities pay a smaller proportion of their wealth for overall pollution cuts than poorer ones do.
- 214 Altman, *op. cit. supra* note 212.
- 215 Moore, *op. cit. supra* note 61.
- 216 Haywood Turrentine, Chair, National Environmental Justice Advisory Committee, Letter to Carol Browner, Administrator, U.S. Environmental Protection Agency, 11 March 1998.
- 217 David Biello, 'Emissions Trading under Attack', *Environmental Finance*, May 2002.
- 218 *Ibid.*
- 219 Larry Lohmann, 'Whose Voice is Speaking? How Cost-Benefit Analysis Synthesizes New "Publics"', Corner House Briefing Paper No. 7, 1998, <http://www.thecornerhouse.org.uk>.
- 220 Altman, *op. cit. supra* note 212. Lifting regulation of utilities' profit margins makes the transfer of wealth to corporations in the form of emissions allowances still more blatant.
- 221 Simone Bastianoni *et al.*, 'The Problem of Assigning Responsibility for Greenhouse Gas Emissions', *Ecological Economics* 49, 3, 2004, pp. 253-57, p. 254.
- 222 See, e.g., Michael J. G. Den Elzen *et al.*, 'Differentiating Future Commitments on the Basis of Countries' Relative Historical Responsibility for Climate Change: Uncertainties in the "Brazilian Proposal" in the Context of a Policy Implementation', *Climatic Change* 71, pp. 277-301, 2005.
- 223 Larry Lohmann, 'Democracy or Carbocracy? Intellectual Corruption and the Future of the Climate Debate', Corner House Briefing Paper No. 24, 2001, <http://www.thecornerhouse.org.uk/>.
- 224 Keeler, *op. cit. supra* note 136.
- 225 FEASTA and New Economics Foundation, *op. cit. supra* note 97, p. 3; John FitzGerald, 'An Expensive Way to Combat Global Warming: Reform Needed in the EU Emissions Trading Regime', *ESRI Quarterly Economic Commentary*, April 2004; UBS Investment Research, 'European Emissions Trading Scheme', London, 2004, [www.unepfi.org/fileadmin/documents/materiality1/emissions\\_trading\\_eu\\_ubs\\_2004.pdf](http://www.unepfi.org/fileadmin/documents/materiality1/emissions_trading_eu_ubs_2004.pdf).
- 226 Peterson, *op. cit. supra* note 116; Lisa Jacobson and Allison Schumacher, 'Emissions Trading: Issues and Options for Domestic and International Markets', Business Council for Sustainable Energy, Washington, 2000.
- 227 *Point Carbon*, 16 November 2004.
- 228 IPA Energy, *op. cit. supra* note 82.
- 229 *Point Carbon*, 16 November 2004.
- 230 *ENDS Report* 369, October 2005, p. 47.
- 231 *Ibid.*
- 232 'HSBC: Testing the Waters for Carbon Neutrality', *ENDS Report* 369, October 2005, p. 25.
- 233 *National Business Review* (New Zealand), 30 December 2003.
- 234 *Ibid.*
- 235 Thongchai Winichakul, *Siam Mapped: The History of the Geo-Body of a Nation*, University of Hawaii Press, Honolulu, 1994.
- 236 Michael Grubb *et al.*, *The Kyoto Protocol: A Guide and Assessment*, Royal Institute for International Affairs, London, 1999, p. 98.

- 237 Bastianoni *et al.*, *op. cit. supra* note 221, p. 254.
- 238 Oilwatch, 'Position Paper: Fossil Fuels and Climate Change', The Hague, November 2000.
- 239 Peter Singer, *One World: The Ethics of Globalization*, Yale University Press, New Haven, 2002.
- 240 *Ibid.*
- 241 Torres, *op. cit. supra* note 5, p. 578.
- 242 Fred Pearce, 'Calling the Tune, *New Scientist*, 7 July 2001, pp. 47-9; Anil Agarwal *et al.*, *Green Politics: Global Environmental Negotiations*, Centre for Science and the Environment, New Delhi, 1999; Centre for Science and Environment, 'Definitions of Equal Entitlements', CSE Dossier Factsheet 5, New Delhi. [http://www.cseindia.org/programme/geg/cdm\\_guide.htm](http://www.cseindia.org/programme/geg/cdm_guide.htm).
- 243 See <http://www.gci.org.uk> for a list.
- 244 Already, carbon costs associated with international emissions trading schemes are encouraging some energy-intensive industries to think about relocating production abroad, and the same would likely happen if foreign countries had a surfeit of carbon permits to offer (Philibert *et al.*, *op. cit. supra* note 65, p. 22). Martin Pecina, chairman of the Czech Republic's Anti-Monopoly Office, noted in February 2006, for example, that the EU ETS is likely to induce Mittal Steel, which has plants in the Czech Republic, merely to increase output in Kazakhstan, beyond the reach of the EU ETS. 'At the same time, it would reduce production in the Czech Republic, and would even profit from the sale of the unused carbon credits,' Pecina noted, claiming that the EU ETS fails to protect the environment and should be abolished (Bouc, *op. cit. supra* note 88).
- 245 As one trade expert puts it, 'if a specific subsidy causes adverse effects to competing entities in foreign countries, then it can be actionable in the World Trade Organisation.' S. Charnovitz, 'Beyond Kyoto: Advancing the International Effort Against Climate Change' in Pew Centre on Global Climate Change, *Trade and Climate: Potential Conflicts and Synergies*, Washington, DC, 2003, <http://www.pewclimate.org/docUploads/Beyond%20Kyoto%20Epdf>, pp. 141-170. In the US, for instance, the Clean Air Act restricted imports of low standard reformulated gasoline in 1999, but the WTO forced the US Environmental Protection Agency to rewrite the rules to comply with the WTO rules. Similarly, a recent NAFTA dispute with the US forced the Canadian government to repeal its ban of MMT, a substance manufactured by US-based Ethyl Corporation (and which had been banned in the US), and to pay compensation to the company for profit losses. Heidi Bachram *et al.*, *The Sky is Not the Limit: The Emerging Market in Greenhouse Gases*, Transnational Institute, Amsterdam, 2003 <http://www.carbontradewatch.org>.
- 246 Dove, *op. cit. supra* note 30, pp. 45-47, 49.
- 247 White, *op. cit. supra* note 201.
- 248 Douglas Kysar, 'Law, Environment and Vision', *Northwestern University Law Review* 97, 2003, pp. 675-729, pp. 690-1.
- 249 Cramton and Kerr, *op. cit. supra* note 38; United States Congressional Budget Office, *Who Gains and Who Pays under Carbon-Allowance Trading?*, Washington, 2000; Dallas Burtraw *et al.*, 'The Effect on Asset Values of the Allocation of Carbon Dioxide Emission Allowances', Resources for the Future, Washington, 2002; Nathan Hultman *et al.*, 'Equitable Carbon Revenue Distribution under an International Emissions Trading Regime', Political Economy Research Institute, Amherst, 2002; J. Jensen and T. Rasmussen, 'Allocation of CO<sub>2</sub> Emissions Permits: A General Equilibrium Analysis of Policy Instruments', Ministry of Business and Industry, Copenhagen, 1998; L. Lane, 'Allowance Allocation under a Carbon Cap-and-Trade Policy', Climate Policy Centre, Washington, 2003; Ian Parry, 'Are Emissions Permits Regressive?', Resources for the Future, Washington, 2003; J. Pezzey, 'Emissions Taxes and Tradeable Permits: A Comparison of Views on Long-Run Efficiency', *Environmental and Resource Economics* 26, 2003, pp. 329-343.
- 250 Peter Barnes, 'The Regional Greenhouse Gas Initiative', 2006, <http://onthecommons.org/node/789>.
- 251 Cramton and Kerr, *op. cit. supra* note 38.
- 252 Robert Hahn and Robert Stavins, 'Trading in Greenhouse Permits: A Critical Examination of Design and Implementation Issues', in H. Lee, ed., *Shaping National Responses to Climate Change*, Island Press, Washington, 1995, p. 203.
- 253 Andrew Aulisi *et al.*, *Greenhouse Gas Emissions Trading in US States: Observations and Lessons from the OTC NO<sub>x</sub> Budget Program*, World Resources Institute, Washington, 2005, p. 19.
- 254 Polanyi, *op. cit. supra* note 15; Harvey, *op. cit. supra* note 29.
- 255 Mitchell, *op. cit. supra* note 23.
- 256 The importance of the aesthetic appeal of such approaches has been highlighted by the distinguished University of Iowa economist Deirdre N. McCloskey: 'When economists are asked why almost all of them believe in free trade, they will say that it is a "theoretical" argument that persuades them. Further inquiry will reveal that it is in fact a pretty diagram that persuades them.'

- 257 Driesen, *op. cit. supra* note 93, p. 94.
- 258 Robert H. Socolow, 'Can We Bury Global Warming?', *Scientific American*, July 2005, pp. 45-55; Bert Metz et al., eds., *Carbon Dioxide Capture and Storage: Summary for Policymakers and Technical Summary*, Intergovernmental Panel on Climate Change, 2005. For problems with this geosequestration 'solution', see, e.g., 'Carbon Dioxide's Great Underground Escape in Doubt', *New Scientist* 2560, 18 July 2006, p. 19; 'Plan to Bury CO<sub>2</sub> under North Sea', *the Guardian*, 5 September 2003 and German Advisory Council on Global Change, *The Future Oceans: Warming Up, Rising High, Turning Sour*, Summary for Policy Makers, Berlin, 2006, which notes that 'storing CO<sub>2</sub> in geological formations under the sea floor can only be an "emergency" solution for a transitional period' (p. 5).
- 259 Metz, *op. cit.*, pp. 34-36. The German Advisory Council on Global Change, *op. cit.*, concludes flatly that 'introducing CO<sub>2</sub> into seawater should be prohibited, because the risk of ecological damage cannot be assessed and the retention period in the oceans is too short' (p. 5).
- 260 Freeman J. Dyson, 'Can We Control Carbon Dioxide in the Atmosphere?', *Energy*, 2, 1977, pp. 287-291.
- 261 Climate Neutral Network, Business and the Environment, XI, 5, May 2000, [http://www.climateutral.com/pages/press\\_bus\\_env.html](http://www.climateutral.com/pages/press_bus_env.html).
- 262 Deepak Mawandia, 'Leveraging CDM to Mobilize Disaster Relief Funding: It Could Make Good Business Sense', Kolkata, 2005.
- 263 'Chile's Agrosuper Sells Credits from Pig Waste to Utilities', Bloomberg News, 20 September 2004.
- 264 Lohmann, *op. cit. supra* note 223.
- 265 'No Carbon Credit for the West African Gas Pipeline', [http://www.eraaction.org/modules.php?name=ERA\\_News&file=article&sid=33](http://www.eraaction.org/modules.php?name=ERA_News&file=article&sid=33); 'Groups Slam Nigeria's Submission of Gas Flare Reductions for Carbon Credits', <http://www.carbontradewatch.org/news/nigeria.html>; 'Judge Orders Shell Nigeria MD and Petroleum Minister to Appear in Court', <http://www.climatelaw.org/media/Nigeria.shell.april06>.
- 266 Warwick J. McKibben and Peter J. Wilcoxon, 'The Role of Economics in Climate Change Policy', *Journal of Economic Perspectives* 16, 2, 2002, pp. 107-29, p. 126.
- 267 Hasselknippe and Reine, *op. cit. supra* note 150, p. 22.
- 268 Veronica Vidal, *La Aplicacion de Politicas sobre Cambio Climatico en el Sector Forestal del Ecuador*, Memoria de Investigación Doctorado en Gestión Ambiental y Economía Ecológica, Autonomous University of Barcelona, October 1999.
- 269 IPA Energy, *op. cit. supra* note 82, p. 3.
- 270 Grubb, *op. cit. supra* note 236, p. 138. World Bank officials, accounting firms, financial analysts and many businesses have all admitted, publicly or privately, that no ways exist to demonstrate that carbon finance is what made a project possible. In the words of PriceWaterhouseCoopers, 'financial additionality cannot really be checked by a validator'. Holcim Cement believes that the 'incentive provided by carbon credits, especially at their current price . . . cannot possibly prove decisive in investment decisions'. A New South Wales government spokesman attempting to defend a state greenhouse gas trading scheme accused of providing coal-burning power plants with huge windfalls recently flatly admitted that 'it is not possible to distinguish between production or investment decisions made as a result of the scheme and those that would have been made anyway' (Wendy Frew, 'Dirty Power Plants Making Millions out of Green Scheme', *Sydney Morning Herald*, 14 September 2005). Other trading experts as well have confessed that counterfactual without-project scenarios 'cannot be measured' (Carolyn Fischer, 'Project-Based Mechanisms for Emissions Reductions: Balancing Trade-Offs with Baselines' *Energy Policy* 33, 2005, p. 1807). There can be no single 'right' account of 'what would have happened without a project' (Erik Haites and Farhana Yamin, 'The Clean Development Mechanism: Proposals for Its Operation and Governance', *Global Environmental Change* 10, 2000, pp. 27-43).
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- 278 See <http://www.emissions.de/index.htm>.
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- 291 For example, European, South Asian and Southeast Asian forest history is full of examples of destructive state or commercial projects legitimised by the claim that without them, the so-called 'tragedy of the commons' would result in despoliation as growing swarms of individualistic farmers loot a landscape unprotected by private property rights. Once projects legitimised in this way go into operation, they often undermine commons regimes which function in ways which prevent such looting. As a result, the projects end up encouraging the destructive, no-holds-barred local behaviour they claim to have opposed. The attempt of baseline-and-credit accounting to determine 'business as usual' scenarios paradoxically transforms the scenarios into moving targets, making honest carbon accounting impossible, with negative results for climate.
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- 293 Van Vliet *et al.*, *op. cit. supra* note 272, p. 154.
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- 295 Haites and Yamin, *op. cit. supra* note 270; Trexler, *op. cit. supra* note 279.
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- 304 Biello, *op. cit.* *supra* note 217.
- 305 Driesen, *op. cit.* *supra* note 62, pp. 314-5.
- 306 Liroff, *op. cit.* *supra* note 166, pp. 16, 117.
- 307 *Ibid.*, pp. 83-6.
- 308 Jacob Werksman, 'The Clean Development Mechanism: Unwrapping the "Kyoto Surprise"', *Review of European Community and International Environmental Law* 7, 2, 1998, pp. 149-150.
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- 310 Ellerman *et al.*, *op. cit.* *supra* note 53, p. 318.
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- 448 'Charlotte's "Carbon Footprint"', *Daily Telegraph*, 5 March 2006.
- 449 Bill Leverett, 'Can't See the Good for the Trees', *Environment and Sustainable Technology*, June 2006, pp. 16-17, likens carbon offsets to the medieval trade in 'indulgences', vouchers that wiped out a specified amount of sin. 'Aggressive and unscrupulous selling of indulgences, and the realisation on the part of buyers that they didn't really do all they were supposed to do, was one of the factors leading to the Protest Reformation.'
- 450 See <http://www.carbonneutral.com>.
- 451 For an example, see Anatole Kaletsky, 'Workers of the World Unite! We Have Nothing to Lose but our Airline Tickets!', *London Times*, 9 March 2006, p. 21.
- 452 Quoted in Heinzerling, *op. cit. supra* note 55, p. 312.
- 453 See forms available at <http://cdm.unfccc.int/Projects/Validation>.
- 454 Soumitra Ghosh, personal communication, May 2006.
- 455 Adil Najam *et al.*, 'Climate Negotiations beyond Kyoto: Developing Countries' Concerns and Interests', *Climate Policy* 3, 2003, 221-231, p. 226.
- 456 Rob Bradley, World Resources Institute, Washington, DC.
- 457 Jacob Werksman, 'Greenhouse Gas Emissions Trading and the WTO', *Review of European Community and International Environmental Law* 8, 3, 1999, pp. 251-264.
- 458 FEASTA and New Economics Foundation, *op. cit. supra* note 97, p. 4.
- 459 *Ibid.* See also Climate Action Network Europe, 'Analysis of National Allocation Plans', Brussels, 2005, pp. 45-46 for the narrower complaint that NGOs in particular have not participated fully in formulating National Allocation Plans.
- 460 Greenspan Bell, *op. cit. supra* note 129.
- 461 Peter Barnes, *Who Owns the Sky? Our Common Assets and the Future of Capitalism*, Island Press, Washington, 2001.





# Chapter 4

## Offsets – The fossil economy’s new arena of conflict



*In which it is shown how projects designed to ‘compensate’ for continued fossil fuel use are helping to dispossess ordinary people of their land, water, air – and futures.*

### Introduction

Again and again, this special report has returned to the difficult truth that there is only one way of addressing the climate crisis: to keep most remaining coal, oil and gas in the ground.

To find a democratic way of doing so quickly seems a tall order in a world whose industrial societies are ever more dependent on fossil energy. As has been detailed in previous chapters, political and business leaders, experts and even many NGOs, while increasingly alarmed, even despairing, about climate change, have so far shown few signs of facing up to the end of the fossil era.

But, as this report has also stressed, there is at least one group – and a very large one – for whom the idea of leaving coal, oil and gas in the ground is not necessarily a revolutionary concept. These are people whose lives, livelihoods and land have already been damaged or devastated by fossil fuel exploration, extraction, refining, transport, use and all the institutions that surround them.

For this group, the struggle to stabilise climate – to stop the world’s above-ground carbon dump from overflowing – is likely to look like only one chapter in a much longer and broader history. When indigenous peoples who have lost their lands through oil drilling meet others whose Arctic hunting grounds are falling victim to climate change, when communities battling the construction of gas pipelines that would pass over their common lands encounter fenceline communities whose children’s health is ruined by air pollution from refineries or power plants, when opponents of airport expansion meet impoverished city dwellers who have lost their neighbourhoods to a hurricane strengthened by warming subtropical waters, awareness cannot but grow that, despite their differences, all such communities are facing a common struggle.

And now a new group is on stage: communities facing the new ‘carbon-saving’ projects that generate the credits bought and sold in the carbon market. Such projects – tree plantations, industrial gas destruction projects, and many others – not only help perpetuate the old problems of coal, oil and gas; they often bring new problems as well.

In order to generate carbon credits from trees or energy crops, plantation companies have to maintain their hold on land that ordinary people may need for other purposes. In order to generate carbon credits from burning the methane bubbling out of landfill sites, authorities have to fight to keep them open. In order to keep track of the carbon their agroforestry schemes generate, rural development organisations have to divert resources from their traditional work. In order to get carbon credits for halting flaring, oil companies have to go on drilling and polluting.



And all the while, new strip mines continue to be opened, oil continues to be spilled, and chemical pollutants continue to waft over power-generating plants. Every Clean Development Mechanism or Joint Implementation project set up under the Kyoto Protocol, or ‘carbon offset’ scheme launched by a private firm, helps perpetuate the fatal flow of fossil carbon out of the ground and into the air just as surely as any drill bit or transcontinental pipeline.

The fossil fuel economy’s new frontier, in short, has become a new battlefield. Added to classic local conflicts over extraction, pollution,

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*‘Middle East nations call oil the “blood of the earth”. No resource is more critical to [US] industry, security, and freedom... Let’s open up the Arctic National Wildlife Refuge to drilling... pump out of the Strategic Petroleum Reserve... clear the way for exploration on the Outer Continental Shelf... Tell Saudi Arabia, Kuwait, and the sheikdoms of the Gulf that if they do not begin to pump enough oil to cut the price to USD 20 a barrel by fall, they can look elsewhere the next time war clouds descend over the Gulf.’*

*Patrick Buchanan,  
US presidential candidate,  
2000*

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and labour abuse are now, increasingly, local conflicts over ‘carbon offsets’ – the projects that license and excuse the extraction, the pollution and the abuse.

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*‘Oil, the blood of the earth, has become, in time of war, the blood of victory.’*

*Henry Berenger,  
adviser to French Prime  
Minister Clemenceau, 1918*

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At first glance, these new conflicts may seem to be only indirectly connected to fossil fuels. People fighting industrial tree plantations in Brazil, for example, may never catch a whiff of the hydrocarbons whose release in Scotland the plantations are supposed to justify and excuse. But the struggle of the exploited community in Brazil and the polluted community in Scotland are, in a sense, one. In discovering the other’s struggle, each, in a sense, rediscovers its own. The Kyoto Protocol and other carbon market schemes springing up around the world, in globalising the defence of fossil fuels in a new way, are also globalising conflicts and movements over fossil fuels in a new way.

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*Oil is the blood of the earth, and should not be taken away. We cannot do that.’*

*Berito Kubaruwa, U’wa,  
Colombian Amazon, 1998*

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In the past, the deeper meanings of dependence on fossil fuel could be understood by coming to grips with the experience of oil wars, polluted farmland, lung disease, militarisation, strip mines, disappearing forests and degraded ice caps. But this is no longer enough. Today, anyone who wants to understand what fossil fuel dependence means also has to look closely at the ‘carbon offset’ and ‘carbon saving’ projects now being set up around the globe, under the auspices of the Kyoto Protocol’s ‘flexible mechanisms’, the World Bank and innumerable consultancies and other private firms; to ask questions about them; and to listen to the voices of those who are affected.

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*‘No blood for oil.’*

*Antiwar slogan,  
1990, 2002*

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Looking at tensions and conflicts in Guatemala, Ecuador, Uganda, Costa Rica, India, Sri Lanka, Thailand, South Africa and Brazil, this chapter brings together a few of these questions and voices. It attempts to introduce these struggles in the only way they can be introduced: through studying what actually happens on the ground.

The topic is difficult. As the last chapter has tried to indicate, the market in credits generated by ‘carbon-saving’ involves some of the most arcane and convoluted technical, legal and intellectual exercises ever devised in the service of perpetuating inequality and environmental folly.

But as elsewhere in this special report, a question-and-answer format may help bring the issues surrounding the new carbon market closer to open public debate. And as with previous chapters, it’s hoped that questions will continue to be raised even after the last page is turned.

## The beginnings – A story from Guatemala



The beginnings of the ‘carbon offset’ idea can be traced back at least as far as 1977, when the physicist Freeman Dyson speculated that large-scale planting of trees or swamp plants could be a cheap means of soaking up excess carbon dioxide in the atmosphere.<sup>1</sup>

But it wasn’t until 1989 that the first forestry project funded explicitly to offset greenhouse gas emissions was set up.<sup>2</sup>

Applied Energy Service, Inc. (AES), a United States-based independent power producer, had been looking for a cost-effective technique for reducing carbon dioxide emissions at a new 183-megawatt coal-fired power plant in Connecticut in order to make the plant more acceptable to state regulators. On the recommendation of the Washington-based World Resources Institute (WRI), AES decided to try to ‘mitigate’ the plant’s carbon emissions by offering USD 2 million to finance 10 years’ worth of ‘land-use activities and multiple-use forestry projects’ in Guatemala.

The activities would be undertaken by the organisation CARE with the help of USAID and the Guatemalan Directorate General of Forests.<sup>3</sup> CARE had been working in agroforestry since 1974 in the Western Highlands – one of the country’s few remaining highland areas with existing forest and the potential to offset significant quantities of carbon – and it was hoped that the AES money could leverage additional funds from other sources (debt-for-nature swaps) as well as volunteer services from groups such as the US Peace Corps.

Some 40,000 smallholder farmers would plant 50 million pine and eucalyptus trees in the course of establishing 12,000 hectares of community woodlots, 60,000 hectares of agroforestry and 2,880 kilometres of live fences. Some 2,000 hectares of vulnerable slopes in local watersheds would be protected and training provided for forest fire brigades to reduce the threat of fire and potential CO<sub>2</sub> release. During its first 10 years, the project would also train local communities so that its activities would become self-sustaining. In all, AES finance would make possible the sequestration of 15.5 to 16.3 million tonnes of carbon in Guatemala



– more than enough, it was claimed, to cover the 14.1 million tonnes the Connecticut plant would emit over its 40-year lifetime.<sup>4</sup>

*Did it work?*

No. In 1999, an external evaluation of the AES-CARE project showed that, even by its own carbon-accounting standards, it was falling far short of the 1 million tonnes of carbon it was supposed to have ‘offset’ to date.<sup>5</sup>

*What happened?*

The project was built around the assumption that using the area for carbon production would be compatible with improving local quality of life through increasing agricultural productivity, watershed protection, and improved fuelwood access. But the designers didn’t sufficiently grasp what the project would mean for farmers in their local political context.

First, many of the mainly indigenous subsistence farmers in the project area in the Western Highlands had been pushed to the edge of the agricultural frontier as land in the fertile lowlands became concentrated in the agribusiness sector. The Western Highlands encompass the country’s poorest communities and most environmentally degraded areas. More than 90 per cent of rural households live in absolute poverty,<sup>6</sup> and with population densities exceeding 100 people per square kilometre and a deforestation rate of 90,000 hectares per year, erosion and land degradation have led to an intensification of rural land use even as poverty rates increase. The average family in the Western Highlands has access to less than one hectare of land for farming.

Yet at the same time, land with official forest status was often declared off-limits to continued agricultural use under Guatemala’s 1996 forest law. The government was trying to re-locate control over communal forests into the hands of municipal authorities, and the law criminalised subsistence activities such as fuelwood gathering.

*Well, wasn’t that a good thing? It helped protect the carbon stored in the trees.*

What it did first and foremost was to take access to the trees out of the hands of ordinary people. One result was that conflict grew between municipal and village authorities and individual landowners. Another was that reforestation looked less attractive. Who wants to plant trees if by doing so you deprive yourself of daily necessities? A third result was increasing distrust of government forest offices, some of which were partly funded by the CARE/AES Agroforestry Project. Not a



Three scenes from the Western Highlands.

good outcome, whether your objective was people's welfare or long-term carbon savings.

Then, too, in the early years of the project, the tree species promoted were often inappropriate for the climate and for degraded land areas. Damage by animals and sabotage of replanted areas also limited the expansion of reforested areas.

*But what about agroforestry systems, which allow farmers to make use of the carbon-sequestering areas?*

Agroforestry systems are indeed more attractive to local farmers, as they serve multiple purposes (grazing, fodder and fuelwood provision, and subsistence or cash-crop components). But they typically take three to five years to become productive. That also makes them a difficult option for families with limited land.

*So it was hard to reconcile local people's needs with the goal of carbon production.*

In more ways than one. Another problem was CARE's need to channel more and more of its limited personnel and finance into monitoring and measuring carbon instead of trying to improve people's lives.

In the past, CARE had had a respectable record of promoting sustainable agriculture and agroforestry, and even some success in protecting water sources through reforestation, although less so in the Western Highlands. The organisation had a great deal of experience in training local community extension agents, providing seeds and tree nursery supplies, and training local people in soil conservation, fodder production and watershed management. CARE extension agents also provided advice and materials for improving grazing areas and soil recuperation, services that local project participants continue to evaluate positively.

The new carbon focus for its work, however, meant that finance and staff time began gravitating away from agroforestry towards reforestation, and away from farm extension work towards unfamiliar work in modelling and monitoring carbon emissions benefits.

*Couldn't the staff do both things at once?*

It's not so easy. Carbon accounting is specialised, complicated work. The market needs hard carbon numbers. You can't just look at a couple of trees and say that they will have soaked up the carbon equivalent of one 1000-kilometre airline flight by 2020. You have to look at growth rates, soil changes, interaction with local communities, how



Villagers in CARE's target area.



The research on Guatemala on which this section draws was carried out by Dr Hannah K. Wittman of Simon Fraser University. It was conducted in the context of a participatory evaluation (that included community mapping and a household-level questionnaire) of CARE’s agroforestry extension programme, operating in two villages in the municipalities of San José Ojetenam and Ixchiguán in the state of San Marcos in the Guatemalan Highlands.

much greenhouse gas the landscape would have released compared to what would have happened without the project. In fact, if you look carefully enough, as Chapter 3 has argued, you find you can’t do the calculations at all.<sup>7</sup>

The complexity (or impossibility) of this new job played real havoc with CARE’s original mission. CARE was used to training and agricultural extension, not carbon monitoring. In 1999, the organisation still didn’t have a methodology in place for measuring and monitoring carbon in agroforestry plots and forests.

An external evaluation conducted in 1999 by Winrock International laid down the law: the project’s certified carbon production had to be improved to make it ‘more acceptable as a CDM-type of project’.<sup>8</sup> A land-use mapping system using a Geographic Information System had to be developed together with remote sensing technologies that could track project changes. ‘Proxy areas’ had to be identified to serve as a ‘without-project’ baseline, and a carbon-monitoring programme for all project activities for which carbon credits would be claimed had to be set up.

In short, the Winrock evaluators, mindful of the requirements of the carbon market, reversed CARE’s own emphasis on livelihood over carbon sequestration. By 2000, CARE officials were openly discussing the possible need to redirect resources formerly channelled to extension activities to pay outside consultants to develop carbon accounting methodologies.

*But surely most of CARE’s agricultural extension work went on as before?*

Not necessarily. The new carbon rules were an incentive to CARE to shift its reforestation focus to larger farmers, who had more resources available to undertake reforestation projects and were thus better equipped to help CARE comply with its carbon sequestration commitments.

The new carbon focus of CARE’s work also made its objectives and premises harder to share with farmers. Even as of 2000–01, farmers were not being told what the project was about, nor how their reforestation and fire brigade efforts contributed to carbon mitigation, nor what the impacts on them of a changing climate might be. Nor were they even directly paid for their reforestation activities. That, of course, made it impossible to discuss with them their role in, or rewards for, offsetting Northern carbon emissions, or to ask them how their own knowledge might improve carbon sequestration design or dissemination. ‘Participatory’ carbon sequestration it was not.

## From the Netherlands to the Andes – A tale from Ecuador



The Dutch FACE Foundation, or ‘Forest Absorbing Carbon Dioxide Emissions’, was established in 1990 by the Board of Management of the Dutch Electricity Generating Companies. The original idea was to establish 150,000 hectares of tree plantations to compensate for the emissions from a new 600-megawatt coal-fired electricity generation plant to be built in The Netherlands.

‘For reasons of land availability and cost-effectiveness’, FACE explained, ‘greater emphasis has been placed on collaboration with developing countries and countries in transition’.<sup>9</sup>

Since 2000, the FACE Foundation has been producing and selling carbon credits from tree plantations as an independent, non-profit organisation. It trades the credits through two Dutch companies: Business for Climate (set up by FACE in 2002 jointly with Triodos Bank and Kegado BV) and Triodos Climate Clearing House.

The FACE Foundation has five projects worldwide: in Malaysia, the Netherlands, the Czech Republic, Ecuador and Uganda. The FACE Programme for Forestation in Ecuador S.A., or PROFAFOR, currently the largest, was set up in 1993. PROFAFOR has not been approved as a UN Clean Development Mechanism (CDM) project. But it does see itself as ‘potentially CDM-compliant’ – as sequestering carbon over and above what would have been the case otherwise, as providing social, economic and environmental benefits, and so on.

PROFAFOR originally thought to plant 75,000 hectares of trees, but later revised this goal downward to 25,000 ha. So far contracts have been signed for the plantation of 24,000 ha, and 22,000 ha have actually been planted. Initially, PROFAFOR activities were focused on the Andean region, or Sierra, and 8,000 ha have been planted under contract with 39 indigenous mountain communities. However, since 2000, contracts have also been signed in Ecuador’s coastal region.<sup>10</sup>

*Well, planting trees is bound to be a good thing for everybody involved, isn't it?*

It's not so simple. The Sierra sites used by PROFAFOR are located in a biome known by the colonial Spanish term *paramo* – which denotes high altitude plains or barren plateaus without woodlands. This zone was never forested, although it does support some trees. The dominant vegetation is Andean grasses from the genera *Festuca*, *Stipa*, *Calamagrostis* and *Deyeuxia*.



*Paramo soils.*

The dark, volcanic *paramo* soils have a complex particulate structure that, in the cold, moist climate of the Sierra, enables them to retain a great deal of water and organic matter. The soils have a far greater capacity to hold water than the vegetation covering them, although a layer of plants is important to keep moisture in the soils during dry seasons. In the humid but not high-rainfall Sierra environment, *paramo* soils are believed to be the main water reservoirs for the local inhabitants.

Although indigenous agriculture has been practised for hundreds of years up to 3,500 metres (the Sacred Valley of Cuzco, a centre of indigenous agriculture, lies at around 3,000 metres), the ecological balance of the *paramo* above 3,200 metres is very fragile. If the plant cover is removed even temporarily, evaporation from the surface increases and organic matter in the soil begins to decompose, resulting in reduced capacity to hold water. Once dry, the soils cannot recover their original structure and organic content, even when they get wet again.

The monoculture tree plantations PROFAFOR sets up to fix carbon are a bizarre and damaging innovation in this environment. The species used are exotics commonly used in industrial plantations elsewhere. Some 90 per cent are pine, either *Pinus radiata* (particularly in the provinces of Carchi and Chimborazo) or, to a lesser extent, *Pinus patula* (mainly planted in Cañar and Loja). Eucalyptus and cypress species make up another 4 per cent.

*But what's wrong with pine trees? PROFAFOR says that experiments with pine in different places get different results and that 'it cannot be categorically stated that pine is noxious for paramo soils.'*

PROFAFOR's non-indigenous pines dry out and crack the soils, not only because they disturb the existing vegetative cover, but also because they use a great deal of water. Organic matter and biological activity decline, uncompensated for by the fall of pine needles. Soils tend to be transformed from water retainers to water repellents, and surrounding flora and fauna are deprived of food and habitat.<sup>11</sup>

The threat is not only to local hydrology, but also, ironically, to local carbon storage capacity. Subject to less extreme variations in temperature and humidity than the drier Southern Andean zone known by the indigenous term *puna*, the *paramo* stores in its thick layers of soil vast amounts of carbon – perhaps 1,700 tonnes per hectare in the case of Carchi province, more than a tropical forest – but only as long as the soils are not exposed to the air and to increased erosion through planting operations and firebreaks.



Under the PROFAFOR project, villagers are obliged to construct firebreaks in which the *pajonal* grasses protecting the soil of the *paramo* are uprooted in a strip bordering the plantation, leaving the soil exposed.

In addition, the carbon in the trees is at risk from fire. In the community of SigSig in Azuay province, fires have already killed or stunted the growth of many pines. And fires are likely to recur continuously, given a fire-prone natural flora, traditional burning practices used to encourage fodder regrowth, strong winds, firebreaks that are too few and too narrow, and the lack of permanent wardens or fire-fighting equipment. The yellowish needles appearing on numerous local stands of *Pinus patula* signal the species' poor adaptation to the Andean environment, possibly indicating lack of a crucial micronutrient or of the mycorrhizal fungi that facilitate the tree's nutrient absorption in its native environment. Animals have meanwhile broken off many terminal shoots, giving rise to a bushy growth, which may prevent the trees from developing trunks suitable for the sawmill. Growth is slow.

*Wait a minute. Are you telling me that a project which was designed to absorb carbon may actually be emitting it?*

*‘At an assembly this engineer told us that thousands of dollars would enter the commune [for tree-planting]...that afterwards we were going to have sources of work till after the harvest, that we were going to collect who knows how much money. And the assembly signed...you know, sometimes we country people, we don’t know, we fall for it naively.’*

*SigSig community member*

Scholar Veronica Vidal found not only that the soils in PROFAFOR plantations are releasing more carbon than the firm takes account of, but also that the pine plantations are capable of absorbing less carbon than the firm claims. She concluded that the net carbon balance in PROFAFOR plantations may well be negative: ‘We are facing a lose-lose situation, in which those who most lose are the future generations that will have to face the problems of climate change.’<sup>12</sup>

*But according to PROFAFOR, local soils have been ‘degraded by extensive use’, and planting pine and eucalyptus in the paramo will restore them and prevent erosion.*

Although some of the sites used by PROFAFOR, situated between roughly 3,200 and 4,800 metres, have been used for grazing, they have not usually been cultivated, due to their remoteness and the harsh climate. The idea that the soils on these sites, which still fulfil their original functions, are being degraded in any way that pine plantations could remedy is simply false. As for erosion, it is the pine plantations and their firebreaks themselves that are likely to create the greater problem.

*Wait, I’m getting confused here. PROFAFOR says that this environment is in bad shape. Following the Spanish conquest, many indigenous peoples had to retreat to high altitudes because Hispanic and mestizo communities were spreading out in the inter-Andean valleys and the Spaniards were taking over land for large estates or private ranches. The land reform laws of 1964 and 1973 helped intensify the exploitation of the paramo even further by transferring higher, less productive areas of hacienda lands to indigenous peoples. Today, agriculture is being practised up to 3,900 metres, and cattle-raising up to 4,500 metres.<sup>13</sup> On its plantation sites, PROFAFOR says, the land is so degraded that farming is just ‘not profitable and the land is not suitable for subsistence activities’.<sup>14</sup> In this context, surely pine trees will be both an ecological and an economic improvement, no? And a way, as PROFAFOR puts it, of ‘taking advantage of land that is not being used and that could generate income to the local economy’?*

Confusion is only to be expected in a situation like this, in which PROFAFOR is saying one thing (largely to an international audience) and local people are saying another thing (largely to themselves).

But it’s useful to remember that there’s a long global history to the kind of claim that PROFAFOR is making, that a certain set of common lands are ‘waste’, ‘degraded’ or ‘unused’, and are idly waiting to be brought into the commodity market before they can become ‘productive’. It’s a claim that was used in the Americas during the colonial era to seize indigenous peoples’ cropland and hunting and gathering

grounds and transform them into the private property of Europeans. It has also been used in India, with more mixed success, since the colonial era, and in Africa as well. And it was used in Europe during the great eras of enclosure 200 and more years ago. In each of these cases the claim concealed and justified takeovers of land that was not only usable and ecologically rich, but used for all sorts of livelihood purposes. And the same is true of the *paramo*.

*PROFAFOR's says that it would have liked to use native species but that 'the majority of native species have almost disappeared, and local knowledge of indigenous tree species has been lost with the trees.'*<sup>15</sup>

Although the *paramo* zone has never been thickly forested, people there retain a knowledge of native trees. In one PROFAFOR area, San Sebastián de SigSig in Azuay province, villagers are easily able to name and describe uses for a dozen native species.<sup>16</sup> Yet the only Andean tree species used by the PROFAFOR project, and on a very small percentage of its sites, is *Polylepis incana*. This is a sub-*paramo* species and it too is being planted in monoculture.

*The English-language PROFAFOR brochure says that local people 'have a say in species selection and they prefer planting non-indigenous pine and eucalyptus species.'*<sup>17</sup> *And the Ecuadorean government sees PROFAFOR as contributing to its own plans for afforesting or reforesting 250,000 hectares in the Andean zone over 15 years.*

But what do local people themselves say about the pine plantations? Lets look at the history.

PROFAFOR said the communities would get both income and employment from the project. In addition to payments per planted hectare, they would get seedlings, technical assistance and training. They would have work for many years. They would have access to the plantations to collect mushrooms, resins, firewood and wood from thinning. And after 20–30 years they would be allowed to harvest the trees and sell the timber. All PROFAFOR asked in return was 100 per cent of the rights to the carbon fixed in the trees. It sounded terrific.

*I have a feeling you're going to tell me that things didn't turn out as promised.*

That's an understatement. Let's start by looking at what happened in three communities that signed contracts with the company between 1997 and 2000. Communities were offered payments of between USD 165 and USD 189 per hectare planted. But the cost of plants and technical assistance during the first three first years of plantation was then deducted, leaving the communities with about half of what they were initially offered (see Table 5).



Pine plantings in Ecuador.



Table 5. Offered and actual payments for plantations

Community	Area leased	Payment agreed per hectare (in USD)	Total amount offered (in USD)	Deductions for plants and technical assistance (in USD)	Amount disbursed to the community (in USD)	Percent deducted
San Sebastián de SigSig	400 ha	\$189	\$75,600	\$36,800	\$38,800	49%
Pisambilla	300 ha	\$165	\$49,500	\$22,500	\$27,000	46%
Mojandita Avelino Dávila	130 ha	\$165	\$21,450	\$9,750	\$11,700	46%

Source: PROFAFOR Forestation contracts

When SigSig community asked how much technicians were being paid for this technical assistance, they were told that PROFAFOR did not have the ‘capacity to ask for these reports . . . it is an administrative matter’. Meanwhile, the price of the planting stock doubled or tripled. And in the end it was the commune, and not PROFAFOR, as specified in the contract, that had to transport the stock from the nursery.

*Well, but little misunderstandings like this will crop up in every business transaction. You just have to get on with it. What does this have to do with the big picture of addressing climate change?*

It doesn’t end there. After having deducted the cost of the seedlings and technical assistance, PROFAFOR was obligated to pay 80 per cent of the remainder in three instalments during the first year after the contract was signed – as long as it wasn’t necessary to replant more than 25 per cent of the seedlings. The remaining 20 per cent was then to be handed over to the community ‘following complete fulfilment of the activities foreseen’ by the company for the second and third year after the contract was signed.

There were several problems here that villagers weren’t ready for. First, when trees die because they ‘do not adapt’, the community has to take on the cost of new seedlings for re-plantation. This happens quite frequently, because of the quality of the plants, the cold and windy conditions of the high-altitude plantation areas, or for other reasons. According to Mary Milne of the Centre for International Forestry Research, the re-plantation rate for PROFAFOR is ‘between 15 and 30 per cent and costs range between USD 865 and USD 5,820, which have to be absorbed by the communities.’<sup>718</sup>

A bigger problem is that because of the necessity of guaranteeing a long lifetime for the carbon sequestered in PROFAFOR’s trees, each community has to maintain the trees itself for 20–30 years before being allowed to harvest them and sell the timber. (More recent

PROFAFOR contracts demand even longer terms, of up to 99 years.) But the money runs out long before that. Nor are the communities given any information on where or how they might market the timber.

But it's not only a money matter. The PROFAFOR contract also ensures that the community turns over communal land and labour to the company for free.

*How does that work?*

Well, take land first. Under the contract, PROFAFOR gets – rent-free – large tracts of community land, which then cannot be turned to any other purpose than the production of carbon credits for the international market for 20 or 30 years.

This is not farmland. Cultivation goes on in other zones of communal property where the land has already been divided up among families. But PROFAFOR is wrong to say that the land is 'degraded', 'is not being used' or 'is not suitable for subsistence activities', and that it is idly waiting to be transformed into an asset by being 'incorporated into the national economy'.

In addition to having important hydrological functions, much of the land is used for grazing or could be rented out for that purpose. When the plantations are set up, families owning cattle may have to rent other lands for their animals, purchase fodder, or reduce their herds. This has an impact on family savings, not only because the monetary compensation villagers get from PROFAFOR is too small and must be used immediately for plantation expenses, but also because, by its nature, cash cannot play the role of the more stable, less liquid, traditional savings embodied in family cattle.<sup>19</sup>

Small wonder that local people feel that they have essentially transferred the land and its potential to generate savings for exclusive PROFAFOR use. As one said, 'We cannot touch or do anything on the area signed over.'

*And does PROFAFOR really also appropriate communities' labour for free? PROFAFOR claims that it provides thousands of well-paid jobs to indigenous communities in Ecuador.*

A lot of these jobs are, in fact, onerous and unremunerated tasks that the communities find themselves unwillingly taking on because of debt. In fact, PROFAFOR has not only failed to provide the jobs it has offered, but has also forced communities to hire people from outside to carry out PROFAFOR work. Local people, it turns out,

often do not possess the necessary technical skills PROFAFOR management plans require. PROFAFOR’s training – workshops for two leaders from each community, held in hotels or other venues in nearby cities – is widely seen as insufficient and too theoretical. In addition, the plantations are often too remote or subject to too extreme climatic conditions for local people to work on themselves.

Where tasks remain incomplete, the community has to fall back on its own unpaid labour pool – a system called *minga* – to fulfil its contractual obligations. Essentially, villagers are forced to exploit their own system of free communal labour in order to escape debt (see box below).

### *Minga: Organising Labour without a Market*

*Minga* is a communal pool of non-marketised labour typical of the indigenous communities of the Andes. Among the Quechuas, *minga* is directed at a specific collective material objective: planting and harvesting, or building or maintaining access routes, irrigation channels, schools or health centres. It is a complex mechanism for social interaction in which, generally for one day each week, both men and women, adults and children, are mobilised.

People working under *minga* receive no money. Rather, the system is one of reci-

procity and mutual help. When *minga* is granted to achieve individual purposes, the *mingado*, or beneficiary, enters into an obligation to return *minga* to the *mingueros*, or workers, at some point in the future.

As one villager from Chuchuqui said: ‘... they paid for dibbling for pine only, not for eucalyptus. And they did not pay me, I worked under *minga*... Where we could not work, they hired people from Quito and Chimborazo and the community paid the workers.’

*But surely the communities must have made some money out of the deal?*

Well, it’s instructive to try to do the maths. Look at what happened to SigSig. The community was to receive about USD 75,000 for 400 hectares of *Pinus patula* plantation to be sited on land a three- to four-hour walk from the settlement’s centre, at approximately 3,700 metres. Plotting, dibbling, planting and construction of the firebreak were carried out between June 1998 and December 1999. But some of the seedlings didn’t take, and the community had to hire outside labour to replant, using the funds supplied by PROFAFOR. The community built a house in the area of the plantation in mid-1999 and a guard was hired for the first two years.

In 2000 and again in 2004, fires swept through large parts of the plantation. The community had to take on most of the costs of replanting – including labour, transportation and food – with PROFAFOR

picking up only the costs of seedlings. The community has also had to take responsibility for replanting, due to maladapted trees dying. Yet the 20 per cent of the funds that should have been disbursed to the community three years after the contract was signed in 1998 have still not been received. And the plantation has to be maintained for nearly 15 more years until harvest. To top it off, if the community decides not to continue carrying out PROFAFOR's plantation work at that time, it must hand over 30 per cent of the income from the sale of the timber to the company.

In a workshop conducted with SigSig residents, an attempt was made to draw up a balance, showing how much the community had gained and lost from its agreement with PROFAFOR, although much of what the community put into the plantations cannot be satisfactorily quantified, such as the *minga* and the work of the community leaders. Calculations were made for plotting, dibbling, firebreaks, right of way, replanting, seedlings, maintenance, management, training and so forth.

The community concluded that, even without taking account of the value of the environmental liabilities the project has saddled local inhabitants with, or the cost of the plantations for another 15 years in terms of labour, inputs, insurance, security, tools, harvest and timber marketing, its losses already amount to over USD 10,000.

*Isn't there anything the community can do to save the situation?*

PROFAFOR has a lot of power in this context. Once a contract is signed, there isn't much communities can do to modify it, even when, as in SigSig, the agreement with the company was signed by only 50 community members when there were over 200 registered.<sup>20</sup>

PROFAFOR can even claim payment of compensation if its staff decides that a community has not fulfilled its obligations. This compensation can amount to up to triple the original payments to the communities, or many tens of thousands of dollars (see Table 6, below).

One villager reported: 'When I told the engineer Franco Condoy that we wanted to undo this agreement, he told us: "You cannot rid yourselves of the agreement, the commune is mortgaged."'

According to Ecuadorian law, Condoy is wrong. Communal property of indigenous communities is not subject to mortgages or land tax. Mortgages can only be contracted with private estate and landholders, individuals or corporate bodies.

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*'We made an assessment and...it was like a bucket of cold water. On doing our accounts, we realised how much money we have put in, and the trees are still small...Although we have no money left...we have to look for a warden to look after the plants and pay him, we have to prune, we have to put down manure, all the care and then the harvest...we ourselves have to find a [timber] market... How is that?! We are depleting our land, we are providing labour, doing harvesting and also giving 30 per cent.'*

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*SigSig community member*

Table 6. Penalty amounts in relation to paid and offered amounts

Source: PROFAFOR Forestation Contracts

Communities	Amounts initially offered (USD)	Amounts disbursed to community	Amounts of penalty clause	Penalty/disbursement ratio
Caguanapamba	n.a.	\$15,716	\$42,660	271%
San Sebastián de SigSig	\$75,600	\$38,800	\$108,000	278%
Pisambilla	\$49,500	\$27,000	\$81,000	300%
Mojandita Avelino Dávila	\$21,450	\$11,700	\$35,100	300%

In practice, however, Condoy is right, since even contracts involving common property are subject to penalty clauses and fines in the event of a breach, and PROFAFOR is well able to enforce mortgage-like arrangements by taking advantage of the inter-ethnic power relations that are a legacy of the colonial era in the region.

In one community, Caguanapamba, where the leaders who had signed the contract mismanaged the PROFAFOR funds they were entrusted with, community members did not get paid for the first planting operation and many seedlings were lost. The leader who succeeded them will now have to use the last instalment of funding in order to pay off the people who did the original planting. To complete the firebreak, he has had to rent a machine with community funds and rely on labour from *minga*.

*All right, I can see that things haven't all gone according to plan with carbon sinks in the Andes. But so what? Can you draw any general conclusions from all this?*

Carbon trading theory says that Southern countries have a hitherto unrecognised and unpriced resource in the form of spare or unused carbon-absorbing potential. By bringing this dormant, unexploited resource into something called 'the market', the theory goes, the South will be able to transform it into living capital or exchange it for cash or other things, adding to its wealth and to that of world society as a whole.

Over hundreds of square kilometres of the Ecuadorian Andes, new transactions involving carbon are indeed being made. But for the most part, they are not textbook 'market' transactions, nor do they address climate change, nor have they resulted in communities' realising new value from formerly unused assets.

Instead, common land, community labour and much of the paltry

but crucial savings of peasant communities have been transferred to a private firm for production of a new commodity which, although largely notional, has the material effect of shoring up an anachronistic pattern of fossil fuel use in The Netherlands. While claiming to ‘absorb’ carbon, PROFAFOR has in fact been absorbing Andean wealth while helping to enlarge the North’s ecological footprint in the South. Indirectly, it is also transferring wealth from future generations to the present, through its failure to address climate change.

The mechanisms that have done the real work in making this transfer possible are not the abstract, benign ‘wealth-creating’ trade mechanisms of economics textbooks. On the contrary, they are mechanisms that compel, discriminate, narrow choices, increase dependence, reduce transparency, and centralise power and knowledge in bureaucracies and expert institutions – just the sort of thing that ‘markets’ are commonly seen as combating. These mechanisms include:

- Unfamiliar tree species planted in exclusive monocultures and requiring extensive technical intervention.
- Non-transparent and exploitative written legal contracts backed by historically-ingrained unequal power relations, through which a private company retains 100 per cent of the carbon sink credits from plantations while local communities take on debt and responsibilities for maintenance and managing environmental impacts.
- An internationally disseminated discourse, according to which the lands to be used for plantations have been ‘degraded’ by excessive use and cannot be ‘profitably’ used for subsistence activities such as cattle-raising.
- Expert procedures of ‘verification’ of carbon flows that by their nature are resistant to public scrutiny.

One last technocratic mechanism that makes PROFAFOR’s manufacture of carbon credits possible is ‘forest certification’, a seal of environmental and social approval that was granted to 20,000 ha of PROFAFOR’s plantations in 1999 by the Forest Stewardship Council (FSC). The FSC is an independent international body with membership from both industry and NGOs, but the actual job of deciding whether a plantation meets FSC standards falls to private firms hired by the plantation company. In PROFAFOR’s case, this was the Société Générale de Surveillance (SGS), which has also certified PROFAFOR’s carbon sequestration.

These certifications reassure buyers who will never visit the Andes that PROFAFOR’s product is a valid, environmentally-friendly commodity from plantations that ‘strive to strengthen and diversify the



The section on Ecuador is extracted from the research of Patricia Granda, who studied the FACE-PROFAFOR project for Accion Ecologica, an Ecuadorian NGO, and the World Rainforest Movement.

local economy’ and ‘maintain or enhance the long-term social and economic well-being of forest workers and local communities’.

Ironically, the SGS certifiers noted as one of PROFAFOR’s strong points the ‘participation of local communities in decision-making’, as well as PROFAFOR’s continued ‘commitment’ to use native species.

Local communities’ lack of power to object to such claims helps lubricate PROFAFOR’S international trade in carbon credits. No community member interviewed by Patricia Granda in 2004 even knew of the existence of the FSC, nor of its Principles and Criteria, nor how they might be enforced. Here, too, environmental markets have failed to live up to their image in economics textbooks.

## The story continues – Carbon forestry in Uganda



One thing can be said for the US-Guatemala carbon trade mediated by CARE described in a previous section: it at least *attempted* to square the production of carbon for the North with local social goals. It would be difficult to say the same for a Norwegian project to grow carbon credits in Uganda that started up a bit later. Journalist Harald Eraker, who investigated the project, labelled it as a case of ‘CO<sub>2</sub>lonialism’.<sup>21</sup>

The Uganda project was closely tied to the construction of conventional gas-fired power plants in Norway by Naturkraft and Industrikraft Midt-Norge corporations. The plants were supported by Norway’s Labour Party, Conservative Party and Progress Party on the ground that they could be made environmentally-friendly through the purchase of carbon credits.

Some of these credits were to be provided by Tree Farms, a Norwegian forestry company operating in Africa. In 1995, Tree Farms (or Fjordgløtt, as it was then called) had received a grant from NORAD, the Norwegian aid agency, to explore the scope for activities in East

Africa.<sup>22</sup> The following year, the company set up in Tanzania and Uganda, and, later, in Malawi as well. In Uganda, it obtained from the authorities an extremely low-cost 50-year lease on 5,160 hectares east of the town of Jinja in the Bukaleba forest reserve on Lake Victoria, which it planned to plant mainly with eucalyptus and fast-growing pines. Bukaleba is one of more than 700 large and small state-owned central forest reserves set aside for forestry and forest protection, covering in all 7 per cent of the land area of Uganda.<sup>23</sup>

Shortly after the Kyoto Protocol was adopted in December 1997, Fjordgløtt increased its capitalisation and invited outside investors to buy shares. By 2000, Tree Farms controlled at least 20,000 hectares of land in the region and was in the process of acquiring a further 70,000 in Tanzania (see box on page 242: ‘The Money Came from a Place Far Away’: Tanzanian Land, Norwegian Carbon). The firm had planted 600 hectares, mainly with fast-growing pines (*Pinus caribaea*, *P. oocarpa*, *P. tecunumani*) and eucalyptus (*Eucalyptus grandis*), with Industrikraft Midt-Norge securing a first option on the associated carbon credits.

*What does the Ugandan government get in return for turning over its land to this company for 50 years?*

It gets a one-off fee of USD 410 and an annual rent of about USD 4.10 for each hectare planted with trees. The rent, paid in fast-depreciating Ugandan currency, is adjusted every 10 years according to the index of inflation as defined by the Bank of Uganda. No rent is paid for areas that the companies have not planted with trees. For six square kilometres of plantation established by 2001, then, Tree Farms had paid Uganda, when inflation is factored in, less than USD 11,000. For 50 years’ use of the same area of land, given current rates of inflation, it was set to pay less than USD 110,000.

*That’s outrageous!*

Yes. Several years after the deal was made, the deputy commissioner for forestry in the Ministry of Water, Lands and Environment, Ignatius Oluka-Akileng, told NorWatch, an independent news service monitoring Norwegian business activities abroad, that the authorities had recently realised that investors were ‘taking advantage of the system’ to get cheap land.

The fact that no rent is paid for areas not yet planted with trees makes such arrangements particularly attractive to land speculators. Yet it has proved hard for the Ugandan authorities to negotiate better terms. According to one reliable source, when Ugandan officials tried



Norwegian journalist Harald Eraker investigated early attempts by Norwegian power and forestry firms to sequester carbon on Ugandan land.



to negotiate a higher rent for 12,000 hectares in the Kikonda forest reserve with the Institut für Entwicklung und Umwelt, a German company headed by a former politician in the European Parliament, the company refused, saying: ‘Our plane to Germany leaves tonight; if you don’t sign now, there will be no deal.’

One problem is that forest authorities often simply don’t know how much foreign companies might profit from carbon trading (see box on page 271: No Need to Know? The Secret Economy of Carbon), or how long they plan to keep plantation land out of other uses to ensure that carbon continues to be stored on it. Forest authorities, to say nothing of local people, are also poorly equipped to confront ministers, politicians and government climate negotiators who take advantage of their position and inside knowledge of European corporate and governmental carbon plans to get funding that helps them gain control of ‘degraded’ state forest land.

*Well, it’s not as though the land is being used for anything else.*

Actually, it is. Since the 1960s and 1970s, local farmers and fishermen have moved in and out of Norwegian as well as German concession areas in Bukaleba. In fact, many people had migrated into the area already by the early 20th century. Although an outbreak of sleeping sickness then caused people to flee, when the tsetse fly vector was brought under control in the 1970s, people moved back to Bukaleba, and Idi Amin authorised a cattle-herding project in the middle of the reserve. Politicians under the Milton Obote regime in the 1980s also supported settlements in the forest reserve, one minister observing that ‘trees don’t vote, but people do.’<sup>24</sup> People were once again evicted in 1989–90. Crops were destroyed and houses torn down. Most evictees settled just outside the borders of the forest reserve, but then slowly started venturing back into the reserve to farm and fish. By 2000, five fishing and farming villages were inside the Tree Farms area in the Bukaleba forest reserve, and people from at least eight villages outside the reserve were cultivating the earth on Tree Farms’ lease. Iganga district, the location of the reserve, was densely populated with migrants from other parts of Uganda, as well as from neighbouring countries. With scant opportunities for work outside agriculture, and with growing numbers, pressure on land was strong.<sup>25</sup>

*But these people must be there illegally.*

According to state law, yes. But some farmers claim that they are the rightful owners, having bought the land they are now working back in the 1980s, or that the land they are farming has been owned by their family for generations.

In 2000, forest authorities told Tree Farms that farmers and fishermen living in or using the Bukaleba reserve had been served notice to vacate.<sup>26</sup> Tree Farms' managing director had left the job of evicting farmers to the authorities, stating that the company would not do 'the dirty job of throwing them out' itself.

Apart from the people from the fishing village Walumbe Beach, however, no one interviewed by NorWatch in 2000 said that they had been given notice to leave the reserve. Several had heard rumours about it, while others were clearly surprised at the news. Some hoped that they might be allowed to stay – a hope perhaps based on the fact that the environmental impact assessment comes close to recommending that fishermen be allowed to stay to avoid social unrest.<sup>27</sup> Almost every farmer and fisherman told NorWatch that they had no other place to go, let alone land to farm. All expressed fears for the future, and asked NorWatch to convey to the Norwegian owners of Tree Farms their request that they be allowed to stay, or at least to farm or fish in the reserve.<sup>28</sup>

*Can't Tree Farms provide jobs for local people to do?*

Tree Farms originally employed several hundred people to manage the Bukaleba plantations. In 2000, however, only 43 were left, according to the assistant administrator at the company's forest station, with only 20 working on the plantations themselves.

Tree Farms did allow farmers to grow maize, beans, and other products between the rows of planted trees during the first few years, until the trees grew too high for other plant life to grow beneath them. According to an EU-supported study, however, this scheme 'resembles a Middle Age feudal system but without the mandatory "noblesse oblige" and with the farmers paying for the bulk of the investment cost of the plantation establishment'.<sup>29</sup> Local farmers clear, plough, weed and manage the plantation areas, providing free labour for ground clearing and weeding.<sup>30</sup> Many farmers reported having to pay the firm cash or a share of their crop to be allowed to farm on the company's lands. One extended family with five adults working on one acre told NorWatch that the previous year they had had to pay 100 kilograms of maize to Tree Farms out of a harvest totalling 250 kilograms.<sup>31</sup>

Conflicts over land and unpaid labour were seen by several locals as threatening the project's future as a provider of both wood and carbon credits. Farmers have reportedly over-pruned trees, uprooted seedlings, and neglected weeding in efforts at surreptitious sabotage.<sup>32</sup> The Ugandan forest authorities, meanwhile, reprimanded Tree

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*'When the UWA people came with their tree-planting activities, they stopped us from getting important materials from the forest. We were stopped from going up to get malewa (bamboo shoots), which is a very important traditional food in the area and is a source of income. There were certain products that we used to get from the forest for the embalu ceremony (circumcision ritual) to be performed in the proper traditional way.'*

*Cosia Masolo, evicted village elder and father of 20 now living on a 0.3 hectare piece of land in Mabembe, Buwabwala sub-county*

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Farms for low technical standards and demanded that the company ‘do some real investment to produce quality tree stands’.<sup>33</sup>

The eucalyptus plantations have also suffered termite attacks. By 2001, the Tree Farms project was way behind schedule and suffering from lack of funds. To raise some quick money, the company was even forced to clear 50 hectares for commercial maize crops, arousing further criticism from the forestry authorities.

*But is the project at least storing some carbon?*

Tree Farms’ original management plan called for their plantations in the Bukaleba reserve to cover some 4,260 hectares of the company’s total area of 5,160 hectares by 2005. The firm anticipated being able to sell 500 tonnes of CO<sub>2</sub> credits per hectare, or 2.13 million tonnes of carbon dioxide in all.<sup>34</sup> The accounting that resulted in this figure was wildly optimistic.

For one thing, proper carbon accounting for the project would require following around thousands of evictees, many of whom would probably have to clear land elsewhere, resulting in carbon emissions attributable to Tree Farms. This would be impossible, particularly in a country such as Uganda, where poverty, landlessness, and political instability keep people constantly moving from one end of the country to the other.

For another, advance sale of carbon credits would require that the long-term political future of Bukaleba be known in advance, so that any re-invasion of the area could be predicted and its effects on carbon storage precisely quantified and insured against or compensated for. No basis exists for deriving numbers of this sort.

The future investment climate for such projects would also have to be calculated, as well as the probability of fires; the ecological effects of plantations on local patches of native vegetation through hydrological or other changes; the soil carbon loss attributable to clearing, ploughing and erosion caused by the project.<sup>35</sup> Even to attempt to do all this would drive the costs of the project through the roof.

If the original easy numbers posited by Tree Farms were accepted by the market, however, they would translate into carbon profits of the order of USD 10 million, well over a dozen times Tree Farms’ outlay on land. This would not include possible income from timber and wood sales. Turning Bukaleba into a Norwegian carbon plantation, moreover, would mean that its lands would not be available for long periods either for agriculture or for plumping up Uganda’s own carbon accounts.

*'The Money Came from a Place Far Away':  
Tanzanian Land, Norwegian Carbon*

In addition to its project in Uganda (see main text), Norway's Tree Farms company was also, by 2000, trying to acquire savannah land totalling over 70,000 hectares in Tanzania. Between 1996 and 2000, some 1,900 hectares of trees were planted in Mufindi and Kilombero districts at about 2,000 metres above sea level, where a seasonally moist climate provided lots of water for thirsty industrial monocultures of *Pinus patula* and *Eucalyptus saligna*.

The land had been leased from the government at USD 1.90 per hectare per year for a 99-year period on condition that it be used solely for forestry. Industrikraft Midt-Norge, the Norwegian power utility, meanwhile signed an options contract to pay Tree Farms nearly USD 4.50 per tonne of carbon dioxide supposedly sequestered. Over a 25-year period, this would give Tree Farms a carbon profit of about USD 27 million for one plantation complex, Uchindile, compared to USD 565,000 paid to the Tanzanian government in compensation for losing the opportunity to do anything else with the land.

Yet according to Tree Farms Managing Director Odd Ivar Løvhaugen, the firm would have invested in Tanzania's forestry sector regardless of possible carbon money. Løvhaugen emphasised that the company considers any trade in carbon credits merely as a supplement to those from conventional forestry. The Tree Farms carbon

project would thus be in breach of the requirements for carbon projects outlined by the Kyoto Protocol, which disallow credits from activities that would have been undertaken without special carbon finance.

Promising various social benefits, the company had succeeded in overcoming villagers' reluctance to cede their uncultivated land to the project, but in the end pledges to provide health and education services were not kept. Up to 500 local villagers were hired to plant and nurse the trees, build roads, or watch over the plantations. But planting took place only between December and March, so the work could not replace agricultural or animal husbandry occupations. In addition, the promised wage was too low – USD 1 a day, less than the government's recommended minimum – for anything other than daily subsistence. Many workers were not paid at all. Some workers interviewed by NorWatch in 2000 had eight months of wages owing to them.

'When we asked about the salaries', commented the residents of Uchindile village, 'the company told us that the money came from a place far away and that there was nothing that could be done about it'.

*Source:* Jorn Stave, NorWatch/The Future in Our Hands, 'Carbon Upsets: Norwegian "Carbon Plantations" in Tanzania', in Friends of the Earth, *Tree Trouble*, Friends of the Earth, Asuncion, 2000.

In sum, the project was not just a 'lose-lose' initiative for forestry and local people, as concluded by the EU-funded study,<sup>36</sup> but in fact a 'lose-lose-lose' state of affairs. The forestry effects of the scheme were

unhealthy, local villagers were suffering, and, as Trygve Refsdal, advisor to the Ugandan forest authorities, warned, Uganda was in danger of being subjected to a ‘new form of colonialism’:

Forest-planting in Uganda and other poor countries must, firstly, aim to meet the needs of the country and the local people, not the needs of the “international community.” If these can be combined, it’s OK, but experience from similar initiatives show that local interests, local needs, and traditional land rights are easily pushed aside, and that land conflicts arise when outside commercial interests enter.<sup>37</sup>

Growing international criticism ultimately prevented Tree Farms from claiming carbon credits for the project. But trees continued to be planted. After lengthy negotiations, the Norwegian owners conceded a little under 5 per cent of the land they had leased from the government to local people, but locals complained that they were still paid badly and that most of the labour was not sourced locally.

*But perhaps the Tree Farms experience will lead to less exploitative arrangements in the future.*

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*‘The biggest problem is how to secure food for the family. All our gardens, where we used to get food, have been taken over by the park rangers’.*

*Amina Gidongo,  
widow and mother of  
seven children living in a  
cave as a result of having  
been evicted*

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Sadly, the evidence suggests otherwise. The international carbon economy has since played a big part in stimulating land grabs by private developers in Uganda’s state forests. In 2003, several officials of the Ugandan government, including not only former vice-president Dr Specioza Kazimbwe but also officials familiar with the international climate negotiations, received large concessions for land suitable for afforestation and reforestation, while communities applying for concessions were left empty-handed and may be excluded from access to the forests in the future.

In addition, a carbon project of the Uganda Wildlife Authority (UWA) and The Netherlands’s FACE Foundation<sup>38</sup> to plant trees in a national park has contributed to a raft of social and environmental problems.

*Not again!*

I’m afraid so. The idea sounded innocent enough: to plant mainly native trees in encroached-upon areas inside and along the 211-kilometre-long boundary of Mount Elgon national park near the Kenyan border. In 1994, FACE undertook planting of 25,000 hectares and in return was given rights over the carbon supposedly sequestered – expected to amount to 2.11 million tonnes of CO<sub>2</sub> over 100 years.<sup>39</sup> UWA’s role was to manage the plantations, protecting biodiversity, safeguard park borders and so on. In 2002, certifiers for the Société Générale de Surveillance (SGS) found that a bit over 7,000 hectares had been planted.

As documented by Timothy Byakola of the Ugandan NGO Climate and Development Initiatives, no one denies that the project has had some good effects. It is acknowledged by locals as having improved regeneration on the boundaries of the park, particularly in areas that had been badly encroached on by agriculture, and as having increased streamflow from the forest. In 2003, the UWA-FACE project was even certified by SGS as a well-managed forest according to Forest Stewardship Council (FSC) principles (for more on the FSC, see 'From The Netherlands to the Andes – A tale from Ecuador' on page 247 and 'Brazil – Handouts for repression as usual' on page 302).

But according to local council officials, the project employs few people, and even then only during the planting period. And the evictions have made many homeless and hungry. In 2002, for instance, 300 families were evicted from disputed land by park rangers in Wanale, Mbale district. Complaining that they had lived on the land for 40 years, with some even holding government land titles, the families said that they were forced to seek refuge in neighbouring villages where they now live in caves and mosques. Fires have to be kept burning the whole night in the caves to protect against cold, and school-going children have had their studies disrupted. Dodging armed ranger patrols, children slip back to their families' former gardens to steal what they regard as their own food. Local people have lodged a case seeking compensation for destroyed property and the return of their land with the Mbale district court.

Hundreds of families have also been evicted in other locations, increasing social tensions.<sup>40</sup> In 2003, villagers disgruntled at UWA's militarised approach destroyed over 400 hectares of eucalyptus plantations in one night. In February 2004, *New Vision* newspaper reported that police were holding 45 people 'suspected of encroaching on Mount Elgon national park and destroying 1,700 trees' planted by the UWA-FACE Foundation project.<sup>41</sup> At a November 2004 community meeting held in Luwa trading center, Buwabwala sub-county, evicted locals insisted that they would go back to the forest rather than face starvation. The park warden, for his part, promised that anyone caught in the forest would be shot.

In fact, so tense has the atmosphere become that Members of Parliament from eastern Uganda have appealed to the government to de-gazette Mt Elgon's boundaries to ease the suffering.

*But maybe a little short-term pain was necessary in order to preserve the forest and its carbon.*

But what else gets destroyed in the process? It's not just a matter of

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*'The boundaries were made unilaterally, displacing over 10,000 people. The wildlife people who operate the park are very militarised, and have killed over 50 people. People feel that the government favours animals more than the people.'*

*David Wakikona, Member of Parliament, Manjiya<sup>42</sup>*

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Recent carbon forestry initiatives in Uganda have been researched by Timothy Byakola of the Ugandan NGO Climate and Development Initiatives.

temporary social dislocation, but also farmland shortages, environmental damage outside the park, and disrupted relationships between local people and the forest.

Today, with a population density of over 450 people per square kilometre in the farmlands around Mbale town and 250 per square kilometre in Kapchorwa district, the village areas bordering Mount Elgon national park are the most densely populated in Uganda, partly due to UWA evictions. Communities living close to the forest mainly grow food crops such as bananas, yams, sweet potatoes and vegetables at bare subsistence levels with few surpluses remaining for sale in local markets. Production of a few cash crops such as coffee and wheat is fast dwindling due to fragmentation of land. A typical peasant holding in the area averages between 0.25 and 1.0 hectares, with a household having an average of 10–15 members.

One result is that soils are quickly losing fertility. Most trees and other vegetation in the villages outside the park have been cut to provide fuelwood for cooking and building materials, leaving open denuded slopes. Deforestation has left land open to erosion as more areas are being converted to agriculture. In 1996, a one-kilometre landslide killed nine people in Budesi and Buwali parish, and during the heavy rains of the 1997 El Niño, another five by landslides in Bunabokha village in Budesi parish. Many locals are concerned that rivers flowing from the mountain are now carrying higher sediment loads, especially during rainy seasons. Communities and community development organisations note that fisheries have suffered.

*All this is due to there being too many people. That's not UWA-FACE's fault.*

It's not so simple. Land scarcity in the area is partly a result of the 'encroachment' of the national park on longstanding farmland, and the hand of the eviction authorities has unquestionably been strengthened by the project.

Social networks have also been endangered when UWA cuts off villagers' access to intact forest and its animals, bamboo shoots, firewood, mushrooms, vegetables, herbs, medicines, building materials, and wood used in circumcision ceremonies. In Bubita sub-county, council officials reported that firewood is now hard to find and that people have resorted to using banana leaves to prepare food, meaning they can no longer eat foods that require long cooking, such as beans. Goats and cows have to eat banana stems because the forest where they used to graze on grass is now a no-go area. In Buwabwala, many young girls are crossing over to neighbouring Kenya to earn money to buy land for their parents. Some have moved into prostitution and contracted HIV.

*But hasn't the project improved the economy of the region?*

Locals indignantly reject FACE Foundation claims that the project has increased incomes, improved standards of living work, provided jobs in planting and nurseries, and given out seedlings for villagers to plant on their farms.

### *A Funny Place to Store Carbon: Land Disputes at Mount Elgon*

Mount Elgon was first gazetted as a Crown Forest in 1938 and became a central forest reserve in 1968 and a national park in 1993. But the area has a long history of human occupation and use. Already in the 1930s, many families were living within the boundary, with about 70 heritable licences issued to families living and cultivating the forest reserve. In 1954, when the first working plan for Mount Elgon forest reserve was written, there were still around 30 licensed families living there.

Forest boundaries were originally marked by holes. In 1962, the forest was resurveyed and live boundary markers, including trees of exotic species, were put in place. However, the boundaries were not plotted on the national land grid, making it hard later on to establish where they had been when the markers were destroyed.

Between 1970 and 1985, during an era of breakdown of law and order, high levels of industrial timber exploitation and confused forest policy, some 25,000 hectares of prime high montane forest between 2000 and 3000 metres in altitude were destroyed or degraded through clearing for agricultural activities. Pit-sawing combined with swidden cultivation reduced the densely-forested lower slopes to barer landscapes colonised by Kikuyu grass (*Pennisetum clandestinum*).<sup>43</sup>

In 1993, Mount Elgon was designated as a national park. But local people were not consulted, in violation of the law. Families found inside the 1963 boundaries – some of whom had occupied the land for over 40 years – were given nine days to vacate, despite the understanding among many of them that the land was theirs and that such arbitrary evictions are in breach of land laws as well as the subsequent 1995 Constitution, which recognises customary ownership.

In August 2003, the Uganda Land Alliance started proceedings against the Attorney General and the UWA on behalf of the Benet people (also known as Ndorobo), who are indigenous to Mount Elgon. The Benet, who had been evicted in both 1983 and 1993, had decided to take the government to court to claim their land rights, and accused the UWA of harassment. The government cut off education and health services to the area and forbade local people from working the land. In October 2005, however, Justice J.B. Katutsi ruled that the Benet people 'are historical and indigenous inhabitants of the said areas which were declared a Wildlife Protected Area or National Park'. Katutsi ruled that the area should be de-gazetted and that the Benet should be allowed to live on and continue farming their land.<sup>44</sup>



## Costa Rica – ‘Environmental services’ pioneer



Costa Rica has always been one of the countries in Latin America keenest to host carbon forestry projects and other ‘environmental services’ market schemes. In the mid-1990s, looking for new ways to derive value from its forests, it decided to become the first country to bring its own government-backed and -certified carbon forestry credits into the global

market,<sup>45</sup> and even before Kyoto was signed was selling them to the Norwegian government and Norwegian and US corporations.

To work on the scheme, Costa Rica hired Pedro Moura-Costa, a Brazilian forester with experience in early Malaysian carbon forestry projects backed by New England Power of the US and The Netherlands’ FACE (see ‘From The Netherlands to the Andes – A tale from Ecuador’ and ‘The story continues – Carbon forestry in Uganda’). Moura-Costa in turn convinced Société Générale de Surveillance (SGS), one of the world’s leading testing, inspection and certification companies, to use Costa Rica as a test site for learning how to make money as a carbon credit certifier. On the back of his own experience, Moura-Costa then set up a new carbon consultancy, EcoSecurities.

Also significant was an early Costa Rican project called CARFIX, implemented by the voluntary organisation Fundación para el Desarrollo de la Cordillera Volcanica Central and funded by US Aid for International Development (USAID), the Global Environmental Facility and Norwegian financiers. CARFIX earned its North American sponsors carbon credits by promoting ‘sustainable logging’ and tree plantations on ‘grazed or degraded lands’, claiming to provide local people with income they would otherwise have to earn through export agriculture and cattle production that endangers forests.<sup>46</sup> Following the emergence of the Kyoto Protocol in 1997, Costa Rica pushed for the certification techniques it had pioneered to be adopted around the globe, and signed further carbon deals with Switzerland and Finland.

*Costa Rica’s enthusiasm for carbon offset projects seems to suggest that there are a lot of benefits in this market for the South, after all.*

The enthusiasm is not unanimous, even in Costa Rica. In fact, the boom in carbon forestry fits into an existing trend of support for monoculture tree plantations that has aroused concern among local environmentalists. Between 1960 and 1985, about 60 per cent of Costa Rica's forests disappeared due to cattle farming. Then there was a 'wood shortage' scare, and the government subsidised monoculture tree plantations extensively between 1980 and 1996. Helped by government incentives, over 130,000 hectares have been covered by the plantations over the past 20 years. By 2000, plantation monocultures covered over 3 per cent of Costa Rica's territory.

The Clean Development Mechanism (CDM), Costa Rican environmentalists fear, may help spread the monocultures even further. In the late 1990s, a government official active in the climate negotiations helped promote a new law supporting monocultures. Half of a 3.5 per cent fuel tax went into an 'environmental service programme' designed largely to give incentives to private landowners to be 'green' in a country in which 20 per cent of the land is national parks, a few per cent indigenous territories and the rest private land. Under the programme, a landowner might get, for example, USD 90 per hectare per year to conserve forest, or USD 500 per hectare over five years to establish a plantation. In return, the state gets rights to the carbon in the plantation, which it can use to bargain with in international negotiations.

*How much of this tax money goes to forest conservation, and how much to plantations?*

Most payments under the environmental services programme go to forest conservation, but 20 per cent is used to subsidise monoculture plantations and agroforestry. This has provoked objections from ecologists, academics and indigenous peoples who argue that monoculture plantations, often lucrative in themselves, can damage the soils, water and biodiversity that the programme is supposed to protect. The programme may also soon be supported by a tax on water and electricity.

*Still, 20 per cent is a pretty small proportion, isn't it?*

Overall, Costa Rica is today putting USD 1.5 million annually into financing 4,000–6,000 hectares per year of new plantations. That may not seem much, but Costa Rica's total territory is only a bit over 5 million hectares. A UN Food and Agriculture Organization consultant's study has suggested that the country set up even more plantations, up to 15,000 hectares per year, using carbon money. Another study estimates that, during the period 2003–2012, some 61,000 hectares of monoculture plantations, or 7,600 a year, could be established in so-called 'Kyoto areas'. That's well above the current rate,<sup>47</sup>



A typical ecosystem on which a Costa Rican plantation might be established. The carbon released from the standing trees, removed to make way for the plantation, often will not appear in project accounts.

implying that plantations could start competing aggressively for land that might otherwise be given over to secondary regeneration and conservation of native forest.

In addition, because CDM forestry projects, for economic reasons, would probably have to cover 1000 hectares and upwards (see below), they could well threaten the land tenure of people carrying out other forest projects in Costa Rica. The average landholding in the country is less than 50 hectares, with most parcels belonging to families.

*Well, sacrifices do have to be made for the climate, don't they?*

Ironically, one of the things that the Costa Rican case helps show is the impossibility of determining whether the climate would in fact benefit from a policy of pushing such projects. It also clarifies the problems of fulfilling the conditions set out in the Kyoto Protocol<sup>48</sup> for reforestation and forestation carbon projects.

Take, for example, a study on carbon projects done by the Forest and Climatic Change Project (FCCP) in Central America, jointly executed by the Food and Agriculture Organization of the UN and the Central American Environmental and Development Commission (CCAD).<sup>49</sup> The study shows that available soil use maps are not precise enough to show how carbon storage in prospective carbon sink areas (or ‘Kyoto areas’) has changed since the 1990s, and are also hard to compare with each other. That would make accounting for increased carbon storage over the period impossible.

The study also suggests that it would be impossible to show to what extent Kyoto carbon projects were additional to ‘those that the country implements as part of its forestry development projects’: ‘it is not possible to predict in what exact proportion these activities will be in or out of the Kyoto areas and any assumption in this respect is enormously uncertain’. In addition, Kyoto carbon projects could find it hard to factor out the anthropogenic activities to encourage natural seed nurseries that are being promoted and funded without carbon finance.

Above all, the FCCP study reveals the conflict between convenience and accuracy in measuring carbon. Measurements of soil carbon before and after the start of any carbon forestry project, it says, would be too costly, even though such measurements are a key to carbon accounting for plantations, which disturb soil processes considerably.<sup>50</sup> Similarly, the study accepts for convenience a blanket carbon storage figure of 10 tonne per hectare for grassland sites that could be converted to carbon forestry. However, Costa Rica boasts too wide a variety of grasslands and agricultural systems – most of them comprising a lot of trees – for such a figure to be used everywhere.<sup>51</sup>

*But can't you cover such unknowns just by taking the amount of carbon you think you might be sequestering and reducing the figure by a certain percentage, just to be on the safe side?*

That's what many carbon accountants do. The FCCP study, for example, suggests a 20 per cent deduction from the figure designating total potential of carbon sequestered to compensate for political and social risks and a 10 per cent deduction to compensate for technical forestry risks.

The problem with such 'risk-discounted' figures is that carbon sequestration is characterised by far more than just risk (see Chapter 3). Uncertainty and scientific unknowns are other realities that biological carbon accounting has to cope with.<sup>53</sup> In these conditions, it's impossible to be sure whether any particular numerical risk factor is conservative enough to compensate for the unknowns involved.

In Costa Rica, for instance, most monoculture tree plantations are less than 20 years old, with a trend towards planting just two species – *Gmelina arborea* and *Tectona grandis*. Pest or disease epidemics can therefore be expected, but their extent is incalculable. Furthermore, El Niño climate events may propagate enormous fires whose extent, again, cannot be calculated in advance. During the dry season of 1998, in the humid tropical zone where uncontrollable fires had never been reported before, over 200,000 hectares were burned. Part of this territory is under monoculture tree plantations. Given such realities, it's unsurprising that the FCCP carbon project study could give no reasons for its 'technical' risk figure of 10 per cent.

At present, there is also little basis for guessing how much carbon sequestered in Costa Rican trees will re-enter the atmosphere and when. The FCCP study simply assumes that 50 per cent of the carbon sequestered by a given project will remain so once the timber has been sold and used. However, the most common plantation species in the country (*Gmelina arborea*) is logged at least once every 12 years and most of the timber is used to manufacture pallets to transport bananas. The pallets are thrown away the same year they are made and probably store carbon no longer than a few years – though no one has done the empirical studies necessary to be sure.

The FCCP study also assumes that anthropogenic activities to foster natural seed nurseries will result in secondary forests that will be in place for at least 50 years. Accordingly, they make no deductions for re-emission of carbon. However, although current forestry law prohibits transforming forests into grasslands, both legal changes and illegal use could result in large re-emissions whose size would be impossible to determine in advance.



A 12-year-old plantation of *Terminalia* trees. The carbon released from eroded soils, such as appear in the photograph, is often missing in project accounts.

*Fossil Carbon vs. Tree Carbon:  
Two Environmental Historians Speak*

‘Carbon cannot be sequestered like bullion. Biological preserves are not a kind of Fort Knox for carbon. Living systems store that carbon, and those terrestrial biotas demand a fire tithes. That tithes can be given voluntarily or it will be extracted by force. Taking the carbon exhumed by industrial combustion from the geologic past and stacking it into overripe living woodpiles is an approach of questionable wisdom... Eliminate fire and you can build up, for a while, carbon stocks, but at probable damage to the ecosystem upon the health of which the future regulation of carbon in the biosphere depends. Stockpile biomass carbon, whether in Yellowstone National Park or in a Chilean eucalyptus plantation, and you also stockpile fuel, the combustion equivalent of burying toxic waste. Refuse

to tend the domestic fire and the feral fire will return – as it recently did in Yellowstone and Brazil’s Parc Nacional das Emas, where years of fire exclusion ended with a lightning strike that seared 85 per cent of the park in one fiery flash.<sup>54</sup>

*Stephen J. Pyne,  
Arizona State University*

‘Undeniably, having more trees will work in the right direction – but to a minute degree. For its practical effect [on climate change], telling people to plant trees is like telling them to drink more water to keep down rising sea-levels.<sup>55</sup>

*Oliver Rackham,  
Cambridge University*

To try to overcome such problems, the Global Change Group of the Tropical Agronomic Centre for Research and Teaching (CATIE), has been studying ways of putting non-permanent biological carbon in the same account as fossil carbon emissions, so that the two can be added and subtracted.<sup>56</sup>

One proposal is called ‘tonne-year’ accounting. The first step in tonne-year accounting is to determine the period that a tonne of carbon has to be sequestered in order to have the same environmental effect as not emitting a tonne of carbon. Because the lifetime of greenhouse gases in the atmosphere is limited, this time period should be finite. If the ‘equivalence factor’ is set at 100 years, then one tonne of carbon kept in a tree for 100 years and then released to the atmosphere is assumed to have the same environmental effect as reducing carbon emissions from a fossil-fuelled power plant by one tonne.

The second step is to multiply the carbon stored over a particular year or decade by the complement of this equivalence factor to find out what the climatic benefits are of that project for that year, and to limit the carbon credits generated accordingly. So the forestry project doesn’t have to be permanent to generate carbon credits; it will just generate fewer credits the more short-lived it is.

*Trust Me, I'm a Doctor:*

*Three Professionals on How to Measure Carbon Offsets*

'...I've often asked myself, when I've been flying in an aircraft, and I've flown over complex landscapes...how the hell can you measure carbon down there to a few per cent? The people that measure the carbon, either by satellite measurements or by flux towers, or by, sort of, sort of looking at the forest...all claim that within some reasonable degree of accuracy or precision you can do it. But when I look down on a complex landscape, I have to be honest, it's...um...I get very impressed if these guys are indeed correct. But, hey, the fact that when I look down in an aircraft and I think its going to be complicated, that's my gut instinct versus the scientific community's. And they claim they can demonstrate what precision and accuracy they can get... One has to go with what these scientists are saying.'<sup>57</sup>

*Dr Robert T. Watson, Ex-Chairman,  
Intergovernmental Panel on Climate Change,  
interview with Cathy Fogel, Washington DC,  
6 October 2001*

'If you know that saving the Amazon is better for the atmosphere than keeping one car off the road, then you ought to be able

to calculate how many cars are equivalent to saving the Amazon. The calculations may be difficult, but I don't see why the problems should be insurmountable.'<sup>58</sup>

*Dr Richard Tipper,  
Edinburgh Centre for Carbon Management*

'Baselines are not a question of imagination. At the International Centre for Research in Agroforestry, we have developed a method for monitoring and evaluation of environmental and development projects that involves project baseline measurement for any response variable that one deems important (e.g. household income, adoption of improved farming technologies, etc.). This same method could easily be used for carbon accounting and take the guesswork out of 'without-project' baselines, additionality and leakage. The simple solution to a problem that has been overcomplicated in the debate is: just measure it! It is really not that hard. Environmental monitoring is a mature field and rigorous methods exist for attributing project impact.'<sup>59</sup>

*Dr Louis Verchot, Lead Scientist for  
Climate Change, International Centre for  
Research in Agroforestry*

*You still haven't mentioned any problems.*

The first problem is that you still have to measure the carbon stored by a project over a particular year or decade. That runs into the same problems with ignorance, uncertainty and all the rest mentioned above. Second, no one knows how long the 'equivalence time' should be. Figures ranging all the way from 42 to 150 years have been mentioned.<sup>60</sup> Another difficulty is that even if one settles on a figure of,



A new teak plantation near the San Carlos River in northern Costa Rica. Exposed soil heated by direct tropical sunlight is likely to release significant quantities of carbon.



A Costa Rican acacia plantation. The logs in the foreground have been discarded and left to rot. In a few years, they will release all their carbon back to the atmosphere.

say, 100 years, it does not necessarily follow that carbon sequestered for 10 years will have one-tenth the climatic effect of carbon sequestered for 100 years. Again, the problem is not that any given patch of trees is temporary, but that there’s so much uncertainty and ignorance about how to measure its relevance to climate. It’s not a matter of calculable ‘risk’, but something far more recalcitrant to market accounting.

In addition, tonne-year accounting can make what allowances it does make for uncertainty only at the cost of generating carbon credits slowly. That makes it unattractive to business. It also militates against small projects. The CATIE study found that at prices of USD 18 per tonne – more than actual prices as of 2006 – the tonne-year methodology would allow profits only in projects of over 40,000 hectares.

Then there is a method called ‘average storage adjusted for equivalence time’ (ASC), which generates credits more quickly.

Other methods include the UN’s ‘temporary’ Certified Emissions Reductions (tCERs), which expire at the end of the Kyoto Protocol’s second commitment period and must be replaced if retired for compliance in the first commitment period; and ‘long-term’ credits (ICER)s, which expire and must be replaced if the afforestation or reforestation project is reversed or fails to be verified. None of these approaches, however, address the basic problems of uncertainty and ignorance described in Chapter 3. In fact, not even the atmospheric lifetime of carbon dioxide emissions can be pinned down with any precision, as mentioned above. For business, this translates into accounting headaches and high economic risk.

In the end, CATIE came to the conclusion that CDM forestry projects had to be big in order for it to be worthwhile to fulfil all the accounting and other requirements. Out of a total of over 1,500 simulated scenarios, only 8 per cent made it possible for projects under 500 hectares to participate. The mean size of a profitable project was 5,000 hectares. One way out would be to bundle smaller projects together and employ standardised assumptions and procedures, but again that would magnify accounting mistakes and also would be hard to achieve, given the Costa Rican land tenure system.

*You’ve talked a lot about how much harder it is to measure how much carbon is sequestered in tree projects than simply to keep fossil carbon in the ground. But maybe we don’t need to compare carbon sequestered in trees with carbon stored in fossil deposits. We should think of forestry carbon projects like Costa Rica’s as replacing carbon released from forests, not as replacing carbon released from fossil fuel combustion. This should solve the measurement problem, since all we have to do is compare biotic carbon with other biotic carbon.*

No, the same problems hold: how do you quantify carbon savings against an unspecifiable baseline, given the biological and social unknowns governing carbon flows in the above-ground systems? (See Chapter 3.)

Yes, climate change can be addressed by trying to conserve forests just as it can be addressed by keeping fossil fuels in the ground. But it can't be verifiably addressed by burning forests and then 'compensating' for this burning with biotic projects, any more than it can be verifiably addressed by mining fossil fuels and then 'compensating' for the associated carbon transfer to the biosphere with biotic projects.

*What's the future for Costa Rican carbon forestry projects?*

The government has recently declared that it will put more effort into non-forestry projects such as windmills and hydroelectric schemes, on the grounds that they are less complicated and yield higher-priced carbon credits. On the other hand, companies such as the US-based Rainforest Credits Foundation<sup>61</sup> continue to be eager to set up new carbon schemes in Costa Rica, often without much prior consultation with the government.



Research for the section on Costa Rica was done by Javier Baltodano of Friends of the Earth, Costa Rica.

## India – A taste of the future



If countries in Latin America pioneered carbon projects, one of the countries to attract the most long-term interest among carbon traders and investors has been India.

By August 2006, the country led all others in number of CDM projects registered with 82, followed by Brazil with 58.<sup>62</sup> Many more are in the pipeline.<sup>63</sup> The Indian government is also pressing for nuclear power and large hydroelectric dams to be allowed to receive CDM funding, and, according to some observers, hopes to use carbon money for developments in the country's Northeast that would dispossess local people of water, land and forests.<sup>64</sup>

nuclear power and large hydroelectric dams to be allowed to receive CDM funding, and, according to some observers, hopes to use carbon money for developments in the country's Northeast that would dispossess local people of water, land and forests.<sup>64</sup>

With about 350 projects at various stages of registration, the poten-



tial for non-plantation CDM projects is estimated by one source at more than 170 million tonnes of carbon dioxide equivalent per year, including 90 million tonnes from renewable energy schemes, while the potential yield of land-use and plantation projects is put at about 78 million tonnes of carbon dioxide equivalent annually.<sup>65</sup> A CDM National Strategy Study predicts that India could take 10–15 percent of the global CDM market.

As social activist Soumitra Ghosh and researcher Hadida Yasmin explain, a ‘friendly and indulgent’ national CDM authority which ‘clears CDM projects in India almost as soon as they are submitted’, a ‘“clean” and aggressive corporate sector’, and a ‘happy band of new-age national as well as transnational validators, consultants and project developers have made India a veritable paradise for CDM projects.’<sup>66</sup> News about CDM projects and the income they will supposedly generate is boosting stock prices in even some of the worst-polluting sectors, such as sponge iron (see below). Accordingly, many of the big names of the Indian corporate world – Reliance, Tata, Birla, Ambuja, ITC – are moving in, in spite of earlier apprehensions that market uncertainty and the complex procedures that CDM involves would put off big companies.

Some of these firms are coming up with smaller-scale projects in renewable energy and energy efficiency. At an ITC paper and pulp operation in Andhra Pradesh, for instance, six separate CDM projects are being arranged inside the same factory. Bundled hydro and wind projects—and biomass—are also industry favourites due to a less risky registration procedure. However, nearly 85 per cent of Indian carbon credits are being generated by only two projects. Both projects – set up by blue-chip corporations SRF in Rajasthan and GFL in Gujarat – destroy HFCs, which are extremely powerful greenhouse gases used in refrigeration, air conditioning, and industrial processes.<sup>67</sup>

Inevitably, social activists are raising questions about whether such one-off gas destruction projects provide ‘any credible sustainable development’ to local communities.<sup>68</sup>

*Why shouldn’t such projects be beneficial to local communities?*

First, because HFCs are so bad for the climate, projects that destroy them can generate huge numbers of lucrative credits merely by bolting a bit of extra machinery onto a single existing industrial plant. As a result, there are no knock-on social benefits other than providing income for the machinery manufacturer and some experience for a few technicians. Second, such projects don’t help society become less dependent on fossil fuels. They don’t advance renewable energy

sources, and they don't help societies organise themselves in ways that require less coal, oil or gas. Third, by ensuring that the market for credits from carbon projects is dominated by large industrial firms, they make it that much more difficult for renewable energy or efficiency projects to get a foothold.

*Don't such projects also provide perverse incentives for governments not to do anything about pollution except through the carbon market? If I were a government trying to help the industries in my country get masses of carbon credits from destroying a few HFCs, I would hesitate to pass laws to clean up HFCs. Such laws wouldn't make industry any money. In fact, they would cost industry. Instead, why not just allow the pollution to go on until someone comes along offering money if it is cleaned up?<sup>69</sup>*

That's a question that's understandably going through the minds of government officials in many Southern countries (as well as of those of corporate executives in the North). As a result, it's not clear whether the CDM market is actually a force for less pollution or not.

Another danger is that HFC projects could undermine the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer. While this Protocol mandates phasing out of HFCs in Southern countries by 2010, the CDM has now provided a perverse incentive to hike production of HFCs in order to cash in as much as possible on credit sales. Although the CDM board has raised the issue with governments, no decision has been made to limit the number of HFC credits or bar new plants from entering the CDM market.

*But at least HFC projects don't do any harm to local people, right?*

That's a matter of opinion. If the industry getting the credits is hurting local people, local people may well disagree with the project. Near Gujarat, at Fluorochemicals Limited, proprietor of one of India's first projects to be registered with the CDM, villagers complain of air pollution's effects on their crops, especially during the rainy season, and believe the plant's 'solar oxidation pond' adds to local water pollution.<sup>72</sup>

Villagers near another factory hoping to benefit from CDM credits, Rajasthan's SRF Fluorochemicals, believe that their aquifers are being depleted and their groundwater polluted, leading to allergies, rashes, crop failure, and a lack of safe drinking water.

*What about other industrial projects?*

One of the industries that is benefiting most from the CDM is the notoriously dirty sponge iron sector.

### *The Fate of Small Projects*

The CDM’s market structure biases it against small community-based projects, which tend not to be able to afford the high transaction costs necessary for each scheme (see Chapter 3). In India, for example, the Barefoot College has trained 20 – 30 solar engineers, who have installed grid solar power stations and solar lanterns across the country. Such projects ‘have difficulty accessing CDM finance,’ according to Bunker Roy of the College, due to the need for ‘upfront financing’ and ‘bundling’ projects together to save on transaction costs.<sup>70</sup>

Another project, the FaL-G Brick Project, aims to promote fly ash bricks as an alternative to burnt clay bricks in the Indian construction sector. Fly ash, a waste product from thermal power plants, is mixed with lime from the acetylene industry and gypsum from chemical plants to form a material for making bricks that requires less fossil energy than conventional materials.

The process is unsustainable in that it relies on a fossil fuel-intensive industry, whose

lifespan it would extend through sales of carbon credits. In addition, fly ash poses a health hazard to the workers who handle it. The project thus adds to the numbers of people suffering health risks due to fossil fuels in two ways: by prolonging fossil fuel pollution around thermal power plants buying the credits, and by bringing a new group into contact with hazardous fly ash.

The FaL-G project would ordinarily be subject to the same market handicap as small solar projects, since the brickmakers to be included tend to be small operations and the ‘volume of emission rights generated by an individual plant is clearly not sufficient to treat an individual plant as a separate small-scale CDM project’. The World Bank’s Community Development Carbon Fund, however, has stepped in to make it possible to ‘bundle’ together hundreds of these tiny plants – located in states as distant from each other as Tamil Nadu, Karnataka, Orissa, Uttar Pradesh and Punjab – under a single project umbrella, streamlining costs.<sup>71</sup>

### *What’s sponge iron?*

Sponge iron is an impure form of the metal obtained from removing the oxygen from iron ore. Its manufacture requires a lot of water and energy supplied by gas or, more frequently, coal.

### *In what ways is it environmentally damaging?*

In Chhattisgarh state, the most polluted in the country, sponge iron factories have contaminated drinking water and, by lifting huge quantities of water from rivers and irrigation canals, lowered water tables.<sup>73</sup> Sponge iron works, which are subsidized by the state, also cause heavy air pollution, often in breach of pollution control norms, affecting health and agriculture. As of 2005, 33 out of 48 sponge iron units in Chhattisgarh were operating without having obtained statutory clear-

ances from the state's Pollution Control Board.<sup>74</sup> According to a report of the State Pollution Control Authority, 36 of the units are in violation of environmental pollution laws. In Siltara area of Raipur district, land near 18 sponge iron units has become barren.<sup>75</sup> Government soil tests from 30 separate sites in various villages found the soil to be contaminated with iron, affecting crop yields. Stored paddy seeds fail to regenerate, and even 50 kilometres away, production has suffered. Vegetables grown in the area turn reddish due to excessive air pollution.

In the last eight years alone, 17,200 hectares were acquired for industrial purposes in the state, displacing many villagers. Entrepreneurs typically acquire their first parcel of land through official channels such as the State Industrial Development Corporation, which in turn acquires its holdings from private owners at below market rates. The entrepreneurs are then able to buy adjoining parcels at bargain prices after the pollution from their factories renders them useless for farming. Sellers are often left with few resources to restart their lives elsewhere, and are seldom able to find employment at the factories. And many new plants are contemplated or under construction.



The internet face of Jindal Steel and Power. The reality is quite different.

*It sounds like there are some serious problems with this industry. But that's a good argument for CDM involvement, isn't it? Isn't it the function of CDM to help clean things up?*

Is the CDM helping to clean the industry up, or is it providing new finance and a pleasant image for a socially and environmentally damaging status quo? Let's look at the evidence.

Start with the biggest sponge iron operator, Jindal Steel and Power Ltd. (JSPL). JSPL runs what it claims to be the largest sponge iron plant in the world near Raigarh city, where it is developing not one but four separate CDM projects that have already been approved by India's government and validated. JSPL's carbon projects are likely to

make it one of the largest energy CDM operations anywhere in the world, generating many millions of tonnes of so-called carbon dioxide ‘reductions’. Spread over 320 hectares, the plant has simply wiped out the once flourishing agricultural village of Patrapali, which it still gives as its address.

Concerned citizens and a voluntary organization have filed a case against JSPL in the state High Court over a proposed expansion of its existing facilities. City dwellers object to increasing air and water pollution and ill health. Rural dwellers are angry at losing their lands. JSPL’s plans include a 20-billion-rupee expansion over three surrounding villages which, with a population of close to 3000, are located on fringe of mixed deciduous, sal, bamboo, and teak forests. Agriculture is a major occupation, and villagers are also engaged in the collection of non-timber forest produce. In 2005, villagers from 22 communities submitted written resolutions that they did not want to sell or donate their land to industry.

For more than a decade, villagers from 18 communities have also opposed a dam JSPL wants to build on the Kurkut river to cater to its needs for water and power, managing to halt construction when various village heads wrote to the Chief Minister. Having already lost 240 hectares of their revenue land to JSPL, farmers in Khairpur village in Raigarh are meanwhile refusing to surrender any more, and complain about musclemen and touts sent by JSPL to pressure them to capitulate. They are also concerned about a new reservoir JSPL is constructing that would inundate their entire agricultural area (which is irrigated and yields two crops a year) and force them to migrate in search of other work.

*Aren’t there ways of mediating between the factory and local villagers?*

A public hearing on the JSPL expansion – mandated by Indian law – was scheduled for 4 January 2005. But local people’s concerns and objections could not be heard, because JSPL brought a large number of supporters and the proceedings were disrupted. The meeting was rescheduled for 18 January 2005 and then 29 January. An alliance of local civil society organizations pointed out that both postponements were made without the statutory 30 days’ notice period, and that the Hindi version of the report and executive summary had not been made available. In the event, no actual public hearing was conducted on 29 January, in spite of the fact that more than 10,000 people showed up. Instead, people were asked to queue up to register their complaints and opposition without interacting with the public hearing panel. The environmental impact assessment prepared for the expansion does not properly address the project’s impact on local forests

or the dumping of solid wastes and fly ash and the associated heavy metal contamination of water sources. A ‘no objection’ certificate JSPL claimed to have obtained from the village council of Tamnar for a thermal power plant has meanwhile proved to be a forgery.

*But surely JSPL must be an isolated case.*

Unfortunately, no. Villagers are also protesting the officially-sanctioned acquisition of 21 hectares by Monnet Steel Industries, another CDM sponge iron beneficiary, in Singhanpur, saying that ‘we will die but will not give up our land and homes’. In May 2005, Nalwa Sponge Iron, MSP Steel, Salasar Industries, Shivshakti Factory and Anjani Steels – all CDM beneficiaries – were issued a notice by the local forest officer regarding soot pollution damaging trees and crops. None of the industrial units in the area is following environmental laws of the country and the state, the notice said. All of the firms have seen resolutions passed against their land acquisitions in local village assemblies.<sup>76</sup>

MSP Steel, whose CDM project has already been approved by India’s government, has meanwhile illegally occupied reserved forest in the Jamgaon area of Raigadh next to its plant, stirring protests and resolutions from the assemblies of nearby villages. According to a doctor from the Jamgaon Primary Health Center, in the year since the plant went into operation, cases of asthma and other respiratory and gastric diseases have increased 20 times. MSP has also felled trees and started building a factory and road on farmland in Manuapali without proper permission. In March 2005, local villagers blocked a national highway in protest against Monnet’s plans to acquire 120 hectares of their land. Villagers have also protested and petitioned against land acquisition by Ind Agro Synergy Ltd., another firm with an already validated CDM project in the works. Many firms are also in breach of the law stating that electrostatic precipitators have to be in operation to curb air pollution.

*But perhaps it’s just in Chhattisgarh that the CDM is associated with such operations.*

Again, no. In West Bengal, a sponge iron plant run by Jai Balaji Sponge Limited of Kolkata in Ranigunj, Burdwan has a waste heat recovery project set to generate over 400,000 tonnes of carbon dioxide equivalent in credits through the Kyoto Protocol’s first commitment period. In 2004, angry residents of nearby Mangalpur village forcibly closed the gates of the factory in a symbolic protest against pollution. They claim that the firm dumps fly ash on open fields, agricultural land, and a children’s playground, and that emissions have increased. Old people and children, the worst sufferers, complain of

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*‘There are some local NGOs complaining that the CDM is just there to clean up after the North. But these groups don’t go to [United Nations] Conferences of the Parties.’*

*Ram Babu,  
PriceWaterhouseCoopers,  
Mumbai, 2005*

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breathing problems and persistent colds and coughs. Walls and windows of hutments in the village are covered with black spots. According to one villager, paddy production is decreasing each year. Numerous fines have been levied against the plant for pollution since 2001. Union leaders say that pollution has been reduced, but charge management with running the plant’s electrostatic precipitator only during the day, to save money.

Some 90 per cent of the factory’s workers, mostly illiterate and from neighbouring states, are temporary. Non-unionised workers get only USD 1.50 per day and sometimes have to work 16 hours a day on a no work-no pay basis. No drinking water or toilets are available. Most workers, permanent staff and union leaders interviewed at the factory were unaware of the CDM project and of carbon trading and its financial implications. One local NGO worker had learned about the CDM project only from the *Telegraph*, a newspaper published in Kolkata.

Another CDM project of about the same size, aimed at using waste heat from kilns and blast furnace gases from pig iron production to generate electricity, is run by SRBSL in Durgapur, Burdwan. Most of the 1700 workers are contract labourers, who get only USD 1.30–1.50 for 12 hours’ work, without the medical benefits provided for the 30 staff. Releases of dust, smoke and gases from the plant again result in respiratory problems among local residents, especially the very young and very old. Workers’ living quarters are covered with a thick layer of coal dust. Water tables and paddy yields have declined, and ponds or ring wells always remain covered with a foul, thick layer of black dust. Local farmers and labourers have also been deprived of what was common land used in part for cultivation. None of the people interviewed – the management representative, the union leader, factory workers or villagers – were aware of carbon trading.

West Bengal polluting firms in other sectors are also cashing in on the opportunity to get carbon money. Jaya Shree Textiles in Prabasnagar, for example, has upgraded boilers and modified motors to reduce energy use, but still pollutes the locality. Its workers remain uninformed about the extra finance supplied by its CDM project.

*What about smaller projects – ones that don’t generate so many credits? Are there any local objections to them?*

Some of the many biomass carbon projects planned for India are also rousing local concerns. One example is the 20-megawatt RK Powergen Private Limited generating plant at Hiriyur in Chitradurga district of Karnataka, which is currently preparing a Project Design Document for application to the CDM. According to M. Tepaswami,

a 65-year-old resident of nearby Babboor village, RK Powergen is responsible for serious deforestation. 'First, the plant cut the trees of our area and now they are destroying the forests of Chikmangalur, Shimoga, Mysore and other places. They pay 550 rupees per tonne of wood, which they source using contractors. The contractors, in turn, source wood from all over the state.' Another villager claimed that 'poor people find it difficult to get wood for cooking and other purposes'. Jobs promised by the firm, Tepaswami complains, were given to outsiders.

Meanwhile, employees at the Karnataka Power Transmission Corporation claim that its 'equipment is adversely affected due to the factory's pollution', while local villagers complain of reduced crop yields and plunging groundwater levels. Project managers deny the allegations. 'If there is deforestation', said plant manager Amit Gupta, 'then local people are to be blamed because they are supplying the wood to us'.<sup>77</sup>

Biomass projects have generally not been designed to benefit the agricultural sector or increase farmer incomes, and money from sale of crop residues or the produce of energy plantations on wastelands do not accrue to landless households. Nor do biogas projects necessarily benefit rural residents. The Bagepalli CDM Biogas Programme proposed for Kolan district of Karnataka state is to set up 5500 two-cubic-metre biogas digesters for households that have an average of two cattle each or more. That excludes the ordinary rural poor, who, on average, own fewer livestock.<sup>78</sup>

*What about plantation projects and other forestry 'sink' projects? Are they also running into trouble?*

Carbon forestry projects made a late start in the CDM market because they are so controversial. The necessary legal framework, laid out in the Marrakesh accords of 2001, was agreed only in late 2005 at the Montreal climate negotiations. So there is little concrete to point to yet.

But carbon forestry is definitely on the cards for India. The World Bank, forestry and other private sector interests, academics and the government are all busy laying plans and calculating wildly different figures for the carbon credits India could get from trees.<sup>79</sup> In 2003, the Indian pulp and paper lobby issued a blueprint for 'Re-Greening India' as part of its longstanding campaign to be allowed to lease 'degraded' forest land on which to grow industrial plantations. The possibility of the plantations earning carbon credits was discussed in detail.<sup>80</sup> A National Environment Policy Draft circulated by the Ministry of Environment and Forests (MoEF) in 2004 meanwhile confirms a new, 'liberalised' environmental policy that promotes carbon

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*'Government figures show that there are about 5 crore (50 million) hectares of "wasteland" in India, land which...now lies open to exploitation through carbon forestry schemes. What the central government does not say is that most of this "wasteland" belongs to Adivasis and other forest-dependent communities, who will be the first to lose out from the development of such schemes.'*

*Madhya Pradesh activist*

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*'Joint Forest Management and Community Forest Management are being used as tools to exclude the Adivasis from their survival sources, and are compelling them to slip into poverty and migrate in search of work. Instead of...recognising Adivasi rights to the forest, the government is seeking their eviction through all possible means.'*

*Local activist*

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trading and other environmental services trades. The move towards carbon forestry also chimes with a grandiose existing plan on the part of the MoEF to bring 30 million hectares of ‘degraded’ forest and other lands under industrial tree and cash crop plantation by 2020, through a new type of collaboration with the private sector, state governments and local communities.<sup>81</sup>

Among the scores of CDM projects being contemplated for India are forestry projects in Madhya Pradesh and Andhra Pradesh states. Here, an organisation called Community Forestry International (CFI) has been surveying opportunities for using trees to soak up carbon. CFI declares that it helps ‘policy makers, development agencies, NGOs,

Village in  
the Handia  
range.



and professional foresters create the legal instruments, human resource capacities, and negotiation processes and methods to support resident resource managers’ in stabilising and regenerating forests.<sup>82</sup> Its work in Madhya Pradesh has been supported by the US Agency for International Development and the US Department of Agriculture’s Forest Service, and in Andhra Pradesh, by the Climate Change and Energy Division of Canada’s Department of Foreign Affairs and International Trade.

CFI suggests that, in India, the CDM would be a viable income-generating activity for rural indigenous communities. But there are strong reasons to doubt this.

*Why?*

In India, as everywhere else, it's not abstract theory, but rather the institutional structure into which CDM would fit, that provides the key clues to its likely social and climate outcomes.

Take, for example, a CDM scheme investigated by CFI that would be sited in Harda district, Madhya Pradesh state. Here CFI sees the CDM's role as providing financial support for Joint Forest Management (JFM), an institution that has been the subject of much celebration of late in India<sup>83</sup> and which would be a likely medium for a great deal of Indian carbon forestry.

*What is Joint Forest Management?*

Joint Forest Management is supposed to provide a system for forest protection and sustainable use through the establishment of village forest protection committees (VFPCs), through which government and development aid funds are channelled. Formalised by state governments and largely funded by the World Bank, JFM was designed partly to ensure that forest-dependent people gain some benefit from protecting forests.<sup>84</sup> It's already implemented in every region of India. Long before carbon trading was ever conceived of, JFM had become an institution used and contested by village elites, NGOs, foresters, state officials, environmentalists and development agencies alike in various attempts to transform commercial and conservation spaces and structures of forest rights for their respective advantages.<sup>85</sup>

*So there should be a lot of evidence already for whether it works or not.*

Yes, but there's not much agreement about what that evidence means. CFI sees the JFM programme as having improved the standard of living in Adivasi villages, as well as their relationship with the Forest Department. It also found that JFM had helped regenerate forests in Rahetgaon forest range, resulting in higher income for VFPCs, although admitting that in Handia forest range, social conflicts had resulted in decreased JFM-related investment by the Forest Department.<sup>86</sup>

On the other hand, many indigenous (or Adivasi) community members, activists and NGOs see JFM as a system which further entrenches Forest Department control over Adivasi lands and forest management, although the practices of different village committees vary.<sup>87</sup> Mass Tribal Organisations, forest-related NGOs and academics have published evidence that JFM village forest protection committees, composed of community members, function principally as local, village-level branches and extensions of state forest authority.<sup>88</sup>

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*'If large protected areas or plantations are managed for long-term carbon sequestration and storage, local people may lose access to other products such as fibre or food... [whereas] governments and companies are best placed to benefit from such schemes... [T]he frequently weak organisation (or high transaction costs of improving organisation) of the rural poor and landless will reduce their access to the carbon offset market, particularly given the many complex requirements of carbon offset interventions. Other barriers to the involvement of rural people centre on their prevailing small-scale and complex land use practices, without clear tenure systems.'*<sup>94</sup>

Stephen Bass,  
International Institute  
for Environment and  
Development

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### *Who’s Encroaching? Forest Peoples and the Law*

Milestones in the state’s efforts to appropriate land from forest-dependent communities in India include the Indian Forest Act of 1878 and the 1980 Forest Conservation Act, which theoretically provided the central government with ultimate control over most forest land.

In 2002, quoting a Supreme Court ruling, the Ministry of Environment and Forests issued a circular to all state/union territory governments to evict all ‘encroachers’ from forest land. Between March 2002 and March 2004, it is estimated that ‘encroachers’ were evicted from 152,000 hectares of forest land, although neither the Supreme Court nor the MoEF had clarified whether the term included people carrying out illegal, commercial logging activities, or Adivasi people, or both. In 2002, an estimated 10 million Adivasi people faced the threat of eviction. The new wave of evictions is helping to create conditions conducive for commercial carbon forestry.

On 23 December 2004, however, the MoEF issued a further circular confessing that due to the lack of definition of ‘encroacher’, many Adivasi people had been unjustly evicted from their lands. Moreover, following heightened protest by Adivasis and support organisations in late 2004, the central government agreed in early 2005 to introduce the Scheduled Tribes and Forest Dwellers (Recognition of Forests Rights) Bill before Parliament. The Bill would provide Adivasi communities with legal recognition of their forest rights in areas of traditional occupation and use. It would also help regularise lands being cultivated by Adivasis, convert so-called forest villages<sup>91</sup> to revenue villages (with title deeds), and settle disputed land claims.

But Adivasi and support organisations still have to fight to prevent the Bill being diluted before it is passed by Parliament.

Communities interviewed in Harda in 2004 said that VFPC chairmen and committee members have become to a large extent ‘the Forest Department’s men’.

#### *What’s wrong with that?*

These local JFM bodies are accused of imposing unjust and unwanted policies on their own communities, of undermining traditional management systems and of marginalising traditional and formal self-governing local village authorities.<sup>89</sup> In one case in Madhya Pradesh, forest authorities and the police shot dead villagers opposing JFM and VFPC policies, in an echo of hostilities between the Forest Department and various classes of other forest users that go back a century (see box above).

According to many Mass Tribal Organisations, communities and activists, JFM was effectively imposed on them without appropriate

consultation and has resulted in the marginalisation, displacement and violation of the customary and traditional rights of the Adivasis in the state.<sup>90</sup> Many state governments implemented JFM programmes on disputed lands. Many Adivasis have lost land and access to essential forest goods.

Current problems with JFM in Madhya Pradesh, according to many local people and activists, include:

- Conflicts within communities as a result of economic disparities between VFPC members and non-members.
- Conflicts between Adivasi groups and other communities generated by the imposition of VFPC boundaries without reference to customary village boundaries.
- Curtailment of *nistar* rights (customary rights to local natural goods).
- Conflicts over bans on grazing in the forest and on collecting timber for individual household use.
- Indiscriminate fining.

According to some Harda activists, JFM has opened deeper rifts within and between Adivasi villages and between different Adivasi groups, and has engendered conflict between communities and the Forest Department. Although funding for the local JFM scheme is now exhausted, VFPCs are still in place in many villages, recouping salaries from the interest remaining in their JFM accounts and from fines imposed on members of their own and neighbouring communities. Communities interviewed also claim that VFPC financial dealings are not transparent. In July 2004, non-VFPC villagers in Harda reported that they would like to see funding of VFPCs stopped and, ultimately, the committees disbanded. They also wanted to see forest management returned to them and their rights to their traditional lands and resources restored.<sup>92</sup> In the words of anthropologist K. Sivaramakishnan, ‘when environmental protection is to be accomplished through the exclusion of certain people from the use of a resource, it will follow existing patterns of power and stratification in society’.<sup>93</sup>

*So maybe these embattled village forest protection committees are not the ideal bodies to carry out CDM carbon projects.*

That would be an understatement. CFI’s proposal that, in order to reduce transaction costs, a federation of VFPCs ought to be created in the Handia range to carry out a pilot carbon offset project is also questionable. So, too, is CFI’s suggestion that the Forest Department should adjudicate cases of conflict there, a proposal that many community residents would find unacceptable.



Fieldwork on the involvement of the Chhattisgarh and West Bengal sponge iron industry in carbon trading, as well as on energy, forestry and climate change in India, was carried out in 2006 by Soumitra Ghosh of the NGO Nespon and the National Forum of Forest Peoples and Forest Workers (NFFPFW) (above) in collaboration with Hadida Yasmin and Arindam Das of Nespon, Devjeet Nandi of NFFPFW (see next page) and Nabo Dutta of Nagarik Mancha.



Fieldwork on the likely consequences of carbon forestry in India was undertaken by Emily Caruso (right) of the Forest Peoples Programme in collaboration with Vijaya Bhaskara Reddy (left), Yakshi Shramik, Adivasi Sangathan and local activists in July 2004.



Hadida Yasmin



Arindam Das



Devjeet Nandi

*But it seems there could be an even more fundamental problem. If JFM projects are going forward anyway, even without the CDM, they're not saving carbon over and above what would have been saved anyway. So how could they generate credits?*

That's not clear. And there are plenty of other problems with CFI's carbon sequestration claims as well. For example, CFI doesn't take into account the changes in numbers of people and in community and family composition to be expected over the project's 20–25 year lifetime. CFI's estimates of fuelwood used by communities in the Rahetgaon range are also inaccurate. CFI believes every family uses two head loads of fuelwood per week, but recent interviewees suggested that a more realistic figure would be 18–22, especially during the winter and the monsoon season. CFI also makes the questionable assumption that local communities would relinquish their forest-harvesting activities for the sake of very little monetary income from carbon sales, and that income flowing to VFPCs would be transparently distributed.

In order to assess how much carbon would be saved, CFI compared vegetation in forest plots at different stages of growth and subject to different kinds of pressure from humans. Yet while the total area of forest to be considered is 142,535 hectares, the total number of 50 square metre plots assessed was 39, representing a total study area of only 9.75 hectares. That may be an adequate sample in biological terms. But it's hardly enough to assess the range of social influences on carbon storage in different places.

*Have any prospective carbon forestry projects been looked at in other parts of India?*

Many. To take just one more nearby example, in Adilabad, Andhra Pradesh state, CFI saw possibilities of sequestering carbon by reforesting and afforesting non-forest or 'degraded' forest lands whose carbon content has been depleted by a large and growing human and cattle population, uncontrolled grazing of cattle in forests and 'encroachment' on and conversion of forest lands for swidden cultivation.

The best option, CFI felt, would be to regenerate teak and mixed deciduous forests. Clonal eucalyptus plantations would, it thought, accumulate carbon faster, and would have other commercial uses such as timber and pulp, as well as incremental returns for any interested investor, but would cost more to establish and maintain, and would be sure to be condemned by Adivasi communities and activists as a new form of colonialism.<sup>95</sup>

*So who would carry out these regeneration projects?*

Here CFI came to a different conclusion than in Madhya Pradesh. In Andhra Pradesh, it decided, the best agencies for taking on forest regeneration would be women's self-help groups (SHGs).

*Which are what?*

SHGs were set up by the state-level Inter-Tribal Development Agency during the 1990s as a mechanism for improving the finances of households through micro-credit schemes and capacity-building, as well as linking households with financial institutions and government authorities. CFI says that they're much more dynamic, accountable and transparent than other local institutions, such as forest protection committees, which are viewed as inefficient, untransparent, untrustworthy, and troubled in their relationship with the Forest Department.

*Sounds perfect.*

Except that it's hard to see how the virtues of the women's self-help groups could work for the carbon economy. For one thing, CFI states that only if the SHGs come together in a federation would carbon offset forestry projects be financially viable, given the high transaction costs involved in preparing and carrying them out. Yet it does not explain how such a federation could come about in rural communities, nor how SHGs could become involved in CDM projects and link themselves to the carbon market. Nor does it mention that SHGs currently work in relative isolation from the Panchayat Raj institutions (the ultimate village-level formal self-governing authority in rural India), the Forest Department and local forest protection committees.

*But surely there's nothing to worry about yet. Maybe we can just learn as we go along.*

The problem is that the mere fact that studies like CFI's are being carried out already gives legitimacy to the idea of carbon offsets in the South. Few outsiders will notice that the conclusions are suspect.

*Still, you've only been talking about problems with JFM, not with carbon offset trading as such.*

Whether or not JFM is involved, many Indian activists fear that by creating a market for carbon, CDM projects will engender change in the relationship between Adivasis and their lands and forests. In order to avoid conflict, any CDM project proponent will need to clarify who owns the land, the project and the carbon.<sup>96</sup> This immediately militates

### *The ‘Voluntary Market’ Comes to India: A Case Study*

When the rock group Coldplay released its hit album *A Rush of Blood to the Head*, the band said that part of the climate damage caused by its production would be offset by the planting of 10,000 mango trees in southern India.

More than four years after the album’s release, however, many of Coldplay’s good intentions have withered in the dry soil of Karnataka state, where the saplings it sponsored were planted. The middleman in Coldplay’s initiative was the UK’s Carbon Neutral Company, which had claimed that the scheme would soak up carbon dioxide emissions and help improve the livelihoods of local farmers.

The Carbon Neutral Company contracted the task of planting the trees to a group called Women for Sustainable Development (WSD), who got GBP 33,000 for the deal. WSD is headed by Anandi Sharan Meili, born in Switzerland of Indian origin and a Cambridge graduate. She now claims that the scheme was doomed from the outset.

In the villages of Varlakonda, Lakshmisagara and Muddireddihalli, among the dozen that Meili said had received mango saplings, no one had heard of Coldplay. Most of those who received saplings said they had not been given the necessary funding for labour, insecticide or spraying equipment.

One Lakshmisagara villager, Jayamma, managed to get 50 of her 150 trees to survive only because she had a well on her land. ‘I was promised 2,000 rupees every year to take care of the plants and a bag of fertiliser. But I got only the saplings,’ she said. Some other villagers were also offered

saplings but didn’t have enough water to nourish them.

In nearby Varlakonda, about 10 families were given approximately 1,400 saplings. Of these, just 600 survived. Another farmer who took 100 saplings, said: ‘[Meili] promised us that she’d arrange the water.’ But villagers said a tanker came only twice.

One of the few successes is the stretch of 300 mango trees owned by Narayanamma, 69, and her husband Venkatarayappa, 74. They were apparently the only couple to receive 4,000 rupees from Meili. At the same time, they spent 30,000 rupees on tankers and labourers. ‘We were promised money for maintenance every year but got nothing’, said Narayanamma.

Sitting in her spacious house in Bangalore, Meili said that she had distributed 8,000 saplings, but acknowledged that 40 per cent had died. The project had foundered, she said, because of inadequate funding. She accused Future Forests of having a ‘condescending’ attitude. ‘They do it for their interests, not really for reducing emissions. They do it because it’s good money,’ she said.

The Carbon Neutral Company said that WSD had a contractual responsibility to provide irrigation and support to farmers. Richard Tipper, the director of the Edinburgh Centre for Carbon Management, which monitored the project for Carbon Neutral, said that the Karnataka project had ‘experienced major problems’ because WSD had not raised the necessary money to administer the project and because of a long drought.

If the Karnataka project does not offset the carbon emissions that Coldplay specified, the Carbon Neutral Company claims, it will make good the amount from other projects. Coldplay is supporting a similar project, which Carbon Neutral says is more successful, in Chiapas, Mexico.

A source close to Coldplay said that the band had 'signed up to the scheme in good

faith' with the Carbon Neutral Company and that 'it's in their hands. For a band on the road all the time, it would be difficult to monitor a forest.'

*Source:* Amrit Dhillon and Toby Harnden, 'How Coldplay's Green Hopes Died in the Arid Soil of India', *Sunday Telegraph* (London), 30 April 2006.

against Adivasi peoples, since in India, the government claims formal ownership and control over indigenous lands and resources. Access and ownership rights are likely to be transformed into benefit-sharing and stakeholder-type relationships. Adivasi communities may lose their capacity to sustain food security, livelihoods, and fundamental social, cultural and spiritual ties. Lands Adivasis depend on could be classified as 'wasteland' and turned over to carbon production. In short, it is unclear how CDM projects could do anything but further entrench discrimination against Adivasi communities by government authorities and rural elites.

CDM afforestation projects can be established on lands that have not been forested for 50 years, and reforestation projects on lands that were not forested on 31 December 1989.<sup>97</sup> But forest conservation projects are also on the horizon. Although conservation schemes are not yet eligible for CDM, conservation financiers and the World Bank and Global Environment Fund are increasingly promoting the idea of protected areas as an additional source of carbon credits.<sup>98</sup> Indigenous peoples will clearly be in for a fight should carbon sequestration and protected area projects come together on their territories.

*Overall, what's the future for CDM in India?*

The country is still seen as a 'front runner' for CDM projects. The government is determined to press forward, and a lot of carbon salesmanship can be expected in the years ahead.<sup>99</sup> But foreign investors are worried that many projects may not get the green light from the CDM Executive Board due to being indistinguishable from business as usual. 'The sustainability just isn't there,' said one consultant employed by a European company to source carbon credits.



## *No Need to Know? The Secret Economy of Carbon*

In 2004, the women’s self-help group of Powerguda village of Andhra Pradesh, India, was given cash in exchange for planting *Pongamia* trees. The tree’s seeds can be used to make a petrol substitute.

The women were given a certificate and USD 645 for ‘offsetting’ the emissions produced by a World Bank workshop on climate change held in Washington, DC.<sup>100</sup> The Bank claims that 30 years of biofuel use by government authorities in Andhra Pradesh will compensate climatically for the workshop’s emissions.

The women didn’t know why they had received the money. They were also unaware of the benefits that went to the carbon traders, releasers and agencies involved.

The irony is that northern Andhra Pradesh has recently been hit by one of the most devastating droughts ever, very possibly as a result of global warming. In the summer of 2004, the number of suicides in the province among farmers driven to desperation by their crippling debts reached 3,000.

The lack of discussion with affected parties that was evident in Andhra Pradesh appears to be a common denominator of carbon-saving projects nearly everywhere:

- The Project Design Documents of four different Indian biomass power projects each repeated, word for word, alleged favourable comments made by a village head. All of the projects – Rithwick, Perpetual, Indur and Sri Balaji – are located in Andhra Pradesh state, but all have different characteristics and are spread over hundreds of kilometres. Even spelling mistakes were repeated in the documents, suggesting that consultation was not genuine. The private consultants who prepared the documents, PriceWaterhouseCoopers and Ernst and Young, responded lamely that identical projects in similar geographical locations were likely to have similar Project Design Documents.<sup>101</sup>
- A senior legal officer at the West Bengal Pollution Control Board, Biswajit Mukherjee, was surprised to learn about CDM support for sponge iron industries in his state. How, Mukherjee wondered, can companies with long records of pollution, including some still paying penalties to the West Bengal government, start ‘clean development’ projects?<sup>102</sup>
- In Uganda, community members living close to the UWA-FACE carbon plantation project near Mount Elgon said that they knew nothing about the project’s carbon credits. Members of the Bubita sub-county local council and top district officials were also in the dark. Residents wanted to know about the financial benefits FACE Foundation receives, particularly because the project encumbers their land for a long time, and planned to take the matter up with their local parliamentarian.
- The Ugandan acting deputy commissioner for forestry in the Ministry of Water, Lands and Environment, Ignatius Oluka-Akileng, told an interviewer in 2001 that his forestry directorate knew little about carbon trades involving state forest lands, nor how much foreign companies were to gain from them, and begged the interviewer to help find information.

## Sri Lanka – A ‘clean energy’ project that was not so clean



Today’s smart business money is going into buying carbon credits from projects that destroy industrial gases or methane (see the preceding ‘India – A taste of the future’). These are the cheapest credits and they can be obtained with the least trouble. Yet they do nothing to address the flow of fossil fuels out of the ground.

But carbon projects that promote energy efficiency or renewable energy technologies do exist. The Kyoto Protocol’s Clean Development Mechanism has dozens of such schemes in its pipeline, although they generate only a minuscule proportion of total credits. Some of these projects are even small and community-based.

So far, however, such projects are merely a bit of expensive window-dressing for the big industrial projects generating cheaper credits. In a competitive market, they appear to have little future.

But are all such projects desirable even on their own terms? For example, are all renewable energy projects good just because they can be described as ‘renewable’?

*I don’t understand. What could possibly be wrong with promoting renewable energy?*

It depends on how it’s used. Let’s take, for example, one of the world’s very first attempts to ‘compensate for’ or ‘offset’ industrial carbon-dioxide emissions – a rural solar electrification programme in Sri Lanka.

The story begins in 1997, when the legislature of the US state of Oregon created a task force that later legally required all new power plants in the state to offset all of their carbon dioxide emissions. When companies put in bids for the contract to build a new 500-megawatt, natural-gas fired power station in Klamath Falls, they also had to present plans for ‘compensating’ for its CO<sub>2</sub> emissions. The winner of the contract, PacificCorp Power Marketing, proposed a diversified USD 4.3 million dollar carbon-offset portfolio, allocating USD 3.1 million to finance off-site carbon mitigation projects. In particular,

the firm put USD 500,000 into a revolving fund to buy photovoltaic (solar-home) systems and install them in ‘remote households without electricity in India, China and Sri Lanka’.<sup>103</sup> In 1999, PacificCorp Power and the City of Klamath Falls signed the necessary finance agreement with a US solar-energy company called the Solar Electric Light Company, or SELCO.<sup>104</sup>

In all, SELCO agreed to install 182,000 solar-home systems in these three Asian countries, 120,000 in Sri Lanka alone.<sup>105</sup> The idea was that the solar systems would reduce the carbon dioxide emissions given off by the kerosene lamps commonly used in households that are ‘off-grid’, or without grid-connected electricity. On average, SELCO calculated, each such household generates 0.3 tons of carbon dioxide per year.<sup>106</sup> SELCO argued that the installation of a 20- or 35-watt solar-home system would displace three smoky kerosene lamps and a 50-watt system would displace four. Over the next 30 years, it claimed, these systems would prevent the release of 1.34 million tons of carbon into the atmosphere, entitling the Klamath Falls power plant to emit the same amount.

*So what’s the problem? It sounds like a win-win situation. The Klamath Falls plant makes itself ‘carbon-neutral’, while deprived Asian households get a new, clean, green, small-scale source of energy for lighting!*

Not quite. Aside from the fact that such projects can’t, in fact, verify that they make fossil fuel burning ‘carbon-neutral’ (see Chapter 3), the benefits to the South that carbon offsetting promises don’t necessarily materialise, either.

*Why not?*

Start with the structure of the trade. Just as industries in the North have historically relied on the environmental subsidy that cheap mineral extraction in the South has provided, in the PacificCorp/SELCO project a Northern industry used decentralised solar technology to reorganise off-grid spaces in the South into spaces of economic opportunity that subsidised their costs of production through carbon dioxide offsetting.<sup>107</sup> Once again, the South was subsidising production in the North – this time not through a process of extraction, but through a process of sequestration.

*You’ll have to explain that to me.*

Traditionally, fossil fuel extraction has resulted in the overuse of a good that can’t be seen – the global carbon sink. And the inequality in the use of that sink between North and South has been invisible. Now, however, that inequality is becoming more visible within cer-

tain landscapes in the form of physical and social changes like those associated with the PacificCorp/SELCO project.

The solar component of the Klamath Falls plant, in essence, proposed to ‘mine’ carbon credits from off-grid areas in Sri Lanka. However, the existence of these off-grid areas is partially due to social inequalities within Sri Lanka. In this case, the project was taking advantage of one particularly marginalised community of Sri Lankan workers in order to support its own disproportionate use of fossil fuels.

*Well, maybe. But so what? PacificCorp didn't create the inequalities in resource use that it was going to benefit from. Why should it be up to PacificCorp to solve social problems in Sri Lanka? Besides, aren't we in danger of making the best the enemy of the good here? PacificCorp may have bought the right to go on using a lot of fossil fuels, but at least the Sri Lankan workers got a little something out of the deal to improve their lives, too.*

Well, as a matter of fact, that really wasn't the case, either. In practice, the PacificCorp/SELCO arrangement in Sri Lanka wound up supporting what one Sri Lankan scholar-activist, Paul Casperz, calls a feudal system of ‘semi-slavery’ on plantations.

*Semi-slavery? Come on! Aren't you being a bit inflammatory? How could decentralised, sustainable solar power possibly have anything to do with that?*

Solar power didn't create the problem, of course. But pollution markets' interventions like this one in the tea estate sector have a way of perpetuating inequality, just as in Los Angeles (see Chapter 3). The trick, as so often in the world of development and environment, is to understand that a bit of technology is never ‘just’ a neutral lump of metal or a piece of machinery benignly guided into place by the intentions of its providers, but winds up becoming different things in different places.

In Sri Lanka, the kerosene-lamp users that PacificCorp/SELCO ended up targeting earned their living in what is known as the ‘estate’ or tea plantation sector. This is a sector in which nearly 90 per cent of the people are without grid-connected electricity, compared to 60 per cent of the non-estate rural sector and only 5 per cent of urban dwellers.

A large proportion of this off-grid population was – and is – from the minority estate Tamil community,<sup>108</sup> which lives and works in conditions of debt dependence on tea and rubber plantations established by the British during the colonial period. Unfair labour practices in the sector have continued to keep estate society separate from and unequal to the rest of Sri Lankan society. Daily wages average USD

1.58 and the literacy rate is approximately 66 per cent, compared to 92 per cent for the country as a whole.<sup>109</sup> The estate population is also underserved when it comes to infrastructure. A sample survey of 50 estates found that 62 per cent of estate residents lacked individual latrines and 46 per cent did not have a water source within 100 metres of their residence.<sup>110</sup>

Due partly to its cost, electrification, unlike health care, water supply, and sanitation, has never been one of the core social issues that social-service organisations working among the estate population get involved in.

*That would seem to make the estate sector the perfect choice for a solar technology project. I still don't see the problem.*

There's no question that electrification could do a lot of good for workers and their families. By displacing smoky kerosene lamps, it would provide a smoke-free environment that reduces respiratory ailments, as well as quality lighting that reduces eyestrain and creates a better study environment for the school-going generation<sup>111</sup> who are eager to secure employment outside the plantation economy. Researchers have found clear connections between off-grid technology and educational achievement.

But as tea estates are regulated and highly structured enclave economies, SELCO could not approach workers without the cooperation and approval of estate management. The chief executive of one plantation corporation, Neeyamakola Plantations, was willing to allow SELCO access to the 'market' that his off-grid workers represented. He himself liked the idea of solar electrification, but for an entirely different set of reasons.

*How's that?*

Sri Lanka's 474 plantation estates were privatised recently. Facing fierce competition from other tea-producing countries, they need to lower production costs and increase worker productivity in order to compensate for low tea prices on the global market and wage increases mandated by the Sri Lankan government. Neeyamakola had already introduced some productivity-related incentives and thought that solar-home systems could provide another. Furthermore, with a regular electricity supply, workers could watch more television.<sup>112</sup> Seeing how other people in the country lived, they'd want to raise their standards of living too. For that, they'd need money. To earn more money, they'd work harder or longer, or both.<sup>113</sup>

So, in 2000, Neeyamakola was only too happy to sign an agreement

with SELCO for a pilot project on its Vijaya rubber and tea estate in Sri Lanka's Sabaragamuwa province, where over 200 families lived.

*It sounds to me like the perfect match. If Neeyamakola focused on the bottom line, what's so bad about that? It's a matter of unleashing the profit motive for the incremental improvement of society and the environment.*

No one expected Neeyamakola, SELCO or PacificCorp to operate as charities. The point is to understand whether such a business partnership was ever capable of doing the things it intended to do, what effects the partnership had on the societies involved, and who might be held responsible for the results.

*So what happened?*

At first, the pilot project was to be limited to workers living in one of the four administrative divisions into which the Vijaya estate was divided, Lower Division, and in nearby villages. Some four-fifths of these workers were estate Tamils living in estate-provided 'line housing'. The other fifth were Sinhalese who lived within walking distance.

In the first three months, only 29 families decided to participate in the solar electrification project: 22 of Lower Division's 63 families and seven Sinhala workers who lived in adjacent villages. In the end, the project installed only 35 systems before it was cancelled in 2001.

*What went wrong?*

Two things. The first thing that happened was that, in the historical and corporate context of the estate sector, the SELCO project wound up strengthening the already oppressive hold of the plantation company over its workers.

*But how could that happen? Solar energy is supposed to make people more independent, not less so.*

This gets back to the nature of Neeyamakola as a private firm. From the perspective of plantation management, the electrification project had nothing to do with carbon mitigation and everything to do with profitability and labour regulation.

Neeyamakola's concern was to increase productivity. Its idea was to use access to loans for solar-home systems to entice estate labourers into working additional days. The Neeyamakola accounting department would deduct a 500-rupee loan repayment every month and send it to SELCO.<sup>114</sup>

In order to qualify for a loan, workers had to be registered employees who worked at least five days a month on the estate.<sup>115</sup> The loan added another layer of worker indebtedness to management. In this case, the indebtedness would last the five years that it would take the worker to repay the loan taken from the corporation.<sup>116</sup>

From workers’ point of view, the system only added to the company’s control over their lives. Historically, the only way that estate workers have been able to get financing to improve their living conditions has been through loans that keep them tied to the unfair labour practices and dismal living conditions of estate life. To upgrade their housing, for instance, workers have to take out loans from the Plantation Housing and Social Welfare Trust. One condition of these loans is that ‘at least one family member of each family will be required to work on the plantation during the 15-year lease period’,<sup>117</sup> during which estate management takes monthly deductions from wages. Hampered by low pay and perpetual indebtedness, workers find it difficult to move on and out of the estate economy.

*I see. And what’s the second problem?*

Inequality and social conflict of many different kinds. First, as Neeyamakola offered solar-home systems primarily to estate workers, most of whom are members of the Tamil ethnic minority, the nearby off-grid villagers of the Sinhalese majority felt discriminated against and marginalised. Disgruntled youth from adjacent villages as well as from estate families who weren’t buying solar systems threw rocks at the solar panels and otherwise tried to vandalise them.

Second, local politicians and union leaders saw solar electricity as a threat to their power, since both groups use the promise of getting the local area connected to the conventional electricity grid as a way of securing votes. So they started issuing threats to discourage prospective buyers.

Third, the village communities living around the Vijaya estate feared that if too many people on the estate purchased solar systems, the Ceylon Electricity Board would have a reason for not extending the grid into their area. And without the grid, they felt, small-scale industry and other entrepreneurial activities, which would generate economic development and increase family income, would remain out of reach, making their social and economic disadvantages permanent.<sup>118</sup> (Any delay in the extension of the grid to the area occasioned by the PacificCorp/SELCO Neeyamakola project, of course, would have its own effects on the use of carbon, and would have to

be factored into PacificCorp/SELCO's carbon accounts. There is no indication that this was done.)

Added to all of this was inequality within the community of estate workers themselves. One consequence of Neeyamakola's focus on getting more out of its workers was that many estate residents whose work is productive for society in a wider sense were ineligible for the systems.

One example is the primary school teacher in the Tamil-medium government school that served the estate population. The daughter of retired estate workers, the teacher received a reliable monthly salary, could have met a monthly payment schedule, and was willing to pay, but was ineligible for a system because her labour was not seen as contributing directly to the estate's economic productivity and profit margin. Retired estate workers and their families were excluded for the same reason. SELCO, a firm new to Sri Lanka, was unable to ensure community-wide benefits or distributive equity within the community as a prerequisite in the design of the pilot project.

On the Vijaya estate, in short, the decentralised nature of solar power – in other contexts a selling point for the technology – had quite another impact and meaning in the context of Sri Lanka's estate sector. It provided the company that was controlling the 'technology transfer' with a new technique to exert control over its labour force and ensure competitive advantage, while exacerbating underlying conflicts over equity.

It's interesting to note, incidentally, that solar projects in Sri Lanka often fall short even at the household level, where many families end up reducing their consumption of kerosene by only 50 per cent.<sup>119</sup> There are many reasons for this. Kerosene use is necessary to make up for faulty management while household members become acquainted with the energy-storage patterns of the battery and system operation. Households also face problems managing stored energy, with children often using it all up watching afternoon television. And local weather patterns and topography likewise take their toll. In some hilly areas with multiple monsoons, solar can supplement kerosene systems at best for a six- to nine-month period, depending on the timing and duration of the monsoon.

*Did PacificCorp's electricity customers – or the Oregon legislature – know about all this?*

Given the geographical and cultural distances involved, it would have been difficult for them to find out. On the other hand, it seems unlikely that Northern consumers of electricity – if they are informed of



This section is based on the research of Dr Cynthia Caron. After completing her Ph. D. at Cornell University in the US on electricity sector restructuring in Sri Lanka, Dr Caron moved to Sri Lanka. She has been awarded a grant from the MacArthur Foundation and has been researching forced migration, resettlement and Muslim nationalism and its relation with Sri Lanka's ethnic conflict, as well as working on development and health projects.



such details – will accept carbon-offset projects that involve not only dubious carbon accounting, but also blatantly exploitative conditions and the reversal of poverty alleviation efforts.

This is another reason for doubting how long-lived undertakings like PacificCorp/SELCO’s will be. From the beginning, they have been more about ‘preserving the economic status quo’ and promoting cost efficiency in Northern countries than about supporting equity in the South.<sup>120</sup>

*OK, I can see there were some problems. But surely social and environmental impact assessments could have identified some of these problems in advance. With proper regulation, they could then have been prevented.*

This is a key issue. For example, the solar technology could have been reconfigured so that an entire line of families could have pooled resources and benefited, rather than just individual houses.

But setting up an apparatus to assess, modify, monitor and oversee such a project isn’t by itself the answer. Such an apparatus, after all, would have brought with it a fresh set of questions. Who would have carried out the social impact assessment and would they have been sensitive to local social realities? Would its recommendations have been acceptable to Neeyamakola? Would its cost have been acceptable to PacificCorp? What kind of further oversight would have been necessary to prevent an assessment from merely adding legitimacy to a project whose underlying problems were left untouched?

Just as a technology is never ‘just’ a neutral piece of machinery which can be smoothly slotted into place to solve the same problem in any social circumstance, so the success of a social or environmental impact assessment is dependent on how it will be used and carried out in a local context.

*But if success is so dependent on political context, how will it ever be possible for new renewable technologies to make headway anywhere? If it isn’t possible, then we might as well give in and keep using fossil fuel technologies! We might as well go along with ExxonMobil when they claim that we have to go on drilling oil since anything else would be to betray the poor!*

The alternative is not to accept the dominance of fossil fuel technologies. Their continued dominance also does nothing to improve the position of disadvantaged groups such as Sri Lanka’s estate Tamils. Nor is the alternative simply to accept the system of global and local inequality exemplified in Sri Lanka’s estate plantation sector.

The alternative, rather, is to act using our understanding that what keeps marginal communities such as that of Sri Lanka’s estate Tamils

in the dark, so to speak, is not only a matter of ‘suboptimal’ use of technology, but also a deeper pattern of local and global politics. Cutting fossil fuel use means understanding this deeper pattern.

Up to now, climate activists and policy makers have often told each other that ‘the essential question is not so much what will happen on the ground, but what will happen in the atmosphere’.<sup>121</sup> The example of the PacificCorp/SELCO/Neeyamakola rural solar electrification project helps show why this is a false dichotomy. What happens on the ground in communities affected by carbon projects is important not only because of the displacement of the social burdens of climate change mitigation from the North onto already marginalised groups in the South. It is also important because what happens on the ground influences what happens in the atmosphere.

## Thailand – Biomass in the service of the coal and gas economy



The experience of Sri Lanka shows that not all projects that go under the name of ‘renewable energy schemes’ promote local betterment, foster local autonomy, or help in the transition away from fossil fuels.

Other types of ‘renewable energy’ projects may turn out to be of equally questionable climatic or social value when integrated into the carbon market as supports for a system dominated by fossil fuel technologies and corporate expansion. A good example is a

‘biomass energy’ project seeking CDM support in Yala province in Thailand’s troubled far south.

There, an approximately 23-megawatt power plant fuelled by rubberwood waste and sawdust is being developed by a diverse group of companies linked by their interest in the carbon trade. They include:

- Gulf Electric, an independent power producer 50 per cent owned

by Thailand’s Electricity Generating Public Company (EGCO) and 49 per cent by Japan’s Electric Power Development Company (EPDC).

- Asia Plywood (AP), a Yala rubberwood processor, next to one of whose factories the plant would be located.
- Det Norske Veritas (DNV), a Norwegian ‘risk management’ consultancy which has managed to parlay its experience in certifying the credibility of pioneer carbon schemes such as Yala into a major share in CDM’s consultancy market.

EPDC is a largely fossil-fuel-oriented company and the largest single user of coal in Japan.<sup>122</sup> It operates 66 coal-fired and hydropower stations and burned USD 652 million in fossil fuels in 2001 alone.<sup>123</sup> It also has an interest in six gas-fired power generating plants in operation or under construction in Thailand, totalling 2,733 megawatts.<sup>124</sup> Nor, with a large new coal-fired power station under construction in Yokohama, does EPDC contemplate any change of direction in the future. ‘Coal offers stable supply and outstanding economical efficiency,’ says a company presentation, ‘hence we predict it will support world energy consumption throughout this century. Our great mission is to ensure that coal is burned cleanly, thus reducing the burden on the environment.’<sup>125</sup>

Accordingly, EPDC’s main response to global warming is coal gasification, which of course does nothing to halt the flow of fossil carbon to the surface, and the development of a nuclear power plant. For EPDC, the point of investment in Yala would be to gain carbon credits to help it, and Japan generally, maintain current levels of fossil-fuel combustion in the face of Kyoto pressures.

EGCO is also largely structured around fossil-fuel technologies. One of EGCO’s gas-fired power stations, in fact, is operated in partnership with UNOCAL, a US multinational fossil-fuel firm that is anti-Kyoto Protocol and sceptical about climate change.

Gulf Electric, meanwhile, with a mainly gas-fuelled generating capacity, has become well known in recent years partly due to the overwhelming defeat in March 2003 of its proposal to build a 734-megawatt Bo Nok coal-fired power plant on the Gulf of Thailand. Local people in Prachuab Khiri Khan province concerned about pollution and other potentially destructive effects of the project had mounted a successful regional and national campaign against it. Following their victory against Gulf, the company moved quickly to propose a gas-fired substitute plant further up the coast.

If any further evidence were required that the sponsoring firms are



Leaders of the movement that defeated the proposal for a coal-fired power plant at Bo Nok on the Gulf of Thailand meet the press in 2004. The proposed power plant was a project of Gulf Electric, a firm that hopes to gain carbon finance for a joint venture biomass plant using rubberwood waste. Jinthana Kaewkhaaw (right), a local villager with a fourth-grade education, was awarded an honorary Ph. D. from Thailand's alternative Midnight University for her tireless efforts against the Bo Nok plant. Galok Wat-Aksorn (left) is the widow of another local leader, Charoen Wat-Aksorn (pictured on her T-shirt), who was murdered over a land dispute connected with the struggle. The leaders were voicing their support for another movement further south battling against the establishment of a gas pipeline and gas cracking plant that encroaches on Muslim *wakaf* common land and degrades the local environment. The alliance of the two movements, one composed of mainly Buddhist villagers, the other composed of mainly Muslims, defies government attempts to pit Thailand's majority Buddhist community against Muslims in the south of the country.

not treating the Yala project as a step away from fossil fuels, there is the fact that they had originally planned to build the power plant without any carbon finance at all. It is only since the depths of the Thai financial crisis, in 1998, that they have contemplated securing supplementary funding through carbon trading.<sup>126</sup> Encouraging them to develop the idea have been subsidies from Thailand's Energy Policy and Planning Office's Energy Conservation Promotion Fund<sup>127</sup> as well as portions of both a USD 30 million OECF loan under a 1999 five-year Global Environmental Facility (GEF) project and a GEF outlay of USD 3 million toward commercial risk premiums.<sup>128</sup>

*But if the point of the Yala project is to help keep corporations using fossil fuels, how can the credits it generates possibly be tokens of measurable climate benefits?*

The project's proponents claim that it would save a measurable amount of carbon by 'replacing' some of the electricity in the Thai grid that's now generated by burning fossil fuels.

*How do they know that the plant would do that?*

The validator, DNV, realised it had no way of determining that the new project's power would be replacing either combined-cycle natural gas or oil-fuel electricity in the national grid.<sup>129</sup> It was also told by Thailand's electricity authority that it was 'often a mistake to see a direct link of displacement between an increase in one component of the grid and a reduction in another'. So DNV looked at the 'average' carbon intensity of electricity from the Thai grid. It then subtracted the figure corresponding to the projected carbon intensity of electricity from the project and multiplied that by the project's output. DNV argued that the resulting figure is conservative, since expansion plans by the Thai electricity authority featured a 'higher carbon intensity

than the grid average used by the project’. This is in spite of the fact that the authority’s figures were a subject of hot dispute in Thailand and carbon intensity per year varies by about 20 per cent.<sup>130</sup>

*It all sounds a bit too much like guesswork, given that the object is the calculation of a precise number of tonnes of CO<sub>2</sub> saved. How can they possibly be sure that if the project didn’t exist, exactly that amount of electricity would have been generated through nothing better than the current ‘average’ fuel mix?*

They can’t. But it’s a procedure that’s acceptable in principle to the UN.

*I assume the consultancy also factors in how much additional use of fossil-generated EPDC electricity the project might encourage in Japan?*

No.

*Why not? If the project helps reassure electricity consumers or investors in Japan that it’s OK to keep using coal-generated electricity there, doesn’t that add to the carbon debit of the project?*

Yes, it does. But Kyoto carbon accounting tends to ignore such realities, not that they could be measured anyway (see Chapter 3). So DNV was under little obligation to present an answer to the question in any of the hundreds of pages of highly technical documents on the Yala project. Assessing the many indirect carbon or climatic effects of the project, according to DNV, ‘is not necessary in our opinion’.<sup>131</sup>

*Let me ask another question, then. If the project was going to be built anyway, then what exactly does it ‘save’ that deserves a climate subsidy? It’s just business as usual.*

That’s right, and the CDM rulebook demands that CDM projects prove that they are not business as usual. As a result, the Yala project’s proponents have had to produce some evidence that it isn’t business as usual.

*How have they done that?*

With difficulty. At first, project proponents claimed that, without carbon credit sales, the project’s return on equity would be lower than ‘desirable’ or ‘normal’ but that the good publicity associated with a climate-friendly project would make up for this. When NGOs pressed DNV to provide evidence for these claims, DNV said that it did not have permission to make public the ‘confidential’ financial analysis the project proponents had given it. Project proponents also asserted that the planning needed for the project was a ‘barrier’ that required carbon finance to overcome, and that the project was tech-

nologically novel in the Thai context.<sup>132</sup> Later on, the project developer also noted that the project was sufficiently financially shaky that it had to be put on hold in 2002.

*But even if that's true, that wouldn't prove that the project could be undertaken only with carbon finance.*

No. And there's a lot of evidence that, in fact, the prospective carbon income of the project has no weight at all with the investors. For example, uncertainty about whether the project would ultimately be allowed to be registered with the CDM, or about whether the Thai government would overcome its initially sceptical stance towards CDM projects, does not seem to have had any effect on the project's original construction schedule. What's more, Sarath Ratanavadi, managing director of Gulf Electric, was quoted in the *Bangkok Post* on 13 June 2003 as saying that Gulf Electric and EPDC 'will go ahead with the 800 million baht project [Yala biomass] even without CDM'.

*What was DNV's response to that?*

It protested that the project's business-as-usual status 'is not as obvious as asserted'<sup>133</sup> and said it had consulted with EPDC about Sarath's statement.

*From a scientific point of view, that's not terrifically convincing.*

No. For this project to be registered with the CDM would, in fact, probably be a net loss for climatic stability, since it would enable the Japanese government to write down its Kyoto commitment by half a million tonnes of carbon dioxide without providing anything verifiable in return. Nevertheless, the controversy over Yala is representative of the level of debate that still prevails in front of the UN committees and panels responsible for overseeing the CDM.

*Well, if the project's benefits for the climate can't be verified or quantified, perhaps we should forget about looking at it as a carbon project and just view it as a standard development project with an unusual prospective source of funding. Does it at least provide some benefits for local people?*

Many local residents in fact quietly oppose the new development on Asia Plywood's Yala site as being likely to reinforce local imbalances of power over air and water quality. They've long felt animosity toward AP for causing pulmonary health and other problems through smoke and ash pollution of local air, water and land, and profess 'no trust' in the firm. Subdistrict officials even allege that the firm has not paid its full share of taxes.

Biomass is not always benign. *Noo Nui*, a comic figure from the shadow puppet folklore of Southern Thailand, registers his opposition to a proposed power plant using waste biomass on the grounds that it will ‘destroy the environment’. The project in question didn’t try to gain access to carbon finance, but is similar to one in the same region that did.



*But why should any of that make any difference to their view of the new project?*

Because for them, the important thing about the project is not the theory behind it, but who is going to carry it out. Local people might well agree with DNV that the disposal of rubber wood residues at Asia Plywood and other installations is ‘one of the most serious environmental problems in the Yala community’. But they view corporate reliability as a more important prerequisite for solving such problems than technical proposals. Refusing to abstract from the local political context, they see narrowly technical factors such as new equipment or CDM certification as irrelevant as long as underlying conflicts between company and community are not tackled. ‘If current problems are not solved’, one local health official interviewed asked, ‘how are new problems going to be addressed?’

*Shouldn’t DNV have taken account of such views?*

DNV was well aware of local people’s view that AP should solve its existing problems with ‘noise, wastewater and solid waste’ before attempting anything else, and should communicate the details of construction to the community as well as involve it in monitoring. Yet it had few incentives to take villagers’ political and social analysis seriously.

DNV did write about a ‘comprehensive public participation programme’ to ‘accurately inform local residents, government officials and other concerned members of the public about the Project and expected impacts’ and ‘obtain feedback, mainly from the local communities and concerned government agencies, with regard to their opinions and concerns about the Project’. Those to be consulted included

the subdistrict administrative authority's committee and residents in 'surrounding villages'. Yet there is little evidence that this 'comprehensive' programme was satisfactory to local residents. According to DNV itself, the meeting it claimed to hold with the Lam Mai subdistrict authority took less than one hour.

Throughout, DNV presented the project and its participant firms as a 'black box' or neutral machine into which formulas for environmental improvement, participation and good community relations could be fed with near-automatic results. Local environmental problems were seen as stemming from a mere technical gap – one that the CDM project would help fill.

Similarly, when at an August 1999 public consultation few respondents agreed with the project, DNV put it down to 'previous dissatisfaction with the dust caused by AP's operation' and claimed that, following the installation of a new boiler which uses sawdust, 'Lam Mai [subdistrict] residents no longer disagree with the Project'.<sup>134</sup>

*Are you saying that that's not true?*

It's certainly not the impression given by a number of local residents interviewed more recently. To them, the workings of the firms involved in the project, far from being enclosed in a 'black box', are both open to view and of powerful interest.

Several people interviewed pointed out that the AP's 'public participation programme' referred to so uncritically by DNV, instead of involving dissemination of useful information, has featured expenses-paid tours for local people to biomass power plants in Thailand's central region. Such tours, they reported, have included hotel accommodation, food and free visits for some male participants to local prostitutes, but no opportunities for close inspection of the plants in question or chances to meet local people.

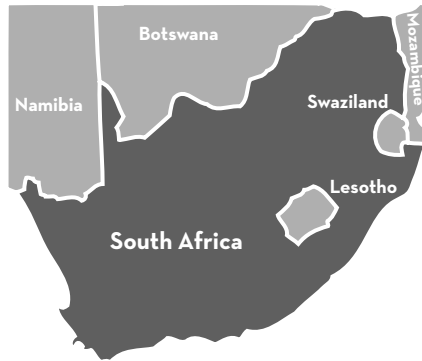
Local residents also pointed to AP's name on a pavilion that the company gave to a Buddhist temple adjacent to its factory after temple monks complained about pollution – an act incurring powerful reciprocal obligations. They noted that other modes of persuasion have also been used. One elderly resident interviewed reported receiving no less than three death threats as a result of voicing criticisms of the AP project.

*So some of the locals aren't too keen on carbon trading?*

Who knows? They understand well what biomass is, but they've never had a chance to discuss the carbon market. Most people are unaware of the AP project's projected role in this new global trade.



## South Africa – Carbon credits from the cities



Durban Solid Waste (DSW), part of Durban’s city council bureaucracy, manages a landfill site called the Bisasar Road dump. The largest such operation in South Africa and one of the largest in the Southern hemisphere, the dump has been in operation since 1980. Located in an area that was designated for people of Indian descent

under apartheid’s Group Areas Act of 1961, the dump is also a primary source of livelihood for the mainly African, and poorer, Kennedy Road settlement, established in the late 1980s and now numbering nearly 1,000, who recycle materials from the dump while struggling with officials and business to gain more secure rights to the land their houses occupy.

Although the site is licensed only to receive domestic waste, medical waste, sewage sludge, private corporate waste and large shipments of rotten eggs have also wound up there. Cadmium and lead emissions are over legal limits, and limits for suspended particulate matter also often exceeded. Concentrations of methane, hydrogen chloride, and other organic and inorganic compounds including formaldehyde, benzene, toluene and trichloroethylene are high.

*That sounds dangerous.*

Local residents report many health problems, with six out of ten of the houses in one downwind block on the nearby Clare Estate reporting cancer cases. The causes of each such individual case of disease are notoriously difficult to pin down. They could include emissions from incineration practices, which stopped in 1997, other emissions from the dump either before or after, or other factors. Lindsay Strachan, Project Manager of eThekweni Engineering and Projects, claims, for example that the Kennedy Road settlement, which burns wood and other materials for heating and cooking, is just as likely as the Bisasar Road dump to be the source of health threats.<sup>135</sup>

But with some houses only 20 metres away from the landfill site

boundary, it's hardly surprising that many in the community want the dump shut down. Under pressure, the city council itself pledged in 1987 to close the site and turn it into sports fields, picnic areas and play areas for children. When, in 1996, the council reneged a second time on the promise, some 6,000 local residents signed a petition of protest, with many blocking the dump site entrance and staging demonstrations and marches. Yet the site was kept open and even started receiving rubbish diverted from a dump in a wealthy white-dominated Durban suburb, which was closing as it was 'earmarked for up-market property development'.<sup>136</sup>



The Bisasar Road landfill dump.

In June 2002, Clare Estate resident Sajida Khan filed a lawsuit against the eThekweni municipality and the federal Department of Environmental Affairs and Tourism for negligence in permitting the dump to stay open. After three years of delays, the case was due to be heard in the autumn of 2005, but due to Khan's poor health (see below), the case will remain in the docket until she is declared fit enough to participate. In the meantime, the Department of Water and Forestry at the provincial level has been delayed in rendering its decision on an appeal against keeping the dump open, estimated to have cost the city R40,000 to fight.<sup>137</sup>

*Very unpleasant, clearly. But what does all this have to do with mitigating climate change?*

In 2002, the World Bank's Prototype Carbon Fund (PCF) signed an agreement with DSW to promote a prospective CDM project to ex-

tract methane from the Bisasar landfill and burn it to generate up to 45 megawatts of electricity for supply to the national grid.

*I’m not sure I understand. How can a project that emits carbon dioxide using fuel from a smelly landfill site be climate-friendly?*

The idea is that the electricity generated by the project would ‘replace’ electricity that otherwise would have been generated by burning coal. It’s claimed that the project would generate enough power to light up 20,000 informal houses or 10,000 formal-sector houses. Because burning methane is less climatically damaging than simply releasing it, and better than burning coal (the dirtier fuel usually used) the project is better than the alternative.

*The alternative? There’s only one?*

Well, of course, in reality there are many alternatives. But the carbon credit market demands that there be only *one* alternative. If there’s more than one alternative, then you’ll have more than one number corresponding to the carbon ‘saved’, and you won’t be able to assign a single number to the number of carbon credits your project is producing. So you won’t have anything definite to sell.

*But how can other alternatives be ignored?*

They are classified as ‘implausible’.

*Who says they’re implausible? What about using the money to close the dump down and treat some of the waste? What about just pumping the landfill gas into the nearby Petronet gas pipeline network so that it would not need to be burned on site? Or finding ways of using electricity more efficiently? Or more non-fossil community-level power sources? None of these sound implausible to me.*

Nevertheless, none of them can be acknowledged as alternatives, because to do so would make it impossible to calculate the credits for the project under consideration. That’s one of the ways that a seemingly ‘technical’ accounting system can help limit the political choices a society can make to small, incremental variations on business as usual.

*How was such a one-sided view of the choices available enforced?*

In the early phase of the project, authority for deciding what would and would not be possible in South Africa in the absence of the Bisasar Road scheme was quietly given to two individuals at the PCF in Washington, DC – Sandra Greiner and Robert Chronowski.<sup>138</sup> Their decision was clothed in many pages of impressive numbers and reinforced through meetings and professional review.

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*‘The poor countries are so poor they will accept crumbs. The World Bank know this and they are taking advantage of it.’*

*Sajida Khan, Bisasar Road community resident*

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Sajida Khan

*Didn't anybody question whether two people in Washington had the right to decide what the alternative energy future of Durban might be?*

How? Information dissemination and public consultation on the project proposal were carried out over the internet, to which only a small minority of the local community have access. Time allocated for objections in late 2004 was a mere 10 days. And few outside the immediate area were either interested in or aware of what was going on.

Meanwhile, Durban officials claimed that without the USD 15 million provided by the Prototype Carbon Fund, they would not bother trying to recover the methane as fuel, since the electricity generated in the process costs so much more per kilowatt hour than the local power utility charges for its coal-fired power.<sup>139</sup>

*All right, fair enough. But assuming that's true, all it proves is that continued raw methane release and coal-fired power is a choice that would have a reasonable economic rationale, not that it is the only choice that could be made.*

That's all that's required, under the rules, for the project to create carbon credits.

*All right. But who would buy carbon credits from the dump?*

All PCF investors get *pro rata* shares of PFC project credits. These investors include British Petroleum, Mitsubishi, Deutsche Bank, Tokyo Electric Power, Gaz de France and RaboBank, as well as the governments of the Netherlands, Norway, Finland, Canada, Sweden and Japan.

*Is this a good thing for local people who live around the dump?*

That depends a lot on who you ask.

*Well, what does the PCF say?*

The PCF says that improving the 'financial position of DSW' would also benefit local people and send a 'clear signal' to them that 'the environment is a number-one concern in South Africa and is being dealt with in the best way possible'.

*And what does the local community say?*

Again, that depends on who you ask. But let's start with Sajida Khan, a member of the Indian community on the border of the dump. Khan, who was diagnosed in 1996 with cancer, and whose nephew died of leukaemia, had this to say in 2002: 'To gain the emissions reductions credits they will keep this site open as long as possible. Which means the abuse will continue as long as possible so they can



The fence separating the dumpsite from the surrounding communities.

continue getting those emissions reductions credits. To them how much money they can get out of this is more important than what effect it has on our lives.’<sup>140</sup>

Khan and some other community members see PCF support for the methane project as having thrown a lifeline to the dump. They note that the PCF’s crediting period for the project is seven years, twice renewable, making a total of 21 years. According to the PCF, ‘because of the growing waste generation per capita in the municipality...there is no plan to close...the Bisasar Road site...during the PCF project life.’ To Khan and colleagues, this new lease on life for the dump, together with the PCF claim that Bisasar Road is an ‘environmentally progressive...world-class site’ leave a very bitter taste in the mouth.

*Understandably so. But are there other views?*

One of the municipality’s top officials responsible for the project, Lindsay Strachan, has little patience with opinions like Khan’s. Because protesters ‘can’t think globally any more,’ he complains, ‘the project is literally slipping through our fingers.’<sup>141</sup> Strachan claims the city is committed to closing the dump and continuing to extract methane thereafter, although a carbon project document he helped write states that ‘it is not reasonable’ to expect that the municipality would close the dump before it is full, and that no plans exist for construction of replacement sites.<sup>142</sup>

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*‘[The Prototype Carbon Fund is after] a cheap bang for their buck; they basically just get the low cost credits...they pillage the country and don’t contribute to its sustainable development.’*

*Sheriene Rosenberg,  
SouthSouthNorth,  
South Africa*

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But there are more than just two sides to this story. Most of the African residents of the nearby Kennedy Road settlement also support extending the life of the dump. For one thing, the dump provides most of their current livelihood. For another, the new World Bank carbon project has shrewdly promised to provide jobs and a few local scholarships. The Bank also pushed DSW to conduct ‘consultative exercises’ in Kennedy Road, which constituted one of the few occasions that the community had been officially recognised. Kennedy Road residents could not help but contrast that recognition with what they perceive as the Bisasar Road community’s lack of sympathy for their ongoing struggles to secure rights to the land they live on so precariously.

*But presumably the World Bank and DSW are merely trying to divide the local Indian and African communities from each other?*

Kennedy Road activists are no more under any illusions about the agendas of outside agencies than they are in the front line of international debate over climate change. But, as Raj Patel of the local Centre for Civil Society at the University of KwaZulu-Natal observes, when communities have been systematically denied dignity,

‘consultations’ such as those staged by DSW under World Bank pressure may be the only ‘substitute for marginalisation’ available.<sup>143</sup>

Patel also observes, however, that as of 2006 the dump ‘seems to have receded as a site of struggle’ for Kennedy Road residents, ‘simply because there are new places and new ways to fight, and bigger things to fight for than the meagre prospect that a family member will get a job picking garbage on the dump.’<sup>144</sup>

*In favour of the carbon project, isn't there also the argument that by extracting methane, the scheme not only prevents quantities of a powerful greenhouse gas from being dispersed in the atmosphere, but also benefits local air quality?*

The project might clear the air, to some degree – although a lot of associated pollutants would still be released, including carbon monoxide and various hydrocarbons.

Clean air, however, is a right South Africans are constitutionally guaranteed even in the absence of carbon trading schemes. In a sense, therefore, Kyoto commodity production is being staked here to the non-enforcement of environmental law. DSW, PCF and their consultants are helping to enclose not only local communities’ air, but also their future. In the process the World Bank is also undermining its own stated concern with ‘good governance’ and the rule of law, because it’s providing an incentive not to enforce the constitution.

*What's the future of the project?*

Uncertain. Project opponents, backed by sympathisers in a range of countries, have definitely had an impact. Sajida Khan and others have filed formal complaints, citing technical, environmental, health and social problems. Several newspaper articles were published on Khan and her struggles, and in November 2004, World Bank staff were forced to visit Durban to have a look for themselves. In addition, in late August 2005, DSW submitted a Project Design Document to the CDM Executive Board for two much smaller methane projects at La Mercy and Mariannhill, which together would yield only one-sixtieth of the carbon credits of Bisasar Road. Although the two projects had previously been part of a package including the Bisasar Road scheme, the documents conspicuously avoided mentioning it.

*Are there other carbon projects afoot in South Africa?*

Quite a few. One is a project associated with Sasol, a chemicals, mining and synthetic fuels company so huge – with nearly USD 12 billion in assets and USD 1.4 billion in profits in 2004 – that it has a city named after it.

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*‘What are we going to do about carbon trading? Our president [Thabo Mbeki] is saying, “Where is this project? Where is any project? Where’s anything?” [There is] a big rush to get South Africa on the map. [Yet now, due to appeals,] the first project in Africa is stopped in its tracks and... literally slipping through our fingers... Japan is calling me. But I say we have no project... [The 2 per cent of people who object] are saying that this is in my backyard, I can't think globally any more... South Africa probably won't be able to say that we spearheaded the CDM market or better still we spearheaded the emissions reductions market... There is disappointment, but such projects will go on elsewhere, in Brazil or Chile or India or Iran or Kampala.’*

*Lindsay Strachan,  
Manager of  
Engineering and Projects,  
Durban Solid Waste*

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Kennedy Road residents on the march for community rights. Many have opposed closing the dump and have criticised opponents of the Bisasar Road CDM scheme.



Sasol is looking for carbon finance for an 865-kilometre pipeline that will carry natural gas from the Temane and Pande fields in Mozambique to its facilities in Sasolburg and Secunda. The gas will supplement coal as the feedstock for Sasol’s liquid fuel synthesis processes at its plant at Secunda, a town 100 kilometres west of Johannesburg, and replace it entirely in Sasolburg, which lies 60 kilometres south of Johannesburg.

Sasol justifies its bid for carbon money by claiming that since gas is a cleaner-burning fuel than coal, it will be releasing a massive 6.5 million tonnes less of CO<sub>2</sub> equivalent into the atmosphere annually than it would if it had decided to continue using coal. That makes the project one of the biggest CDM projects in Africa to date.

*Bigger than Bisasar Road?*

Yes. The project would generate twice the credits of Bisasar Road, even though the emissions it is ‘saving’ are of carbon dioxide, which is eleven times less potent a greenhouse gas than the methane seeping out of the Bisasar dump.

*How does Sasol justify the claim that it’s helping the climate?*

Without carbon money, Sasol argues in its CDM documents, it would have had to continue using coal as its only feedstock. True, there are signs that the firm was going to diversify its feedstock sources

anyway. Sasol's coal mine in Sasolburg 'reached the end of its economic life in 2001,<sup>145</sup> and trucking in replacement coal from Secunda was not 'economically sustainable'.<sup>146</sup> Yet the company insists that the obvious choice for a new feedstock source was not gas from Mozambique but rather digging a new coal strip mine near Sasolburg. Although there was 'public concern' over this proposed mine, which would have been sited on the banks of the Vaal river,<sup>147</sup> as well as 'a desire from Sasol and the South African government to reduce local air pollution', the company insists that there was no incentive or legal obligation not to go with coal.<sup>148</sup> The pipeline option, on the other hand, was blocked by 'numerous and difficult-to-manage barriers' including capital costs, political instability, and fluctuating gas prices – all of which needed carbon finance to overcome.

*I guess that's reasonable – if you think a fossil fuel company should be granted carbon credits at all.*

The only trouble is that Sasol's claims are contradicted by several of its own executives' accounts of how the pipeline option was chosen. For example, at a June 2005 meeting of the South African National Energy Association at the Siemens Headquarters in Sandton, outside of Johannesburg, Sasol's Natural Gas Supply Manager, Peter Geef, noted that the Mozambique pipeline had already been 'completely paid for' and that there were no outstanding financial inputs. Upon being questioned about the CDM, Geef responded that 'yes, we are indeed trying to get some carbon finance for this pipeline...you get a lot of pay-back in terms of dollars per tonne', but that 'we would have done this project anyway'.<sup>149</sup>

*So essentially Sasol is asking for carbon finance not to do something it would not have done otherwise, but as a bonus for what it has already done but just wished was more profitable.*

Exactly. Even Richard Worthington of the South African Climate Action Network (SACAN), who supports carbon trading projects in theory, says that the project merely entrenches Sasol's pipeline monopoly. He adds that the company's quest for extra income from carbon credit sales 'is just baseless greed'.<sup>150</sup>

*What about the other South African projects you mentioned.*

Another South African landfill gas CDM project is located at the Bellville South Waste Disposal (BSWD) dump in the north of Cape Town municipality. This project aims at capturing 70 per cent of the site's methane, instead of the current 30 per cent, which is merely flared.<sup>151</sup> The methane would then be used as fuel by local industry.

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*'You shouldn't be selling off your crown jewels so the North can keep polluting.'*<sup>169</sup>

*Sheriene Rosenberg,  
SouthSouthNorth,  
South Africa, June 2005*

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Sasol's Sasolburg plant, seen from the south.



Used in the early 1930s for sewage disposal, the site has been a dumping ground since the 1960s. Originally far from human settlement, it is now surrounded by the largely coloured and Indian Belhar community.<sup>152</sup> Although the site was closed for a time due to the ‘close proximity to residential areas and the risk of contamination to the underlying Cape Flats aquifer’,<sup>153</sup> it was later reopened, enraging local residents, who formed two separate organisations in opposition: the Landfill Monitoring Group and the richer and more Indian-based Belhar Development Forum. Both groups were relieved by the city’s pledge to close the site in 2006 but alarmed at negotiations that are now under way to extend its life until 2009.

*Does the extension of the life of the dump have anything to do with the CDM project?*

Project developer Walter Loots, head of Cape Town Solid Waste, denies this. Cape Town ‘is running out of landfill space’, Loots says, and ‘the only alternative would be a higher-cost regional landfill 60 kilometres out of town’.<sup>154</sup> It hasn’t been revealed whether any increase in available gas caused by keeping the dump open was included in the CDM accounting for the project, as was the case at Bissar Road in Durban.

*And who’s developing the project?*

Unlike the larger Bissar Road scheme, Bellville is being developed under the close supervision of a non-profit consultancy, South-SouthNorth (SSN), in a municipality in which climate change issues have their own office. It has also gained ‘Gold Standard’ status as a project meeting the highest standards for environmental and social sustainability.



Sasol gas flaring. Such flaring is alleged by environmentalists to be in breach of South African law.

### *What's the Gold Standard again?*

The Gold Standard was originally an attempt by the World Wide Fund for Nature to correct the CDM's 'failure to demonstrate "additionality" and deliver added environmental and social benefits'.<sup>155</sup> It is now being overseen by the Swiss-based organisation BASE. As discussed in Chapter 3, the Gold Standard gives a special certificate to CDM projects that deliver 'real contributions to sustainable development in host countries plus long-term benefits to the climate'.<sup>156</sup> The associated credits are sold at a premium.

However, it's not clear how a project that is widely opposed by the local community could make a 'by no means insignificant contribution towards local sustainability'. The project can be considered 'ecologically sound,' moreover, only in a very relative sense. As Walter Loots admits, current landfill practices are not sustainable.<sup>157</sup> Organic material and non-organic material are not separated,<sup>158</sup> even though waste sorting could conceivably create badly needed employment. This makes the capture of methane at Bellville 'an inefficient solution to an avoidable problem'.<sup>159</sup> Yet the city can hardly spend money on waste separation and recycling when 155,000 families in informal settlements still have no roadside collection of waste.<sup>160</sup>

*The Gold Standard doesn't seem to be encouraging projects that have longer-lasting social and environmental benefits for the community, then.*

Not in this case, no.

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*'The carbon market doesn't care about sustainable development. All it cares about is the carbon price.'*

*Jack Cogen,  
president, Natsource  
(the largest private buyer  
of carbon credits)*

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*But surely there must be more encouraging examples somewhere that can point a way forward for the carbon market.*

Well, there are plenty of positive initiatives in all the countries mentioned in this chapter. Costa Rica has stopped oil exploration in sensitive areas. Indian groups are organising to stop sponge iron production across four states. Thai villagers are working against coal-fired power plants.

The trouble is that such initiatives exist in opposition, as it were, to the carbon credit market, which is designed to *extend* fossil fuel use. If you look for ‘alternatives’ *within* the CDM and the carbon ‘offset’ market, you’re likely to be repeatedly disappointed.

Let’s nail down this point by looking at one final South African CDM project – probably as good a carbon project as you’re likely to see anywhere. This is the Kuyasa low-cost housing energy upgrade project. Certified by the CDM Executive Board on 27 August 2005, Kuyasa is the first Gold Standard project in the world to generate certified emissions reductions credits and has been widely applauded both nationally and internationally.

*There! That’s the sort of example I want to know about. Tell me more.*

Well, I’m not sure you’ll want to hear it. What Kuyasa shows, in the end, is that such ‘good’ schemes are unlikely to survive in the carbon credit market and seem virtually incompatible with it.

*How do you figure that?*

Well, let’s go over the history of the project and its virtues first.

Planning for the Kuyasa scheme, located in a neighbourhood in the township of Khayelitsha outside of Cape Town, got underway in 2002. Its pilot phase, launched in July 2003, involved retrofitting eight Reconstruction and Development Programme (RDP) homes and two crèches with insulated ceilings (where there would normally just be a corrugated steel roof), replacing regular lighting with low-watt compact florescent bulbs, and installing solar water heaters on the roofs. Partly because residents would have used grid electricity to heat their water in the absence of the solar heaters, the project is held to reduce demand for coal-fired electricity. The claim is that in total, 2.85 tonnes less CO<sub>2</sub> are generated per household per year as a result of the project. The project’s next phase will see the target group expand from 10 to 2,309 RDP homes throughout Kuyasa.

The scheme’s pilot phase has been a source of great pride for the project developers – the city of Cape Town and SSN – as well as its



Bellville, viewed from the dumpsite.

beneficiaries. It is also, unusually, actively supported by local residents, who have been consulted from the beginning. Kuyasa's ward development forum put together a broad-based steering committee of community members who assisted in the design of the project, decided which households would participate in it, and mapped out how the project would move forward into its next phase. The steering committee also helped facilitate contacts and a flow of ideas between the community and the project developers.

The project has a particularly high Gold Standard rating in terms of 'social sustainability and local development and has a minimal impact apart from the reduction of GHG on the natural environment'.<sup>161</sup> Kuyasa also creates jobs in installing and maintaining the solar water heaters, which are locally manufactured. Furthermore, the R625 average annual savings on electricity bills can go back into the local economy and create further economic spin-offs.<sup>162</sup>

One pilot project participant, Muzelli, an unemployed man in his thirties confined to a wheelchair, confirmed that he now saves over R600 per year on his electricity bills, which he is able to send back home to support his children still living in the Eastern Cape. When the weather gets cold at night (it can drop below 10 degrees Celsius during winter evenings), all of Muzelli's neighbours come over to visit, as his ceiling keeps the house much warmer than anywhere else in the neighbourhood. Though he admitted that he did not know much about climate change, Muzelli made it clear that people support the project for many reasons, namely the money they save and having warmer houses. 'This



Trusha Reddy researched the Bisasar Road project while she was an intern at the Centre for Civil Society at the University of KwaZulu-Natal and later, as a freelance journalist, Climate Care’s light bulb project.



Graham Erion of York University Faculty of Environmental Studies and Osgoode Hall Law School conducted research on Sasol, Bellville, Kuyasa and Bisasar Road while a visiting scholar at the University of KwaZulu-Natal’s Centre for Civil Society.

is a good project,’ he stated. ‘People are very impatient to get their homes upgraded; they really want this project.’<sup>163</sup>

Thus Kuyasa has been held up as an example of the potential of carbon trading both to fight climate change and to improve living conditions in local communities.

*This has got to be the future of the carbon credit market, then.*

Unfortunately not. The reality is that rather than being an example of what the CDM can deliver, Kuyasa is a testament to what it can’t.

*What do you mean?*

The project can’t survive off carbon finance. Instead, it is financed predominantly by one-off government grants, as an explicitly ‘public sector project’.<sup>164</sup>

Project proponents estimate that carbon money can cover no more than 20 per cent of the scheme’s costs, depending on the spot market price of the Certified Emissions Reductions (CERs) it sells.<sup>165</sup> (The first 10,000 CERs from the project were sold at 15 euros each to the UK to ‘offset’ jet flights and other emissions associated with the 2005 G8 summit meeting at Gleneagles, Scotland.<sup>166</sup> But ‘very few CER purchasers will pay upfront’.<sup>167</sup>) SSN staff member Lester Malengis, who has worked on the scheme for two years, admits: ‘This is first a project that uplifts Kuyasa, not a carbon project... . That funding is not sustainable.’<sup>168</sup>

The project is possible only because of generous funding from the national Department of Environmental Affairs and Tourism in Pretoria, the Western Cape provincial government, and Electricité de France (as part of their Corporate Social Responsibility campaign).<sup>169</sup> In addition, SSN and the city of Cape Town have donated hundreds of hours of unremunerated labour. For Richard Worthington of the South African Climate Action Network, Kuyasa has only ‘got to where it got to because it’s been treated as a charity case. It’s been damned expensive and not at all an example of how to put a project together’.<sup>170</sup>

Nor, according to Emily Tyler of SouthSouthNorth, who was closely involved in the development of Kuyasa, has registration as a CDM project helped. ‘The CDM actually adds little value (indeed, it adds costs) to the very sorts of projects it was designed to encourage,’ Tyler wrote in a whistle-blowing editorial in February 2006. There is, she said, ‘no financial value added by the CDM for the project types which most closely fit the CDM’s avowed objectives.’ Only by

### *The Voluntary Market Comes to South Africa*

In 2005, after two years of being unemployed, Sibiongile Mthembu got lucky.

Mthembu, 24, a lifelong resident of Guguletu, a sprawling township 20 kilometres from Cape Town created under the apartheid era, was recruited off the street by a local energy consultancy to hand out free energy-efficient light bulbs.

The consultancy had in turn been commissioned by Climate Care, a British company, to distribute the bulbs. The idea was that they would replace the more typical and wasteful incandescent variety. After having bought the bulbs (and convinced the city of Cape Town to pay to distribute them), Climate Care was then in a position to sell the CO<sub>2</sub> emissions estimated to have been saved to British consumers and companies who want to ‘offset’ their own carbon emissions.

The neighbourhoods where Mthembu went about his 10-day temporary job were full of long-standing problems. Houses were crumbling, with faulty wiring, unpainted ceilings and damp walls. Yet at USD 150 per month, when most residents earn considerably less – many from jobs such as selling loose cigarettes and sweets – the rent exceeds what the poor can afford.

‘Some people are pensioners,’ explained Pat Mgengi, one resident:

‘They don’t even get that amount of money every month. They tried taking people out of the houses and we put them back. Even after paying the full amount asked some don’t have the title deeds. We are going to court time and again. We are just trying to live like any other human being.’

In this community, the light bulbs Sibiongile Mthembu offered around would not ordinarily be on anyone’s shopping list. At 15 watts, the compact fluorescent bulbs are far more energy efficient than traditional higher-wattage bulbs and last about 10 times longer. But they cost USD 2.80 each, as opposed to traditional incandescent bulbs at 50 cents, and are not sold locally.

Not surprisingly, Mthembu’s bulbs had many takers. Mgengi said he accepted the four that he was offered simply because they were free. ‘We just accept what they introduce to us.’

But few local people will be able to afford to buy replacements. And when asked by residents if he would come back to deliver more bulbs if any were broken, Mthembu admits, he and his fellow light bulb distributors had to lie. Of the 69 low energy bulbs reported as broken from the households surveyed by Climate Care two months after the project started, none has yet been replaced.

Climate Care argues that this project is generating real carbon savings, since it would not have gone ahead without the firm’s intervention and is ‘not required by legislation, not common practice (and) not financially viable without carbon funding’.

However, in the wake of electricity blackouts, power generator Eskom recently decided to provide five million free energy efficient light bulbs to low-income households, among a host of other energy-saving measures. Sibiongile Mthembu is now employed delivering Eskom’s energy-efficient light bulbs to 86,000 houses in Guguletu. These are houses that Climate Care missed

out on its 10-day sojourn in Africa in 2005, and that were supposedly not going to receive such bulbs without Climate Care’s money.

Among Climate Care’s biggest customers for its carbon credits are British Airways and British Gas, both major contributors to climate change. British Gas has recently been in the news for pursuing legal action against Bolivia for taking a democratic decision to nationalize its oil resources. It is currently a partner in two large gas fields in the country and has eight exploration blocks that have not yet started production. British Airways, meanwhile, is busy promoting British airport expansion, ramping

up its inter-city commuter flight services, and launching a budget airline to popular short-haul holiday destinations.

Yet Climate Care defends both companies as being among the ‘best environmental performers’. ‘The climate crisis is so urgent that we should not worry about the motivation of our clients,’ the company declares in its 2004 Annual Report.

*Source:* Trusha Reddy, ‘Blinded by the Light’, *New Internationalist*, June 2006. Some names have been changed to protect sources.

bypassing the bureaucracy required for quality control at the CDM, seeking extra donor funding, and selling credits on the higher-priced voluntary market to offset emissions from corporate travel, personal lifestyle and so forth, could Kuyasa have broken even.<sup>171</sup>

*But maybe later on the project will be able to stand on its own two feet as a commercial proposition.*

That seems unlikely. In fact, a special project has had to be set up by the international Renewable Energy and Energy Efficiency Partnership to help clean energy proponents find new sources of funding for Kuyasa-like projects.<sup>172</sup> There has been talk about relying on community residents to cover some costs,<sup>173</sup> allowing manufacturers to lease solar water heaters to low-income communities,<sup>174</sup> and even selling Kuyasa’s carbon credits several times on the voluntary ‘offset’ market as well as through the CDM.

*But that last choice would be consumer fraud!*

Yes. The more times Kuyasa sold each of its credits, the more greenhouse gas emissions elsewhere it would be licensing. If the project sold even one of its credits twice, the project’s net effect on the climate would become negative even on its own carbon accounting. So this was never a serious option and is roundly rejected by SSN.

*Does that mean that for the time being, Kuyasa will have to be dependent on the kindness of taxpayers and politicians?*

Yes. Unfortunately, it's not as if government has no other funding priorities. Housing activist Peter van Hausen notes, for example, that there is currently a backlog of 260,000 houses that need to be built in Cape Town, and 20,000 more are required each year.<sup>175</sup> This backlog has almost doubled since 1994. In the long term, it is a lot to ask of public authorities that they spend tax money on energy upgrades for people who already own their homes when hundreds of thousands do not.<sup>177</sup>

Thus, while Kuyasa is exactly the type of project that many people hoped the CDM could deliver, now that it exists, the carbon market simply cannot support it. Carbon credit buyers will naturally gravitate towards much less environmentally and socially desirable projects such as Bisasar Road, Bellville or Sasol – assuming any of them come on line.

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*'The rich developed countries have emitted most of the greenhouse gases currently in the atmosphere and now the more enlightened of them are prepared to pay to further pollute our atmosphere, or more exactly, they will provide money so that they can continue their pollution while we decrease ours.'*<sup>176</sup>

*South African Climate Action Network, July 2002*

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## Brazil – Handouts for repression as usual

In a carbon project in Minas Gerais, eastern Brazil, carbon trading institutions have used and exacerbated coercive power relations in yet another attempt to produce an imaginary carbon commodity. As in Ecuador and Uganda, the Forest Stewardship Council (FSC) has played a big role and, as in South Africa, the World Bank as well.



*Is this another tree plantation project?*

Partly, but it's a good deal more complicated. The company claiming to be saving carbon and helping the climate is a pig iron-producing and plantation management company called Plantar S.A.

*How is Plantar helping the climate? Is the pig iron it makes produced by solar energy? Or is it perhaps used to make solar cells?*



Unfortunately, no. The iron is produced by burning charcoal and releasing carbon dioxide into the atmosphere, and is actually used to make things like cars, which of course release yet more carbon dioxide.

*In that case, how can Plantar claim that it deserves carbon credits? It sounds like it’s an active part of the industrial system that is accelerating climate change.*

Plantar and its colleagues at the World Bank have tried many lines of argument. At first, they said that without carbon finance, there would be an ‘accelerated reduction in the plantation forestry base in the state of Minas Gerais, within the next decade, caused by harvesting of existing forests (now in the last cycle of their rotations) and lack of investment into replanting’.<sup>178</sup> In the absence of carbon finance, Plantar and the Bank insisted, ‘the company would not invest in the replanting of its forests for the pig iron production, abandoning them after the final harvest of the existing plantations’.<sup>179</sup> When reminded that CDM rules do not allow credit to be provided for ‘avoided deforestation’, the Bank rewrote its design documents to emphasise other justifications.

*Which were...?*

First, that Plantar was not avoiding deforestation but rather preventing an otherwise necessary switch in the fuels for its pig iron operations from eucalyptus charcoal to more carbon-intensive coal or coke.

*Let me get this straight. This company says it deserves carbon credits for not doing something?*

That’s right. Plantar claims that without carbon money, the company would switch over from using charcoal to using fossil fuel. It’s called an ‘avoided fuel switch’. Because the carbon dioxide released by the charcoal is supposedly mostly absorbed by the new trees grown for new charcoal, less carbon enters the atmosphere than would enter it from the burning of coal.

*But why would Plantar switch over to using coal? Isn’t there enough charcoal to go around?*

Plantar claims that without extra carbon finance for a 23,100-hectare plantation scheme, the charcoal-fired pig iron industry would face a ‘supply bottleneck’. It says current plantations are being depleted and the lack of forest incentives will render new plantations financially unfeasible without World Bank carbon financing.<sup>180</sup> Plantation land will be ‘converted to pasture or agricultural land’.<sup>181</sup>

*Is that true?*

Well, it does somewhat strain credulity. Plantar is saying that carbon credits for its 23,100 hectare project are the only thing that can ensure charcoal supplies, even though Minas Gerais alone boasts 2 million hectares of eucalyptus plantations. Plantar itself owns rural properties covering more than 180,000 hectares, mainly devoted to eucalyptus for charcoal and almost all located in Minas Gerais,<sup>182</sup> and provides management services for more than 590,000 hectares of plantations for itself and other companies in Brazil spread across 11 large units.

The firm also has large investments in the development and production of high-yielding clonal eucalyptus varieties and is reported to be producing over 40 million clonal seedlings per year,<sup>183</sup> with yields of 35-42 cubic metres per year, contributing to its reputation as a committed, low-cost and highly competitive producer of charcoal and many other plantation timber products.<sup>184</sup> In addition, Plantar has recently gone to the trouble of getting plantations it uses to produce barbecue charcoal certified by the FSC.

Why should the failure to get carbon credits for only 4 per cent of the total area under the firm's management and 13 per cent of its own direct holdings result in a failure to invest in replanting? If the financial prospects for new plantation development are so poor, why did Plantar purchase the lands in question before it was considering carbon finance?

Some 143 local groups and individuals put it more strongly in a letter to the CDM Executive Board of June 2004:

[T]he claim that without carbon credits Plantar...would have switched to coal as an energy source is absurd... Yet now [Plantar] is using this threat to claim carbon credits for continuing to do what they have been doing for decades – plant unsustainable eucalyptus plantations for charcoal... It is comparable to loggers demanding money, otherwise they will cut down trees... [The CDM] should not be allowed to be used by the tree plantation industry to help finance its unsustainable practices.<sup>185</sup>

Even the project's validator, Det Norske Veritas (DNV), a Norwegian 'risk management' consultancy, admitted to being sceptical about Plantar's claim that it would not invest in replanting in the absence of the CDM project, 'given Plantar S.A.'s relatively strong investment capabilities as one of the major eucalypt seedling producers in Brazil'.

*How did DNV check Plantar's claim?*

They simply went to Plantar and asked them if it was really true or not. Unsurprisingly, Plantar executives assured them that the 'internal

rate of return for planting new trees today is not attractive in absence of the sale of CDM credits’.

Meanwhile, the World Bank and its consultants admit that there are several possible ‘land management scenarios for the Curvelo ranch in the absence of the carbon project’.<sup>186</sup>

*That means that there are several possible baselines with different carbon profiles.*

Yes.

*That means that there are several different figures for how much carbon the project might save.*

Yes.

*That means that there can be no single number of carbon credits generated by the project.*

No, there can’t.

*Doesn’t that bother the project accountants?*

No. They simply choose the baseline scenario they claim is ‘most plausible’ and discard the others.

*So there’s actually no scientific basis for assigning any particular number of carbon credits to the project?*

No. It’s essentially arbitrary. What’s more, even if Plantar could prove that it was avoiding the use of a quantifiable amount of coal in Minas Gerais, it would still have to prove that the coal would not be used somewhere else for 10, 50, 100 or 300 years. Or it would have to quantify the extent to which its local avoidance of fossil fuels was helping indirectly to build an alternative, non-fossil energy economy worldwide. In the end, it’s anybody’s guess how Plantar’s carbon credits are related to climate.

Revealingly, even those technocrats who are committed to the idea of carbon-saving projects are beginning to be uneasy about companies’ demands to be given carbon money for what they are doing already. In January 2003, the CDM Methodologies Panel rejected the claim of another ‘avoided fuel switch’ carbon project located adjacent to Plantar’s that it was an improvement on ‘business as usual’.<sup>187</sup> In November 2003, the project submitted another accounting methodology. But the Panel was still unsatisfied. Could carbon-saving projects that merely continue current practice really be ‘additional’? The panel decided that the claim throws up problems of ‘moral hazard’.<sup>188</sup>

*'Moral hazard'? What does that mean?*

It's a term often used in the insurance business. By insuring houses, for example, an insurance company, if it's not careful, can create an incentive for its customers not to take proper precautions against fire. Similarly, offering businesses a way of getting subsidies for what they're doing already, without any way of verifying their claims about what would happen otherwise, creates incentives for them not to make any improvements.

*Are there other justifications Plantar cites for getting carbon credits?*

Several. Plantar has also looked to get carbon credits for afforestation; improvements in charcoal production that minimise methane releases; rehabilitating *cerrado* (savannah), the biome it itself has had such a hand in depleting; and improving grasslands.

*What do local people make of all this?*

They find it hard to believe that Plantar could secure extra finance for anything that falls under the rubric of 'environment' or 'development'.

'We were surprised and bewildered by the news', a group of over 50 trade unions, churches, local deputies, academics, human and land rights organisations and others protested in a letter of 26 March 2003.<sup>189</sup> They see the company as having illegally dispossessed many people of their land, destroyed jobs and livelihoods, dried up and polluted local water supplies, depleted soils and the biodiversity of the native *cerrado* biome, threatened the health of local people, and exploited labour under appalling conditions (see 'Plantar vs. local people – Two versions of history', on page 309).<sup>190</sup>

*So they see the carbon scheme as shoring up an unjust and destructive social arrangement.*

Yes. But local residents oppose not only the way Plantar is trying to get paid for using former *cerrado* and farmland for a carbon dump. They also oppose the way the carbon project appropriates alternative futures that they are pressing for:

The argument that producing pig iron from charcoal is less bad than producing it from coal is a sinister strategy... What about the emissions that still happen in the pig iron industry, burning charcoal? What we really need are investments in clean energies that at the same time contribute to the cultural, social and economic well-being of local populations... We can never accept the argument that one activity is less worse [*sic*] than another one to justify the serious negative

Conducting research into the story of Plantar have been Marcelo Calazans (below) and Winnie Overbeek of the Brazilian NGO FASE-ES in Espirito Santo, assisted by an international team working on carbon trading more generally including, (next page from top) Adam Ma'anit and Heidi Bachram of Carbon Trade Watch, Jutta Kill of Sinks Watch, and Ben Pearson of Clean Development Mechanism Watch (and now with Greenpeace Australia).





impacts that Plantar and its activities have caused... [W]e want to prevent these impacts and construct a society with an economic policy that includes every man and woman, preserving and recovering our environment.<sup>191</sup>

*In the face of all this opposition, how does the project go forward?*

The scheme probably couldn't have got off the ground without the help and sponsorship of the Prototype Carbon Fund (PCF) of the World Bank, which would feed any credits it generates to its roster of Northern corporate and government clients. Plantar was the Bank's first carbon sink project and the Bank expected it to 'prepare the ground for similar projects in the future'.<sup>192</sup> Plantar's carbon scheme also gains legitimacy from the involvement of the FSC, as do similar schemes in Ecuador and Uganda (see 'From the Netherlands to the Andes – A tale from Ecuador' and 'The story continues – carbon forestry in Uganda').



*What if Plantar can't deliver the credits? Suppose the plantation burns down or the project verifiers find problems with the carbon accounting?*

One of the buyers of Plantar's carbon credits, The Netherlands, insists that if more than 30 per cent of its credits are delivered late, Plantar will have to pay a penalty. The World Bank would get off without paying anything.



*But doesn't the involvement of the World Bank, as an internationally reputable development institution, at least guarantee certain environmental standards and provide safeguards against abuse of local people?*

On the contrary. Many local people feel that the Bank's involvement merely legitimises environmental damage and the intimidation that Plantar uses to control local people – intimidation which, as in Thailand, is nowhere acknowledged in carbon project documents.



Many local residents are afraid to let interviewers cite their names. Some receive death threats. When a representative of the Rural Union of Workers of Curvelo went to the climate negotiations in Milan in December 2003 to raise awareness about the negative environmental and social effects of Plantar's operations (which won a special ironic NGO award there for 'worst CDM sinks project'), the company's directors bullied other union members into signing a letter of support for the company, threatening massive layoffs if carbon credits were not forthcoming. (One longstanding union opponent of the expansion of eucalyptus plantations in Minas Gerais did manage to insert the legible notation 'under pressure' beside her signature.)

### *Plantar: Local People Speak*

‘Plantar has planted all over, even up to the Seu Zé do Buritim river spring. Thirty-five thousand hectares of land...they sprayed pesticides with a plane. There used to be deer and other animals in the area. The native fauna lived together with the cattle. But since they applied the pesticide, every one of them got killed... The eucalyptus planted over here is meant for charcoal. It is a disaster for us. They say it provides jobs, but the maximum is 600 work places in a plantation of 35,000 hectares. And, whenever everything has been planted, one has to wait for six years. So, what work does it generate? ... We used to produce coffee – the Vera coffee – and pasta and cotton. Several different little factories in their suitable regions. Nowadays, there is only the eucalyptus. It has destroyed everything else... Why do they come to plant in the land suited for agriculture instead of more suitable areas? Because there it takes 10 to 20 years and over here only seven. All the best pieces

of land went to the eucalyptus plantations, pushing the small producers away and destroying the municipalities... These companies don’t want unions. They immediately co-opt the union leaders and they begin to make them part of their inner circle of managers and directors... The eucalyptus gives the water back to the earth after some years. But when it is time to give it back, they plant a new one that will absorb the water returned by the old one. This new plantation will develop really quickly, because, besides the rainwater, it will receive the water from the old eucalyptus...they are using the carbon credits to plant these eucalyptus that will grow very quickly.’

*Local man who asked for anonymity  
out of fears for his safety, 2003*

‘Eucalyptus has been grown with blood.’

*Antonio, local farmer, 2003*

Unbowed, the local movement has subsequently appealed directly to European investors not to put money into the Plantar carbon project. Peasant and trade union representatives travelled to Cologne to intervene in the Carbon Expo trade fair held there in June 2004, in which the Bank participated.<sup>193</sup>

Throughout the disputes over the carbon project, the World Bank has taken the side of Plantar. For example, in 2003 it posted on its website a letter from Plantar to PCF investors replying to dozens of local groups, without posting the original letter to which it was a reply.

*What about FSC? How are they involved?*

FSC has certified only 32,232 hectares of Plantar’s operations – less than 18 per cent of its landholdings.<sup>194</sup> These hectares are used to produce barbeque charcoal, as well as charcoal that would be used for the PCF project. However, Plantar has not hesitated to announce on its website that certification ‘ensures that our forest is managed in an environmentally responsible, socially beneficial and economically viable way’. This

gives the impression that FSC's certificate is valid for all of the company's plantations. It also claims in a letter to PCF investors that '100 per cent of the Project Area is being and will be certified'.<sup>195</sup>

As in Ecuador, FSC thus has a hand, if only an indirect one, in producing a fictitious commodity claiming to be 'carbon'.

## *Photo Essay*

### Plantar vs. local people – Two versions of history

Demonstration  
in early 2005  
against the 'green  
desert' created  
by commercial  
eucalyptus  
plantations  
established by  
Plantar and other  
companies.



**Local People:** Before the advent of giant eucalyptus plantations, the inhabitants of the *cerrado* (savannah) of northern Minas Gerais used the savannah for crops, cattle, wild foods, medicines and crafts. Small and medium-sized companies relied on *cerrado* products to manufacture pasta, leather, saddles, shoes, cotton oil, textiles, castor oil, textiles, sweets, and liquor and other products of the native *pequi* fruit.

Rice, beans and maize were planted and traditional dairy farming and livestock-raising was practised. Under the dictatorship, however, lands that the *geraizeiros*, or *cerrado* inhabitants, had traditionally used and claimed ownership over, but which were not formally titled and were under the jurisdiction of the state (*devolutas* lands), were leased fraudulently for 20 years to eucalyptus-planting firms, who also received financial incentives. Many rural dwellers were expelled from the land, while others were persuaded to abandon it by promises of jobs and better living conditions; still others sold up after becoming isolated and seeing their water supply dry up or become contaminated with pesticides. The *cerrado* was cut down, fields were fenced and consolidated, and agriculture, stock-raising and food products factories, which depended on the biodiversity of the *cerrado*, collapsed, leaving many unemployed. Through dispossession and impoverishment, residents have been forced to accept low wages and dangerous working conditions, often as illegal out-sourced labour, or flee to *favelas* on the outskirts of cities, where they are also trapped in a cycle of poverty.

Exactly how much of Minas Gerais' monoculture of eucalyptus plantations today is on *devolutas* lands is disputed, but the area is large. An investigative commission of the Minas Gerais parliament found that iron and steel companies were granted 'a large part of the *devolutas* lands in northern Minas Gerais'. Whatever the exact figure, however, the question must be investigated, since according to Brazilian law, corporations cannot acquire this type of land, only peasants. By right, such lands should be given back to rural dwellers and used for food production, and restoration of the *cerrado*. Many *geraizeiros* have brought a case against the state over their expulsion from their land when it was expropriated and leased to the companies. They want to convert plantations back into native *cerrado*.

**Plantar:** Plantar has never owned nor used any so-called *devolutas* lands. It has never contributed to the eviction of indigenous peoples. Plantar has never placed any constraints on the commercialisation of *cerrado* fruits, on which a few families may rely to earn their living, or on those who collect fruits for subsistence purposes. It is very hard to imagine how a company that does not occupy more than 4.5 per cent of the Curvelo Township area could cause a crisis in the fruit-collecting economy. Besides preserving both legal reserves and permanent conservation areas, Plantar also contributes to the conservation of traditional species of the *cerrado*. Anyway, the areas where Plantar works are not economically dependent on *cerrado* products but on cattle-raising. This has heavy environmental impacts, adds little value, and creates fewer employment opportunities than are created by the forestry industry. For example, in Felixlândia, Plantar acquired



Some of Plantar's plantations from the air.



a former cattle-raising farm which did not provide more than 20 jobs. In the same area, we currently have almost 300 permanent employees. In Curvelo, Plantar provides more than 1000 direct jobs, not to mention indirect ones. Plantar has not caused massive job layoffs and has significantly expanded due to forestry management services provided to third parties.

**Locals:** The 4.5 per cent figure doesn’t include other companies’ eucalyptus plantations in Curvelo, including those of Cossisa and Vallourec & Mannesmann Florestal (a company that is also trying to get carbon credits for maintaining a plantation operation that has displaced local people). In any case, knowing that Plantar has covered 4.5 per cent of the municipality with eucalyptus does not change the plantations’ impacts on the lives of people nearby. Plantar’s comparison between the 20 workers on a former cattle ranch and the 300 workers working there now is misleading. No local people were in fact hired. Unemployment in Felixlândia in fact increased. In addition, while eucalyptus plantations may provide employment during the first two years – in preparation of the land, planting, pesticide application or irrigation – they provide very little work during the subsequent five years before cutting.

It’s true that local people do not use *cerrado* areas under Plantar’s control for fruit collection. These areas are very small and offer little. But local communities have suffered from Plantar’s restrictions on their tradition of letting their cows graze freely. Plantar has put cattle in fenced areas or taken them away to another area without informing the owner. This has led to cases of lost cattle. Land reform and small-scale agriculture are the only ways of creating a future for the Brazilian rural population. Tree plantations only worsen the unequal distribution of land in the country. In Espírito Santo, eucalyptus plantations expelled thousands and thousands of people into the poor neighbourhoods of urban centres and an uncertain future. Turning over the 23,100 hectares of the Plantar project to small-scale diversified and ecological agriculture would create at least 23,100 more human-friendly jobs, with salaries at least four times higher than those of the majority of Plantar workers, according to the concrete experience of the local Movimento dos Pequenos Agricultores (Movement of Small Peasants). The Movement is also developing an alternative reforestation project, using not eucalyptus but tree species with multiple uses and local environmental value.



Harvest time on Plantar's plantations.

**Locals:** What with the eucalyptus industry's transformation of local rural society, people often have no livelihood options other than small-scale charcoal production, and build clay ovens in the *cerrado* for the purpose. Collecting commercial eucalyptus is against the law, however, so independent producers often burn what's left of native trees, and the resulting charcoal is often eventually purchased by the corporations. Although the companies are legally allowed to use a certain percentage of charcoal made from native *cerrado* trees as long as it comes with a certificate, they are said to pay more for native charcoal *without* the certificate. This allows them to use more than the legal amount of native charcoal. Companies still use around 15-20 per cent native charcoal.

**Plantar:** The use of charcoal made out of native vegetation is a reality that bothers pig iron manufacturers, environmentalists and authorities alike. That's why it's a goal of the Plantar project to establish sustainable plantations, capable of supplying 100 per cent well-managed eucalyptus plantation charcoal for pig iron manufacturing, thus curbing negative impacts brought by the use of native vegetation.



Forest clearance for Plantar plantation.

**Locals:** Plantar also continues to destroy *cerrado* directly in order to use the land for plantations. For instance, Plantar bought *cerrado* lands in the Campo Alegre and Paiol communities in Minas Gerais and planted eucalyptus on it. As late as 2000, Plantar was felling *cerrado* in Lagoa do Capim. In December 2002, Plantar land was also cleared at the river spring of Pindaíba. Native tree trunks can still be seen there. Dozens of municipalities have declared a state of emergency over water. Near Paiol de Cima, one stream has completely dried up after having previously flowed 11 months of the year. In Felixlândia, a spring called Cabeceira do Buriti is degraded. Flows in the Buriti river are down and herbicides have been applied without consultation

Plantar eucalyptus plantation with dead native *buriti* tree in the foreground. The *buriti* is a symbol of the *cerrado* region whose wide river basins it thrives in. The tree needs a lot of water to survive, and its demise shows that water levels have dropped.





Dried-out swamp forest near abandoned farm, October 2003.

with local people, killing fish and birds. Plantar has planted eucalyptus at river springs, drying them up and also contaminating them with pesticides that kill animal life in the streams. Plantar's contamination of local drinking water sources with pesticides has also caused the death of many emas, large land birds related to ostriches. The communities of Cobú, Paiol de Cima, Canabrava and Boa Morte have been forced to dig artesian wells. Cattle-ranching does not cause such negative impacts on water, and produces a greater diversity of goods, including meat, milk, leather and manure.

**Plantar:** We have been accused of drying up rivers, but in fact some streams dry up naturally for a few months, due to the seasonality of rainfall normal to the *cerrado*. They recover later. Of course, as with any fast-growing species, eucalyptus needs underground water. Nevertheless, scientific studies have shown that, as long as they are properly managed, as our plantations are, eucalyptus plantations do not reduce water supply to specific regions. Careless grazing and other traditional practices are more harmful to hydrological systems than eucalyptus plantations.

**Locals:** A Minas Gerais Parliamentary Investigation Commission found in 2002 that Plantar was practising illegal outsourcing of labour that negatively affected the safety and livelihoods of charcoal workers. It cited 'precarious labour relations, abominable working conditions, slave and child labour and deforestation of the *cerrado*' as well as 'infamous' wage levels. It also found problems with housing, hygiene, drinking water, food and transport, and noted that Plantar was in breach of International Labour Organisation provisions regarding freedom of trade union organising. The Federal Public Ministry of Labour has sued Plantar for illegal subcontracting and forced it

*Quilombola* charcoal workers. The *quilombola* are descendants of African slaves who, during the colonial era, escaped from farms to the hinterland, where they founded their own communities with their own distinctive culture, which survives today.



to sign an agreement to change its behaviour, which was subsequently found not to be in compliance. During the 1990s, the Montes Claros Pastoral Land Commission, a church-related organisation, also verified the existence of slave labour on Plantar property. In March 2002, the Curvelo Regional Labour Office (DRT) issued Plantar with a summons for using slave and child labour in timber extraction and charcoal production and fined the company after finding 194 workers without any registration on its plantations in Curvelo.<sup>196</sup>

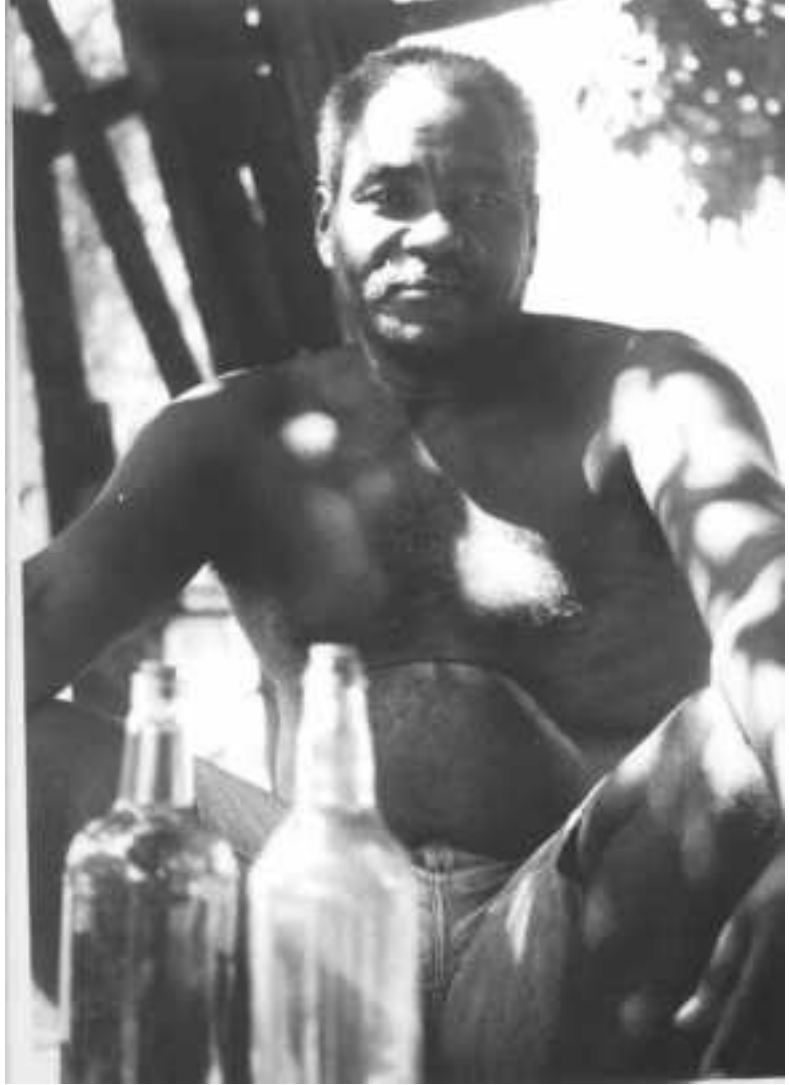


Plantar charcoal ovens.

**Plantar:** Plantar has never used child labour or slave labour. Our working conditions are in complete accordance with labour laws. Besides complying with Forestry Stewardship Council standards, the company is frequently audited under its International Standards Organisation-certified quality management system and is certified by ABRINQ Foundation as a ‘child-friendly company’. Representatives from the Intergovernmental Panel on Climate Change have visited Plantar’s facilities. Plantar may have been cited over working conditions by a Parliamentary Investigation Commission (along with every other company in the sector), but no irregularities were found. The benefits provided to employees are a benchmark for the industry and include occupational health care, half scholarships for all employees from basic education to graduate degrees, and free meals and food supply kits to lower-income employees. Instead of undertaking a legal dispute with the Curvelo Regional Labour Office (DRT) after being cited over outsourcing, Plantar has already agreed to manufacture charcoal with its own workforce.

**Locals:** Plantar’s agreement to manufacture charcoal with its own workforce needs to be evaluated to see whether it is really improving conditions for workers, who in general earn a maximum of only USD 100 a month. As unemployment is rife, most workers are frightened of mentioning any problem that occurs, including the creation of new contracting companies nominally part of Plantar with names like Plantar Energética. Plantar charcoal workers are continuously exposed to smoke containing toxic gases as well as pesticides and are at a high risk of accidents. In Espirito Santo, the Attorney General for Workers’ Conditions opened a confidential investigation in

Jorge, a former Plantar worker: ‘When I started working at Plantar I was OK. One day I fainted after lunch. I was already applying the insecticides, fungicides. I had headaches, I felt weak. My superior told me, “I am firing you because you don’t know if you are sick or not.” Six or seven people died. Plantar said it was heart failure. Now I’m unable to work. I don’t dare eat the fish from the streams here.’



2001 after the death of several former Plantar workers. One, Aurino dos Santos Filho, died with a pump filled with pesticides on his back while working on a eucalyptus plantation in Espírito Santo in 2001; he was only 34 years old. Aurino’s family has not received any compensation from the company. Plantar does nothing for workers who become disabled as a result of their work for the company; many have already died. Plantar makes labour organising difficult by rotating workers among far-flung sites. Worker leaders are registered as ‘urban labourers’ to prevent them from becoming rural union members.



*Quilombola*  
charcoal  
worker.

**Locals:** When it built a new tree nursery, Plantar, without consulting local inhabitants, diverted a road that has always been used by the communities of Paiol de Cima, Meleiros, Cachoeira do Choro, Paiol de Baixo, Canabrava, Gomos and others, extending travel distances for local inhabitants, including 900 students from the Serfio Eugenio School, by more than five kilometres. Plantar also dammed up the local Boa Morte river to supply the nursery with water, as well as polluting water with fertilisers and other agrochemicals, causing complaints from downstream water users.

**Plantar:** The detour has not caused any damage to local people. The original route is still there and can be used by pedestrians, cyclists and horse riders. Vehicle traffic has been diverted to prevent seedlings from being affected by dust, and drivers prefer to take the detour anyway because the road is of better quality. Public and school buses no longer get stuck in the mud during rainy periods.

**Locals:** In 2003, the old road was fenced off, making it impossible even for pedestrians to use. Even for anyone daring to jump the fence, the road is unusable, since it is blocked by the company's nursery. School buses never had problems with the old road.



Most of the photographs and information in this section are courtesy of Tamra Gilbertson of Carbon Trade Watch and form part of an international exhibition developed by her on the Plantar case.





With the help of Carbon Trade Watch, different generations (above and below) learn how to film their struggle to share with outsiders, including communities near a BP refinery in Scotland. The carbon credits BP obtained from Plantar and other carbon projects would allow it to maintain high levels of fossil fuel pollution in Europe.



- 1 Freeman J. Dyson, 'Can We Control Carbon Dioxide in the Atmosphere?', *Energy* 2, 1977, pp. 287-291.
- 2 Paul Faeth et al., *Evaluating the Carbon Sequestration Benefits of Forestry Projects in Developing Countries*, World Resources Institute/EPA, Washington, 1994; Sandra Brown et al., *Carbon Sequestration Final Evaluation: Final Report to CARE Guatemala for PNO3 Agroforestry Project*, Winrock International, Arlington, VA, 1999. The project also featured the first ever 'additionality' analysis; that is, an analysis that claimed the project deserved carbon credits because it would not have happened without the sponsoring corporation's concern about climate change. See Mark Trexler et al., 'Forestry as a Global Warming Mitigation Strategy: An Analysis of the Guatemala Carbon Sequestration Forestry Project', World Resources Institute, Washington, 1989.
- 3 See [www.careusa.org/careswork/project.asp](http://www.careusa.org/careswork/project.asp).
- 4 *World Rainforest Movement Bulletin* No. 37, August 2000, available at [www.wrm.org.uy/bulletin/37/Camerica.html](http://www.wrm.org.uy/bulletin/37/Camerica.html); and [www.careusa.org/careswork/project.asp](http://www.careusa.org/careswork/project.asp). Guatemala Agroforestry estimates 100 tonnes of carbon sequestered per hectare for forests and 30 tonnes for regrowth.
- 5 Brown et al., *op. cit. supra* note 2.
- 6 World Bank, *Guatemala - Integrated Management of Natural Resources in the Western Altiplano (MIRNA). Project Appraisal Document*, World Bank, Washington, 2001.
- 7 Larry Lohmann, 'Democracy or Carbocracy? Intellectual Corruption and the Future of the Climate Debate', Corner House Briefing No. 24, 2001, pp. 36-44, <http://www.thecornerhouse.org.uk>.
- 8 Brown et al., *op. cit. supra* note 2.
- 9 Verónica Vidal, *La Aplicación de Políticas sobre Cambio Climático en el Sector Forestal del Ecuador*, Memoria de Investigación Doctorado en Gestión Ambiental y Economía Ecológica, Autonomous University of Barcelona, October 1999.
- 10 Since 1994, PROFAFOR has arranged forestation contracts in the provinces of the Ecuadorian Sierra: Imbabura, Pichincha, Chimborazo, Cañar, Azuay and Loja. It has also signed contracts in coastal provinces, in the buffer zone of the Mache-Chindul Ecological Reserve within the polygon formed by El Carmen, Pedernales, Cojimíes, Muisne, Atacames, Bilsa and Quinindé - that is to say, in the north of the province of Manabi and in the south of the province of Esmeraldas.
- 11 Robert Hofstede, 'Impactos Ecológicos de Plantaciones Forestales', in Robert Hofstede et al., *Geografía, Ecología y Forestación de la Sierra Alta del Ecuador: Revisión de Literatura*, Editorial Abya Yala, Ecuador, 1998. See also Robert Hofstede, 'La Importancia Hídrica Del Páramo y Aspectos de Su Manejo', EcoPar, August 1997.
- 12 Vidal, *op. cit. supra* note 9.
- 13 G. Medina et al., 'El Páramo como Espacio de Mitigación de Carbono Atmosférico, Serie Páramo, 1', GTP/Abya Yala, Quito, 1999, quoted in Veronica Vidal, 'Impactos de la Aplicación de Políticas sobre Cambio Climático en la Forestación del Páramo de Ecuador', *Ecología Política*, No. 18, 1999, pp. 49-54.
- 14 See <http://www.stichtingface.nl>.
- 15 *Ibid.*
- 16 See also C. Borga et al., *Plantas Nativas para Reforestación en el Ecuador*, Fundación Natura, Quito, 1980.
- 17 See <http://www.stichtingface.nl>.
- 18 Mary Milne, 'Transaction Costs of Forest Carbon Projects', Center for International Forestry Research, available at <http://www.une.edu.au/feb/Economics/carbon/CCO5.PDF>.
- 19 Montserrat Alban and Maria Arguello, *Un Análisis de los Impactos Sociales y Económicos de los Proyectos de Fijación de Carbono en el Ecuador: El Caso de PROFAFOR-FACE*, International Institute for Environment and Development, London, 2004.
- 20 The agreement was signed using as a reference a document from the property registry and some false title deeds.
- 21 Harald Eraker, 'CO<sub>2</sub>lonialism: Norwegian Tree Plantations, Carbon Credits and Land Conflicts in Uganda', NorWatch/The Future in Our Hands, Oslo, 2000.
- 22 NORAD, letter to NorWatch, 30 March 2000.
- 23 Trygve Refsdal in telephone conversation with Harald Eraker, March 2000.
- 24 *Ibid.*
- 25 B. Koppers, *Social Impact Assessment of the Proposed Natural Forest Resources Management and Conservation Program*, K Consult, Oslo, October 1999.
- 26 D. N. Byarugaba, Commissioner for Forestry, 'Utilisation of Bukaleba Forest Reserve', 25 January 2000. An MP, Bunya West, wrote an open letter dated the same day which reacted harshly to a proposed solution for the land conflict put forward by a parliamentarian from the district on behalf of Norwegian and German concessionaires. The proposal entailed that while those only engaged in fisheries could keep a landing site for fishing boats, other intruders had to leave the reserve by the end of July that year.

- 27 John R. W. Aluma, 'Report on Environment Impact Assessment of the Management Plan for Bukaleba Forest Reserve under Busoga Forestry Company Limited', consultant's report, September 1999.
- 28 The company's environmental impact assessment, too, has noted the fears of local people: 'The [local] communities have expressed very strong desire to be permitted to continue to stay there [in the reserve] as it would be extremely difficult to find alternative locations and activities for livelihoods.' Yet the summary of the impact assessment states that the farmers and fishermen 'consider the project as a positive socio-economic development' for the area. *Ibid.*
- 29 Koppers, *op. cit. supra* note 25.
- 30 Nsita Steve Amooti, Forest Officer, 'Field Visit to Bukaleba Forest Reserve', 24 November 1999.
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- 33 Amooti, *op. cit. supra* note 30.
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- 48 'The Marrakesh Accords and the Marrakesh Resolution', [www.unfccc.int/cop7/documents/accords\\_draft.pdf](http://www.unfccc.int/cop7/documents/accords_draft.pdf).
- 49 Alfaro *et al.*, *op. cit. supra* note 47.
- 50 *Ibid.*
- 51 At present most of the timber consumed by the country comes from wooded grasslands. For example, in the year 2001 alone, approximately 260,000 cubic metres of timber were legally extracted from some 170,000 hectares of wooded grasslands, amounting to 3 per cent of the national territory (*Estado de la Nación*, San Jose, 2003).
- 52 See Paul Harremoës *et al.*, *The Precautionary Principle in the 20<sup>th</sup> Century: Late Lessons from Early Warnings*, Earthscan, London, 2002.
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- 59 Open email, 21 April 2005.
- 60 Gregg Marland *et al.*, 'Accounting for Sequestered Carbon: The Question of Permanence', *Environmental Science and Policy* 4, 2001, pp. 259-268; Michael Dutschke, 'Fractions of Permanence – Squaring the Cycle of Sink Carbon Accounting', *Mitigation and Adaptation Strategies for Global Change* 7, 2002, pp. 381-402.
- 61 See <http://www.rainforestcredits.org>.
- 62 China, Korea, Chile, Mexico, Viet Nam and Argentina are also prominent. See <http://www.cdm.unfccc.int> for up-to-date figures on CDM projects.
- 63 'Doubts Raised over Some Indian CDM Projects', *Point Carbon*, 10 January 2006. Tracking CDM projects in India is extremely difficult. Though India has set up a National CDM Authority (NCDMA), with a dedicated website, and NGOs such as the Tata Energy Research Institute (TERI) and Germany's Gesellschaft für Technische Zusammenarbeit (GTZ) offer India-specific data, information on CDM projects remains partial and inadequate. It is difficult to determine which project is selling what amount of credits to whom, and to find other relevant market information. Even the number of projects in the pipeline is difficult to ascertain. Validators' websites and the UNFCCC's list of projects being validated reveal names of CDM projects in India that are not on the NCDMA list. The fact that CDM projects in India do not require environmental impact assessments or management plans makes them all the more difficult to monitor and assess. Most surveys of CDM in India are carried out by supporters such as the NCDMA, the Asian Development Bank, and NGOs such as TERI, GTZ, or Japan's Institute for Global Environmental Strategies, and as a rule do not go beyond explaining business opportunities afforded by the CDM. There is little journalistic coverage of the physical performance of CDM projects and how they affect communities, and no systematic critique.
- 64 Anna Pinto, Centre for Organisation, Research and Education, 'Carbon Sinks, Carbon Trade, CDM and the Indigenous Peoples of the Northeast Region of India', draft, Guwahati, 2006.
- 65 Institute for Global Environmental Strategies; Ministry of the Environment, Japan; and Winrock International, India, *CDM Country Guide for India*, Second Edition, Tokyo, 2005, p. 43.
- 66 Soumitra Ghosh and Hadida Yasmin, 'Trade in Climate: The Saga of CDM, India Style', draft paper, Siliguri, 2006. This paper is part of a forthcoming *Report on CDM Projects in India* by Soumitra Ghosh, Devjeet Nandi, Nabo Dutta, Hadida Yasmin and Arindam Das.
- 67 Ritu Gupta, Shams Kazi, and Julian Cheatle, 'Carbon Rush', *Down to Earth*, Centre for Science and Environment, 15 November 2005.
- 68 *Ibid.*
- 69 *Ibid.*
- 70 Natuur en Milieu, 'The Future of the Clean Development Mechanism', Proceedings of the Renewable Solutions Conference, Montreal, 1-2 December 2005; see <http://www.natuurenmilieu.nl/page.php?pageID=76&itemID=1596&themalD=7>.
- 71 *Ibid.*
- 72 Gupta *et al.*, *supra* note 67.
- 73 Information on the sponge iron industry and CDM in this and succeeding paragraphs is drawn from Ghosh *et al.*, *Report on CDM Projects*, forthcoming (see *supra* note 66).
- 74 Minister for Forests and Environment Ganishram Bhagat, response to a question raised by MLA Nobel Verma in the Vidhan Sabha, 2 March 2005.
- 75 In a written reply to a question from MLA Dharamjit Singh, the State Minister for Forests, Environment and Housing informed the Vidhan Sabha on 24 February 2006 that in the Dharsinva Block of Raipur district, crops in 4,611 hectares of land belonging to the farmers of 17 villages had been severely damaged due to pollution spread by sponge iron plants. Crops have also been damaged in Kesla, Bodri, Chakarbhata, Dagori and Silphari villages of Bilha Block in Bilaspur district.

- 76 General Manager, District Trade and Industry Centre, Raigarh, 2005.
- 77 Gupta *et al.*, *op. cit. supra* note 67.
- 78 Ghosh *et al.*, *Report on CDM Projects, op. cit. supra* note 66.
- 79 Two researchers using software developed at the World Resources Institute in Washington estimated that as much as a staggering 7 billion tonnes worth of carbon credits could be sequestered by Indian plantations between 2000 and 2050 (Suruchai Bhadwal and Roma Singh, 'Carbon Sequestration Estimates for Forestry Options under Different Land Use Scenarios in India', *Current Science* 83, 11, 2002, pp. 1380-1386, <http://www.ias.ac.in/currensci/dec102002/1380.pdf>, p. 1380). A Planning Commission document has projected a vastly lower figure of 5 million tonnes of carbon dioxide saved a year, netting India about USD 125 million during the Kyoto Protocol's first commitment period (Planning Commission of India, *National Action Plan for Operationalising Clean Development Mechanism in India*, New Delhi, 2003, [http://planningcommission.nic.in/reports/genrep/fin\\_CDM.pdf](http://planningcommission.nic.in/reports/genrep/fin_CDM.pdf), p. 97). The fact that these two figures differ by a factor of 28 reflects the delirium that characterises the theory of carbon plantation 'offsets' (see Chapter 3).
- 80 Since 1992, the Indian pulp and paper industry has been trying to lease 'degraded' state forests to establish private plantations in order to meet the growing demand for raw materials. In 1994, when the Indian government tried to pass a law making this transformation possible, it faced stiff resistance from not only community groups and NGOs, but also the Planning Commission, which set up an expert committee to look into the matter. The committee categorically refuted the industry claim that degraded lands do not support biodiversity and are not used by local communities. It went on to show that leasing out of forests to industries would prove to be both ecologically and socially harmful, and would be an injustice to communities, who use all forests for livelihood and other reasons, and that no forests in the country could be said to be 'absolutely degraded' (N. C. Saxena *et al.*, *Report on the Prospects of Making Degraded Forests Available to Private Entrepreneurs*, Planning Commission of India, New Delhi, 1999).
- 81 Ghosh *et al.*, *Report on CDM Projects, op. cit. supra* note 66.
- 82 See <http://www.communityforestryinternational.org>.
- 83 See, for example, Irshad A. Khan, 'Joint Forest Management: Most Significant Forest Sector Policy Reform of Twentieth Century', note, World Bank, New Delhi, 2003.
- 84 Nandini Sundar *et al.*, *Branching Out: Joint Forest Management in India*, Oxford University Press, New Delhi, 2001; Arvind Khare *et al.*, 'Joint Forest Management: Policy, Practice and Prospects: India Country Study', International Institute for Environment and Development, London, 2000; Dermot Shields *et al.*, 'Incentives for Joint Forest Management in India: Analytical Methods and Case Studies', World Bank Technical Paper No. 394, Washington, 1998; Shashi Kant *et al.*, 'Complementarity of Institutions – a Prerequisite for the Success of Joint Forest Management: A Comparative Case of Four Villages in India', World Bank, Washington, 2002.
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- 86 Mark Poffenberger *et al.*, 'Communities and Climate Change: The Clean Development Mechanism and Village-based Forest Restoration in Central India', Community Forestry International and Indian Institute of Forest Management, Santa Barbara, 2001, p. 71, [http://www.communityforestryinternational.org/publications/research\\_reports/harda\\_report\\_with\\_maps.pdf](http://www.communityforestryinternational.org/publications/research_reports/harda_report_with_maps.pdf).
- 87 See M. Sarin *et al.*, 'Devolution as a Threat to Democratic Decision-making in Forestry? Findings from Three States in India', Overseas Development Institute, ODI Working Paper No. 19, 2003, <http://www.odi.org.uk> and G. Brahmane *et al.*, 'The Adivasis and the World Bank-Aided Madhya Pradesh Forestry Project: A Case Study of Indigenous Experience', discussion document prepared for the Workshop on Indigenous Peoples, Forests and the World Bank: Policies and Practice, 9-10 May 2000, Washington DC, <http://www.forestpeoples.org>.
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- 90 G. Brahmane *et al.*, *op. cit. supra* note 87.
- 91 Inhabitants of so-called forest villages lack land title deeds (*pattas*) and are classified as 'encroachers' on state forest land.
- 92 For further information on the current situation regarding JFM in Madhya Pradesh, see Shramik Adivasi Sanghathan, *op. cit. supra* note 88.
- 93 K. Sivaramakrishnan, *op. cit. supra* note 85.
- 94 Stephen Bass *et al.*, 'Rural Livelihoods and Carbon Management', Natural Resources Issues Paper No. 1, International Institute for Environment and Development, London, 2000, <http://www.iied.org>, pp. 4-5.
- 95 See, for example, C. K. Janu, 'The South Indian Adivasi Experience in the Nagar Hole National Park and Muthanga Wildlife Sanctuary', speech at the World Parks Congress, Durban, South Africa, 8-18 September 2003, available at [http://www.forestpeoples.org/Briefings/Indigenous%20Rights/wpc\\_india\\_nagarahole\\_eng.htm](http://www.forestpeoples.org/Briefings/Indigenous%20Rights/wpc_india_nagarahole_eng.htm).
- 96 Marrakesh Accords and the Marrakesh Declaration, Bonn, 2001, [http://unfccc.int/cop7/accords\\_draft.pdf](http://unfccc.int/cop7/accords_draft.pdf), Annex (A) 1. (c).
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- 99 'Doubts Raised over Some Indian CDM Projects', *Point Carbon*, *op. cit.*, *supra* note 63.
- 100 This is an example of a non-CDM carbon trading project. The project bypassed government and the CDM Executive Board and was implemented between two private entities. It was thus not subject to any legal requirements involving registration, monitoring or verification.
- 101 'Consulting Firms Deny Wrongdoing in Drafting Indian PDDs', *Point Carbon*, 11 November 2005, <http://www.pointcarbon.com>.
- 102 Ghosh *et al.*, *Report on CDM Projects*, *supra* note 66.
- 103 US Environmental Protection Agency, *Inside the Greenhouse*, EPA, Washington, 1997, [www.epa.gov/globalwarming/greenhouse/greenhouse2/oregon.html](http://www.epa.gov/globalwarming/greenhouse/greenhouse2/oregon.html). Solar-home systems are purchased on credit. SELCO was to use money from Klamath Falls to purchase stock. It would then be reimbursed by estate management using deductions from project participants' monthly salaries.
- 104 SELCO, a Maryland-based firm with offices in Bangalore, Colombo and Ho Chi Minh City, was established in 1997. Its Sri Lankan branch folded in 2005.
- 105 Solar-industry analysts believe that the Sri Lankan market for solar-home systems is at least one million households, not including the war-torn provinces of the north and east. (Personal communication, Mr Pradeep Jayawardene, Shell Renewables Lanka Ltd. At the time of an interview with Cynthia Caron, this number did not include the war-torn provinces in the north and east where ethnic conflict has created economic instability and uncertainty for Sri Lanka's business community. With the 2002 ceasefire agreement between the Government of Sri Lanka and the Liberation Tigers of Tamil Eelam (LTTE), the solar market might open up in the LTTE-dominated provinces in the island's north and east.) As of August 2002, about 30,000 systems had been installed island-wide, 20,000 with support from the World Bank's Energy Services Delivery Project. (Lalith Gunaratne, email correspondence 12 August 2002.) For more on the difficulties of financing solar-home systems for rural electrification, see Cynthia Caron, 'Examining Alternatives: The Energy Services Delivery Project in Sri Lanka', *Energy for Sustainable Development* 6, 1, 2002, pp. 37-45.
- 106 SELCO, 'Developing Countries Receive Solar Funding from Oregon's Klamath Cogeneration Project Carbon Offset Portfolio.' SELCO Press Release No. 4, 13 September 1999. Each lamp emits about 0.10355 tons of carbon dioxide per year.
- 107 J. T. Roberts and P. E. Grimes, 'World System Theory and the Environment: Toward a New Synthesis', in R. E. Dunlap *et al.* (eds), *Sociological Theory and the Environment: Classical Foundations, Contemporary Insights*, Rowman and Littlefield, Lanham, 2002, p. 184.
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- 109 At the same time (1999), the country's overall literacy rate was close to 92 per cent. Estate education is understaffed. In 1999, the national teacher-student ratio was 1:22, while in the plantation sector it was 1:45.
- 110 From a study conducted by the Plantation Housing and Social Welfare Trust.
- 111 A. W. Little, *Labouring to Learn: Towards a Political Economy of Plantations, People, and Education in Sri Lanka*, St. Martin's Press, New York, 1999.
- 112 Some families already used a car battery to power television sets.

- 113 Personal interview with Cynthia Caron, 18 August 2000.
- 114 Five days at Rs. 122.15 (USD 1.58), or USD 7.90.
- 115 There were three cadres of employment on the estate: resident-permanent (from the estate lines), non-resident permanent (from nearby villages), and temporary-casual.
- 116 Many workers already had loans to upgrade their existing housing. Estate management took monthly deductions from the wages of workers who had housing loans administered by the Plantation Housing and Social Welfare Trust (PHSWT). Under the PHSWT housing-loan scheme, 'at least one family member of each family will be required to work on the plantation during the 15-year lease period', according to the trust itself. The only source of funding available to workers to improve their living conditions has been through loans that keep them tied to the unfair labour practices and dismal living conditions of estate life.
- 117 Figures are from the Plantation Housing and Social Welfare Trust.
- 118 While there are no studies that show a direct correlation between concentrations of off-grid technologies such as solar power and decisions not to extend the grid into those areas (Lalith Gunaratne, email communication with Cynthia Caron, 12 August 2002), the fear that off-grid electrification could keep an entire area permanently off-grid was very real for adjacent residents. Solar-home systems generate between 35 and 50 watts of power, enough to meet requirements for domestic lighting and electronic entertainment such as TV and radio. The relative low generation capacity of solar home systems does not appear to enable equitable opportunities for economic development in off-grid areas.
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- 120 Sonja Boehmer-Christiansen, 'Science, Equity and the War against Carbon', *Science, Technology and Human Values* 28, 1, 2003, p. 82.
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- 125 *Ibid.*, p. 15.
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- 127 Global Environment Facility, *Project Brief* for project THA/99/G31, World Bank, Washington, DC, 1999.
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- 135 Lindsay Strachan, personal interview with Trusha Reddy, 13 June 2005.
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- 139 Reddy, *op. cit. supra* note 136.
- 140 Carbon Trade Watch, *The Sky's Not the Limit: The Emerging Emissions Trading Markets*, Transnational Institute, Amsterdam, 2002, <http://www.carbontradewatch.org>.
- 141 Reddy, *op. cit. supra* note 136.
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# Chapter 5

## Ways forward



*In which the claim that ‘there is no alternative’ to carbon trading is dissected and set aside, and emerging alliances for a more democratic and effective climate politics are explored.*

This special report has argued that the carbon market is getting in the way of solutions to the climate crisis.

Yet many environmentalists – especially in the North – say that carbon trading is unavoidable. Citing the Kyoto Protocol, the EU ETS and other trading schemes, they argue that, like it or not, it’s impossible to imagine any future national or international climate regime that does not include carbon markets. ‘The only policy measures with teeth involve cap and trade’, goes one often-heard refrain. ‘And the only way of overcoming US opposition to climate action is through carbon trading; to criticise carbon markets is to play into the hands of George W. Bush and the oil companies.’

There’s no time to start all over again, many environmentalists add, so the best we can do is roll up our sleeves and pitch in to try to make carbon trading a little less unworkable, a little less counterproductive and a little less unfair than it would be otherwise.

*I can see you think this is the counsel of despair. But what’s the alternative?*

That’s a question that’s often asked – again, especially in the North. Let’s start by trying to appreciate what a very strange question it is.

Pollution trading is a completely new idea, recently pushed on the world by a small circle of neoliberal institutions in the US. (The quarrel between George W. Bush and carbon trading advocates such as the framers of the Kyoto Protocol is in part merely a friendly dispute between two overlapping factions of US business.) Pollution trading’s main appeal is that it promises to save money for the rich over the short term. As a pollution control policy, it has a bad to indifferent record in the very few places it’s been tried, and is sure to fail elsewhere if the pollutant involved is that slippery, ubiquitous compound called carbon dioxide.

By contrast, many so-called ‘alternative’ approaches are of extremely long standing, have a range of beneficial effects, and have a prior

record of some success across a range of societies and issues. Most striking of all, many are already being widely used.

That raises the question: why should anyone use the word ‘alternative’ to refer to these approaches, while speaking as if carbon trading were a ‘mainstream’ strategy? Carbon trading is not, in fact, part of most climate policy proposals. It is not what people are mainly relying on in their efforts to tackle climate change. It’s not the only initiative that has teeth and not ‘what we have to work with’. On the contrary, it’s a dubious sideshow that’s wasted a great deal of time because it’s been treated as a main event. It may appeal to Northern advisers at international financial institutions under pressure to offer single ‘silver bullet’ solutions to global problems.<sup>1</sup> But it’s not working, and clearing it out of the way would be one good first step towards more constructive action.

*I’m confused. Could you give some examples of the more established and successful strategies you’re talking about?*

Well, you could start with a package of approaches that’s currently getting a lot of attention in Northern countries, where immediate steep cuts in fossil fuel emissions are most crucial. Roughly speaking, this package consists of

- large-scale public works
- subsidy shifting
- conventional regulation
- green taxes and other non-trading market mechanisms
- legal action

– all backed and monitored by popular movements and evaluated against ambitious short- and long-term targets.

*Sounds like a complicated blueprint to implement.*

Actually, it’s not a blueprint. Neither is carbon trading. Political action isn’t the implementation of blueprints. The future isn’t decided by planners sitting in rooms by themselves and then slotting their plans into a black box of default political institutions. It’s more a matter of alliance-building, of move and counter-move. The package mentioned above isn’t a theory but a historical observation of the current state of an ongoing process of discussion, conflict, consultation and bridge-building in which a lot of political institutions themselves come into question. Proposals for action flow out of such processes; the processes do not flow out of them.

*All right, no need to go on about it. But could you spell out the thinking surrounding the strategies you mention?*

First, sweeping public works programmes could help reorganise Northern societies' infrastructure away from fossil fuel dependency in a way that pollution trading and taxes are incapable of doing. Such programmes could, for example, revamp transport systems; decentralise electricity networks to make them more efficient, reliable, secure and receptive to solar, wind and micro-hydro power;<sup>2</sup> and help overhaul inefficient heating systems.

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*'Tinkering around the edges won't solve the problem. Just beating the carbon lobby won't solve the problem. Full social pricing and better information distribution are not enough. Using resources wisely will require institutional change.'*

*Gar Lipow, 2006*

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Phasing out subsidies for fossil fuel exploration, extraction, refining, transport and use is a second climate-friendly structural shift that cannot be made through trading schemes but only through collective decision-making. The subsidies in question underwrite a huge range of activities from domestic and foreign pipeline development to superhighway construction, airport expansion, long-distance shipping, military operations, tax exemptions for aviation and bunker fuel users, low-cost credit and insurance for fossil fuel firms and consumer rebates for sports utility vehicles.<sup>3</sup> Powerful enough political movements could shift such towards a coherent programme of, for example: renewable energy development; community-based planning for lower-carbon lifestyles; support for local movements protecting land, forests and smallholder agriculture; better insulation and heating; promotion of public debate and exchange on climate change; and just treatment for those who would otherwise suffer from the transition to less carbon-intensive industry, including fossil fuel workers and the poor. If coordinated regionally, increased support for renewable energy development could well spur global change more rapidly than negotiations at the United Nations, since it would threaten the competitiveness of countries that continued to insist on extreme fossil-fuel dependence.<sup>4</sup> Cutting off public subsidies for the export of climate- and people-unfriendly technologies would have the virtuous side effect of supporting local efforts to defend low-carbon lifestyles against large-scale and often corruption-ridden projects involving fossil fuels.<sup>5</sup>

*But wait a minute. Aren't fossil fuels the cheapest source of energy for Southern countries?*

It's not so simple – not when the history of subsidies is taken account of, costs such as health impacts, crop losses, and pollution damage are factored in, and fuel price risks are acknowledged.<sup>6</sup>

Moreover, most foreign-backed fossil fuel projects in the South don't provide cheap energy to the South itself, but rather result in fossil

fuels being exported and consumed in the industrial North. For example, Nigeria, the world's eighth largest oil exporter, imports 76 per cent of its petrol, and 34 per cent of its kerosene, at a cost of USD 3.6 billion. In the oil-producing Niger delta region, firewood is the primary energy source for 73 per cent of the people.<sup>7</sup>

In addition to shifting subsidies away from fossil fuel development, it's also important to curb subsidies for deforestation provided by national governments, export credit agencies, the World Bank and others. These include subsidies for pulp mills, industrial monoculture plantations, mining in forested areas and other enterprises that result in displacement, impoverishment and ecological degradation.<sup>8</sup> Such a move would help in both slowing down and adapting to climate change. Shifting subsidies away from military budgets, particularly that of the US, would also free up money for tackling climate change.<sup>9</sup>

A third element of a strategy for structural change in the North, in addition to public works and subsidy shifting, would be more serious conventional regulation setting efficiency and carbon use standards for buildings, vehicles and urban development and land-use planning. As noted in Chapter 3, such regulation is often capable of improving efficiency faster, at a lower cost, and in a less coercive way than market mechanisms such as trading or taxes.<sup>10</sup> It can do things that trading, taxes and voluntary programmes cannot do.<sup>11</sup>

Fourth, as structural change provides more low-carbon choices (better public transport, more efficient machinery), carbon taxes and taxes on material intensity (focusing on unnecessary or throwaway use of metals, water, wood, plastics and so forth) come to have a greater effect.<sup>12</sup> Revenues from such taxes could then be used to reduce taxes on labour, fund low-carbon energy and increase efficiency, or offer rebates to buyers of greener, more efficient equipment.

Further market instruments that do not demand impossible types of quantification could then be applied in the service of innovation. 'Environmental competition statutes' that require polluters to pay costs that their competitors incur in reducing pollution are a good example.<sup>13</sup>

The courts provide yet another important arena for action beyond the trading floor. 'If generally accepted scientific assessments are accurate, global warming is likely to be the most expensive environmental problem ever', explains US law professor Andrew Strauss. 'Determinations are going to have to be made about who is going to bear these costs...[and] litigation will very likely play a role.' Oxford climate modeller Myles Allen and others advocate the use of public nuisance, product liability and human rights law against greenhouse gas polluters.<sup>14</sup> Allen's colleague, science and technology scholar Steve Rayner,

suggests that the ‘threat of civil liability may prove to be a much more powerful’ incentive to the US electricity utility industry to reduce its emissions’ than the threat of regulation.<sup>15</sup> International law may provide still further avenues for action against global warming, through lawsuits against banks and export credit agencies for corruption and human rights violations connected with fossil fuel projects.<sup>16</sup>

## Getting reacquainted with what works

In the South as well as the North, community-level or popular strategies of proven worth in fostering climatic stability also need to be better recognised by environmentalists and systematically strengthened instead of being penalised and undermined by national governments, the World Bank, export credit agencies, the World Trade Organization and so on. For example:

- Networks protecting community forests, other local commons and low-input swidden or integrated farming systems (increasingly supplemented with biogas energy production) are a powerful force against climatically destabilising land clearance, commercial logging, high-input intensive agriculture and long-distance food transport.
- Movements against trade liberalisation, privatisation and commodification worldwide help to slow growth in unnecessary transport and protect local subsistence regimes against threats from fossil fuel-intensive sectors.<sup>17</sup>
- Popular movements against oil wars, gas and oil pipelines, fossil fuel extraction, power plant pollution and airport and highway expansion also help curb extraction of fossil fuels.
- It is increasingly clear that small renewable energy sources over which local communities have power, whether off-grid or on-grid, are becoming a cheap alternative to fossil fuel-oriented centralised generating systems in many areas of the South.

Insofar as they defend local resilience and promote community solidarity and organisation, such strategies are crucial not only in slowing climate change but also in adapting to it.<sup>18</sup> As scholars Elizabeth Malone and Steve Rayner observe, ‘fostering flexibility means fostering power at the local level’.<sup>19</sup> As emissions trading expert Ruth Greenspan Bell explains in an article on sulphur dioxide trading in China, fostering that power requires closer attention to realities on the ground than pollution trading advocates have usually been willing to pay:

In their enthusiasm for efficiency over other values, the advocates for market-based instruments for environmental control have re-

versed the order in which environmental solutions are found. They have given their prescriptions without first doing a physical examination of the patient; in other words, they have first recommended environmental instruments and secondarily tried to bend institutions to support the already identified cure... . Those who advise governments to adopt reforms for which the institutional basis does not yet exist put the cart before the horse, a costly mistake that directs weak countries in the direction of solutions they have little hope of implementing. Instead, the donors and advisers should...take into account existing capabilities and institutions [and] find examples of small, albeit imperfect, efforts that seem to be working and building on them.<sup>20</sup>

*Well, this is all very interesting, but is any of it really going to happen?*

A lot of it already has happened, or has clear precedents. A lot of the strategies mentioned above have a far longer record of use than pollution trading – and a more successful one. Public works and subsidy-shifting have been used for millennia to change societies' energy-use patterns – cases range from the ancient irrigation systems of Asia to the US's undermining of rail travel and subsidisation of interstate highways and suburban sprawl following the Second World War.<sup>21</sup> Taxation was used during the Xia and Shang Dynasties in China, in ancient Aksum and Ghana, ancient Egypt, Greece, Rome, and in the Aztec and Inca empires. Conventional pollution and energy regulation has been around for at least 150 years and has many achievements to its credit, including in the US from the 1970s onward at both national and state levels.<sup>22</sup>

Local forest or water commons regimes, meanwhile, have played a climate-stabilising role for decades or, in many cases, centuries.<sup>23</sup> Popular movements against privatisation and resource wars have been achieving concrete results for just as long. Hundreds of communities on at least four continents have been successfully protecting their local areas from oil drilling for decades.<sup>24</sup> In Costa Rica, the government has halted efforts by US oil companies to explore and extract hydrocarbons from some of the country's richest ecosystems.<sup>25</sup>

Many of these strategies are already being explicitly directed at climate change. Climate-related regulation and climate-related tax codes are already on the books in many countries. In 2000, the Caribbean nation of St. Lucia announced a unilateral plan for a fossil fuel-free energy future.<sup>26</sup> Following the lead of the city of Växjö,<sup>27</sup> Sweden is also planning to abandon the use of oil within 15 years and ultimately other fossil fuels as well.<sup>28</sup> Although its claim to have cut emissions from 1997 to 1999 is questionable,<sup>29</sup> China's government has introduced taxes and targets promoting efficiency and renewable energy



more stringent than those in the US, including laws allowing energy from renewable sources to be sold into the grid at a higher price and encouraging more energy-efficient buildings.<sup>30</sup> Even in the US, universities, towns, cities, states and companies are taking their own actions against fossil fuel overuse, often without even mentioning carbon trading.<sup>31</sup> Understanding that strict regulation is inevitable and worried about losing out when it comes, even many large US corporations are pressing their government for stronger intervention.<sup>32</sup>

Shifting subsidies away from fossil fuels, similarly, already has a lot of support. Backers range from grassroots groups in the South to Greenpeace to student organisations, the Climate Crisis Coalition, Platform, the US Climate Emergency Council and the government of Sweden.<sup>33</sup> The Kyoto Protocol itself commits its signatories to 'progressive reduction or phasing out' of damaging subsidies for fossil fuels. The Organization for Economic Cooperation and Development estimates that removing such subsidies would alone reduce emissions by 18 per cent by 2050 while increasing world income by 0.7 per cent.<sup>34</sup> Oilwatch has proposed that nation states halt oil and gas extraction in protected areas and that they be compensated by countries that pledge to reduce drastically their carbon dioxide emissions.<sup>35</sup> Roughly 90 per cent of the US voting public now favours more subsidies and government regulation to encourage renewable energy.<sup>36</sup>

Demonstrators take to the streets in Montreal in December 2005 on the occasion of the 11th Conference of the Parties of the UNFCCC.



Calls for more sweeping taxes on carbon use are also reverberating worldwide.<sup>37</sup> In addition, movements demanding institutional divestiture from banks investing in fossil fuels are getting under way, and there are growing links between movements concerned with carbon trading and those concerned with related forms of privatisation in health, water, education, transport, energy and genetic information, and with biotechnology and nuclear energy. Legal action, too, is already being taken. In Nigeria, local communities have challenged oil companies as well as their own government in the courts over gas flaring and pollution.<sup>38</sup> Environmentalists are also suing US and German export credit agencies for funding fossil-fuel projects abroad.<sup>39</sup> In December 2005, Alaskan and Canadian Inuit peoples sent a petition to the Inter-American Commission on Human Rights claiming that the US was violating their human rights by refusing to cut greenhouse gas emissions.<sup>40</sup> In July 2004, eight states filed a tort-based suit against electricity generators in a court in New York on global warning nuisance grounds. In June 2006, the US Supreme Court agreed to consider a demand by 12 states, together with various cities and environmental organisations, that the George W. Bush regime regulate carbon dioxide to combat global warming.<sup>41</sup>

In short, the question ‘what’s your alternative to carbon trading?’ needs to be turned on its head. Carbon trading itself is an ‘alternative’ – although it’s perhaps too marginal, academic and parochial, when considered in a global context, to deserve even that title. Strategies such as those detailed above have a better claim to be considered part of a living mainstream. To treat the two as if they were on a par signals a catastrophic loss of political and historical perspective.

## Choosing allies

*OK, I take your point. But if so many of the non-trading approaches you mention are well-established and widely-supported, why aren't they achieving better results? Carbon trading may be a waste of time and resources, but the strategies you mention don't seem to be doing so well against global warming, either!*

That’s true, but it’s important to remember that strategies such as those detailed above are not only ‘technically’ more realistic than carbon trading, but politically more realistic as well – provided that environmentalists and other activists fulfill their responsibility to help build alliances that can help make them so.

*In what ways are they more realistic?*

In many ways. Unlike carbon trading, these approaches are built on the basic truth that most fossil fuels will have to be left in the ground.

Unlike carbon trading, they recognise irreversibility and the differences between risk, uncertainty, ignorance and indeterminacy and don't try to calculate the incalculable. Unlike carbon trading, they acknowledge explicitly the real-world functions and limitations of conventional development institutions. Unlike carbon trading, they take into the account the realities of international politics. Crucially, unlike carbon trading, they make no bones about the fact that dealing with the climate crisis is going to involve democratic political organising and an uphill political struggle.

*But does dealing with the crisis have to involve democratic political organising? Realistically, there may be no time for that. Maybe environmentalists should just try to make a quick deal with governments and business to solve the problem.*

That's the working assumption of many carbon trading supporters in the North. The idea is that environmentalists should throw their support behind policies that offer corporations or rich-country governments the short-term cost savings associated with emissions trading, plus property rights in the atmosphere, plus a flow of cheap credits from carbon projects and new opportunities for investment. In return, corporations or rich-country governments will back emissions cuts while channelling funding and green technology to the South.

One difficulty with this plan is that many corporations have understood from the start that carbon markets are structured in a way that will allow them to take the gravy while leaving environmentalists with nothing. They know that rent-seeking under the EU ETS or horse-trading under the UNFCCC will enable them to delay emissions cuts indefinitely (see Chapter 3). They know that carbon trading often takes the teeth out of other, existing forms of regulation.<sup>42</sup> They know that every pollution trading scheme to date has involved rewarding polluters with free assets. They know the system can be gamed. They know that 'giving carbon a price' need not be an inducement to structural change, especially if they can control that price. And they know that carbon 'offset' projects offer still further opportunities to entrench 'business as usual'. Firms are often delighted when environmentalists support the colonialist claim that the global green future lies in an expanded export of machinery and expertise from North to South and lose no time in setting up mechanisms that allow industry and the World Bank to reap new rewards from a parade of methane-burning schemes, large hydro-electric dams, coal-fired generating plants and expanded monocultures that benefit the world's rich while leaving the course of climate change untouched. Many polluters like carbon trading not because they think it will pay for a just transition to a low-carbon future, but because they are convinced it won't.

While the refrains ‘there is no alternative’ and ‘it’s too late to turn back now’ play in the background, environmentalists following this plan are now running through a predictable repertoire of salvage attempts: schemes for ‘certifying’ carbon projects, efforts to persuade governments to auction allowances rather than giving them away, toothless complaints about officials’ ‘lack of political will’ to set adequate emissions caps, press releases seizing on small concessions as ‘major victories’. The more committed environmentalists become to this dynamic, and the more they slot themselves into roles as market verifiers, monitors and corporate consultants and trainees, the less they’re able to face the extent to which they’ve been snookered. The harder it has become, too, to acknowledge that they’ve made political alliances with the wrong parties and that in the end, the fight against global warming has to be part of the larger fight for a more just, democratic and equal world.

*But why should anyone have to choose their allies? Aren’t we all in this together? Global warming is, after all, global. It’s going to hurt everyone. You make it seem as if there’s some kind of class war going on. It sounds so ideological.*

In climate politics, as in everything else, different sides have different stakes, different vulnerabilities, different backgrounds, different commitments, different interests and different kinds of power. That’s largely what this special report has been about. For the sake of a viable future, these differences need to be explored and understood, not ignored. Too often the peremptory exclamation ‘You’re just being ideological!’ – like the peremptory question ‘But what’s your alternative?’ – functions merely to shut down a conversation that needs to be continued and expanded.<sup>43</sup>

*I’m still not convinced. In Chapter 3 you made fun of carbon trading by saying that it could only function effectively and equitably in an ideal world in which every political problem had already been solved and every institution transformed virtually into its opposite. Now it seems like you’re saying that the same is true for any strategy for contending with global warming.*

No. Climate activists who are realistic about politics – and politicians who are realistic about climate change – must start from where the world is today and contend with the institutions that exist today. That means choosing political allies to whom global warming is more than just a new threat to or opportunity for profit and market share, and who will have an interest in defending and building the institutions capable of coping with it.

If carbon trading, *per impossibile*, could be carried out the way its environmentalist proponents claim to want it to be carried out, it would

hold little appeal for the biggest polluting businesses. If it is carried out as it is today, then its environmentalist proponents have lost their battle. Either way, environmentalists are deceiving themselves if they think that carbon trading is going to ‘jiu-jitsu’ ruling elites into serious action on climate change. There are no detours around political organising.

### *No Detours around Politics*

Q. At the talks you give to American audiences, you are often asked the question, ‘What should I do?’

A. Only by American audiences. I’m never asked this in the Third World. When you go to Turkey or Colombia or Brazil, they don’t ask you ‘What should I do?’ They tell you what they’re doing... These are poor, oppressed people, living under horrendous conditions, and they would never dream of asking you what they should do. It’s only in highly privileged cultures like ours that people ask this question. We have every option open to us, and have none of the problems that are faced by intellectuals in Turkey, or *campesinos* in Brazil... But people [in the US] are trained to believe that there are easy answers, and it doesn’t work that way... You want a magic key, so you can go back to watching television tomorrow? It does not exist. Somehow the fact of enormous privilege and freedom carries with it a sense of impotence, which

is a strange but striking phenomenon... There is no difficulty in finding and joining groups that are working hard on issues that concern you. But that’s not the answer that people want. The real question people have, I think, is, ‘What can I do to bring about an end to these problems that will be quick and easy?’... But that’s not the way things work. If you want to make changes in the world, you’re going to have to be there day after day doing the boring, straightforward work of getting a couple of people interested in an issue, building a slightly better organisation, carrying out the next move, experiencing frustration, and finally getting somewhere... That’s how you get rid of slavery, that’s how you get women’s rights, that’s how you get the vote, that’s how you get protection for working people. Every gain you can point to came from that kind of effort.<sup>44</sup>

*Noam Chomsky, 2005*

Indeed, no aspect of the discussion on global warming can be disentangled from debates about colonialism, racism, gender, exploitation and the democratic control of technology. What, for example, is to be done about the fact that the world – and mainly the rich minority – uses the energy equivalent of 400 years of plant growth every year thanks to being able to burn the ‘buried sunshine’ of fossil fuels?<sup>45</sup> To switch enough of the world’s energy production from fossil fuels to biomass so as to stabilise atmospheric concentrations of carbon dioxide without cutting energy use would require more land than is currently used for all of the world’s crops. To switch enough energy

production from fossil fuels to centralised production of wind power without cutting energy use would require devoting a parcel of 210 million hectares, or a land area bigger than Mexico, to wind turbines; converting entirely to solar would mean covering an area of 14 million hectares, the size of Bangladesh or Greece, with solar panels.<sup>46</sup> Yet to resort to nuclear power would be disastrous for global security and disastrous for future generations. There's no way around it: fossil fuels or not, keeping the rich supplied with the same amount of energy they use now implies resource takeovers with deep colonialist and anti-democratic implications.

*But by the same token, surviving global warming is not only a political problem but also a technical problem, no?*

Of course. The real difficulties, however, as experts from all sides of the political spectrum tend to agree, are more political than technical.

*So we don't need a technological revolution to deal with the issue?*

No. A wealth of studies have already traced out, in some theoretical detail, enforceable pathways that industrialised countries can take towards a non-colonialist, safe and convivial non-fossil future – pathways that neither require nor would benefit from emissions trading.

In the US, for example, Amory Lovins and his colleagues at the Rocky Mountain Institute have charted a non-nuclear 'roadmap for getting the United States completely, attractively, and profitably off oil' while creating jobs, improving security and rebalancing trade, featuring efficiency, biofuels, saved natural gas, and, optionally, hydrogen.<sup>47</sup> Lovins' proposals rely on a suite of government policies that would allow more decentralised power generation; cut fossil-fuel subsidies; decouple profits from utility electricity sales; let utilities profit from customers' lowered energy use; tax aviation, driving and petrol; impose a tax on inefficient products while giving rebates for efficient ones; encourage 'smart growth'; promote research and development; provide information about available efficiency improvements; invest in energy supply infrastructure and greener equipment; and help retrain workers for lower-carbon commerce. Systems analyst Gar Lipow reckons that in 30 years the US could phase out fossil fuels entirely, at an annual cost of less than a third of the country's current military budget, or less than the tax breaks given to the very rich over the past 40 years: 'it is a myth that global warming is a technical rather than a political problem'.<sup>48</sup>

In Europe, Friends of the Earth England, Wales and Northern Ireland has documented how a 48–71 per cent reduction in carbon dioxide

### *Waiting their Chance*

Enormous reserves of common sense and ingenuity worldwide are awaiting proper opportunities to be tapped in the service of minimising and coping with climate change.

The great bulk of this shrewdness and inventiveness is of course to be found in the ordinary people of the South. But in the North as well, huge potential is waiting to be unblocked.

In the US, opportunities for efficiency abound that can ‘pay for themselves in an extremely short time’,<sup>51</sup> provided that government does not shy away from regulation. These include control systems that reduce energy consumption in irrigation systems by up to 99 per cent, super-adobe construction,<sup>52</sup> houses and commercial buildings that save up to 90 per cent of heating and cooling costs, ultra-light rail, and so on. The Intergovernmental Panel on Climate Change estimates that if good design and insulation were extended globally, greenhouse gas emissions could be cut by up to 40 per cent.<sup>53</sup>

Zero-carbon housing is already up and running in the UK and Germany. Woking Borough Council near London has re-

duced carbon emissions in council buildings and properties by over 77 per cent since 1990 through more localised power sources, financed by energy efficiency savings. Architects Atelier Ten have designed a way of keeping buildings cool without air conditioning, using a termite mound as their model.<sup>54</sup> Even the big corporate sector is waiting its chance. In Britain, 74 companies’ emissions reduction efforts have already yielded USD 11.9 billion in gross savings, largely from efficiency.<sup>55</sup>

Technological change can be swift, given the right context. During the Second World War, it took US car manufacturers only six months to convert to military production, and the country took only 12 years to switch from steam to diesel/electric locomotives and from uncontrolled automotive emissions to catalytic converters. During 1975–2000, the US used 3.43 per cent less water per year per dollar of GDP, and, during 1977–85, helped by regulation, made very rapid oil and energy savings. Thanks in part to building and appliance efficiency standards, per capita electricity use in California has remained virtually flat since the mid-1970s, while it has risen by more than half in the rest of the US.<sup>56</sup>

emissions could be achieved in the UK by 2020 in the all-important electricity sector, without any new nuclear power or geo-sequestration, and with a decline in the use of natural gas.<sup>49</sup> As noted in Chapter 3, consultant Roger Levett estimates that fuel use in the UK could be cut by 87 per cent and carbon-based fuels eliminated altogether using existing technologies. Levett points out that ‘near-zero carbon’ housing is possible now, without any new technological breakthroughs, together with a 90 per cent reduction in automobile carbon pollution and improvement in the quality of life – provided that the

state undertakes planning and regulation to help establish new ‘virtuous circles’ including community restructuring, better public transport and higher vehicle occupancy.<sup>50</sup>

## Markets, states and freedoms

*I’m still suspicious of all this talk about government action. Economists and political leaders, particularly in the Anglo-American world, like to say that markets promote freedom and choice while state regulation amounts to ‘command and control’. Some Northern environmentalists even claim that to criticise the carbon market is to embrace coercion and ‘totalitarianism’. What do you say to that?*

Merely that it reflects another serious loss of perspective and a lack of acquaintance with life outside the economics classroom. Turning things into commodities has always made possible some freedoms only by precluding others. During the Industrial Revolution in Europe, many people gained the freedom to move around and sell their labour but lost the freedom to raise their animals on the commons. Today, pension fund managers have the freedom to shunt massive investments from country to country with one or two clicks on a computer mouse, while the citizens of those countries may not have a choice of affordable medicines. Similarly, having the option of driving wherever you want to go can preclude having the choice of getting access to amenities without a car, and eliminates the choice of keeping urban areas distinct from rural areas.<sup>57</sup> It may also narrow the choices of ordinary people in the Niger delta or herders along the Chad–Cameroon oil pipeline. As Michael Jacobs quips, the market is not always Adam Smith’s ‘invisible hand’ but often an ‘invisible elbow’ instead. The question always needs to be asked: Whose choices are we talking about, and which ones?

Markets transform and centralise coercion in certain ways; they do not get rid of it.<sup>58</sup> Every market is suffused with ‘command and control’: policing of property and contracts; foreclosure; dispossession; surveillance; registration; standards; bureaucracy. Every market, too, entrenches the historical ‘command and control’ that was used to establish its physical infrastructure and price-setting or bargaining systems, whether those controls were exercised through law or brute force.<sup>59</sup> The other side of the coin is that regulation’s constraint of consumer choices, together with multiple, systemic investments in public works, can often expand the range of other choices available to people and their freedom to enjoy public goods.<sup>60</sup>

Similarly for climate change. The Kyoto Protocol and other trading-oriented approaches limit present and future choices in far-reaching



ways – many of which have been explored at length in this special report – at the same time they open up new opportunities for big business. Approaches stressing the sort of structural change that trading can't achieve, meanwhile, feature other kinds of restraint, distributed among other groups, but also other kinds of freedom. As the late Ivan Illich observed nearly 35 years ago, a low energy policy allows for a wide choice of ways of life. If, on the other hand, 'a society opts for high energy consumption, its social relations must be dictated by technocracy and will be equally distasteful whether labeled capitalist or socialist'.<sup>61</sup>

*You've made a great deal of the hazards of turning over control over the atmosphere to business through carbon markets. But isn't it just as dangerous to turn over control of the atmosphere to governments? Governments are often poor stewards of the public interest. They dispose of common assets below market value, ensure that their distribution makes the rich richer and the poor poorer, use the proceeds for private gain, and so forth. Look at the way governments hand out commercial concessions or indigenous peoples' lands. In addition, even if it's true that carbon markets allow corporations to seek gigantic unearned rents, surely more conventional forms of regulation give them similar openings to 'capture' the regulatory apparatus,<sup>62</sup> or influence legislators voting on tax laws. So what's the difference? You distrust market incentives and market forces, but do you really think there are such things as benign, omniscient governments, and that they are capable of solving the climate crisis? And if not, how are you going to organise so as to bring about the kinds of government action you describe?*

That's a useful question. But let's start by challenging the dichotomy between 'market mechanisms' and 'government regulation' that it implies. Carbon markets themselves are a complicated new form of government regulation. As Karl Polanyi would have been the first to point out, they require what he called an 'enormous increase in continuous, centrally-organised and controlled interventionism' and 'deliberate state action' (see Chapter 3). They expand the power over the atmosphere not only of business but also, necessarily, of state agencies. They are no more neutral, technical 'instruments' for attaining external, political goals than the state itself is.

Anybody worried about the powers, clumsiness and corruptibility of the state and its regulators – and who isn't? – accordingly ought to be worried about carbon markets for the same reasons. The difference is that, with carbon markets, there are a lot of additional reasons for concern. As Chapter 3 has detailed, carbon trading, in addition to granting large corporate polluters new powers over the earth's ecosystems, introduces so many further complications, centralised controls, and opportunities for fraud that it makes democratic scrutiny and oversight virtually impossible.

What is required is for the political support behind some of the movements and approaches mentioned above to be deepened, extended and encouraged, not to be undermined and overshadowed by a set of little-tried, regressive gimmicks destined to fail in any case.

*Who said anything about overshadowing? I'm not against any of the activities you mention. I acknowledge the importance of public investment. I know regulation and taxes are necessary. I can understand the central role of commons regimes, of greater self-sufficiency and all sorts of local initiatives. But isn't there a role for carbon trading in supplementing and supporting all these approaches? Trading is the wave, not the water. It's merely one part of what will make a global climate regime work. Let a hundred flowers bloom!*

Let's review the situation. Since 1997 or so, carbon trading has come to usurp the great bulk of the UN's work on climate change, with experts, diplomats and politicians devoting endless hours to trying to work out the insoluble complexities of a system that in the end functions primarily to shore up fossil fuel dependence. Carbon trading rewards the worst polluters with huge free public assets, depriving climate-friendlier enterprises of both money and human brainpower. Carbon trading undermines the impetus for regulation, taxation and reduced consumption in countries such as the UK, Sweden and the US; slows innovation in both North and South; provides greenwash for climate-unfriendly practices such as coal mining, industrial tree plantations and large hydroelectric dams; and hogs the time of Southern civil servants who could be far more beneficially engaged. Perhaps most important, carbon trading mainly benefits and empowers precisely those institutions most active in blocking and interfering with low-carbon lifeways and climate-friendly industrial change.

Take, for instance, one of the biggest players in the carbon market, the World Bank. The Bank itself admits that 'renewable energy technologies – wind, mini-hydro, and biomass-electric – are the least-cost option...for off-grid electrification'<sup>63</sup> of the sort needed by many of the world's 1.6 billion people who do not have access to electricity, as well as being crucial to climate change mitigation. As noted in Chapter 1, the Bank's own internally-commissioned Extractive Industries Review recommended that it get out of coal immediately and get out of oil by 2008. Yet the institution continues to champion large-scale, centralised fossil-fuel projects at the expense of renewable energy – the Chad-Cameroon pipeline, the Baku-Ceyhan pipeline and many others.<sup>64</sup> Eighty-two per cent of its oil projects are for export to the North. Its carbon credit portfolio extends the life of fossil-heavy technologies in the North while providing only derisory support for climate-friendly initiatives in the South. The Bank's top two

energy-loan beneficiaries are oil contractor Halliburton and oil company Shell; number five is Exxon-Mobil and number 12 is Enron.<sup>65</sup> The main victims of the Bank's infrastructure and market-first policies, on the other hand, are ordinary people with low-carbon livelihoods – who often achieve their results in the teeth of the institutions that support trading – as well as the commons that support them.<sup>66</sup>

Carbon trading's main private sector beneficiaries, whether oil companies, plantation firms, or electric utilities, share a similar orientation. By their own admission, private banks involved in carbon trading 'can't deal with communities', while brokers point out again and again that 'the carbon market doesn't care about sustainable development'. In addition, a global carbon credit market divides communities from each other in a way that impedes, rather than helps, the search for common solutions. Villagers near a carbon project in Chile are unlikely ever to see firsthand how the project's credits might help perpetuate pollution in Japan, drown villages in Bangladesh, or keep motorways clogged in Canada. Well-off buyers of 'offsets' from wind farms in New Zealand are unlikely to investigate what might link their 'green' purchases to the havoc wreaked by pipelines pushed through Nigeria or Alaska.

In what ways, then, does carbon trading 'supplement' or 'support' other approaches to climate change? If carbon trading isn't undermining and overshadowing genuine solutions to climate change, it's hard to imagine what would.<sup>67</sup>

*All right, but does that necessarily have to be the case? After all, mightn't carbon trading be helpful in financing a just transition to a non-fossil future?*

How?

*Well, first of all, suppose – just suppose – that Northern governments could be forced by popular pressure to auction off tradable allowances instead of giving them away free to business. Couldn't the revenues be used to support the most vulnerable sections of society through the transition to a non-fossil economy?*

Maybe. But just as the question arises of who gave European Union governments the right to give away so much of the earth's carbon-cycling capacity to some of their largest corporations under the EU ETS, so too does the question of who would give governments the right to auction it.

There are also a lot of other possible sources of support for the vulnerable during that transition. For example, part of the subsidies now being given to fossil fuel development could be put towards a just transition. The need to support the fuel-poor and retrain the jobless is hardly by itself an argument for carbon trading.

*What about the international level? If global warming is to be addressed, the North is going to have to pay the South not to use fossil fuels. Not only is the North in debt to the South for centuries of ecological and social appropriation; it also needs to help out for the sake of its own future. Who's going to put up the cash for this if not Northern carbon credit buyers?*

Are you suggesting that the Clean Development Mechanism is helping to 'decarbonise' either the North or the South? Chapters 3 and 4 have shown that that's not going to happen.

*OK, but maybe something like the CDM could provide the necessary funds.*

What exactly would something *like* the CDM be? Again, let's review the situation. In today's international carbon project credit market, the Northern polluters who are supposedly paying for 'green development' in the South are in fact getting paid themselves. They get to continue using fossil fuels at a bargain price. And they get to profit from exporting goods and expertise to enterprises most of whose contribution to alleviating climate change is, to put it charitably, questionable. Instead of supporting community-driven renewable energy projects, for example, coal, oil and hydrofluorocarbon corporations are making money from end-of-pipe technologies that they develop themselves. If the North is genuinely interested in paying for a renewable future in the South, that's hardly the way to go about it.

*But suppose you had a rule, as the Centre for Science and Environment proposed back in 1998, that no CDM trade could take place that did not involve a 'transition to the use of non-carbon or biomass energy sources'.<sup>68</sup> That could create a huge market for solar energy and other renewable technologies in the South.*

To what extent could a mechanism like the CDM ever involve a transition away from carbon-based energy? Remember the basic principle of the CDM market: finance goes to projects only at the cost of licensing and supporting continued extraction and use of fossil fuels elsewhere. Nor have eight years of environmentalist pleading resulted in much demand for renewable energy projects from CDM credit buyers. These are not projects this market supports (see Chapters 3 and 4).

That's not to say that the ideal of global equity, reparations and funding for renewable technology isn't important. But it's not going to be achieved through trading; nor by elite institutions that have played such a large part in the stupendous widening of the gap between rich and poor over the past 50 years,<sup>69</sup> such as the World Bank. Effective reparations and a transition away from fossil fuels will have to be achieved through a broader-based political struggle, not an elite-to-elite commercial deal.

### *From an Open Letter by Oilwatch*

'Never before have the limits of the current development model based on hydrocarbons been so clear or close.

'Never before has the relationship between oil and the networks of power that control the world been so clearly understood, nor have the relationships between oil and the main causes of misery that affect humanity been so evident...

'For the Southern part of the world, the oil model has meant the perpetuation of inequitable exchange, technological dependence, indebtedness, and impoverishment. The ecological debt between North and South, which began during the colonial years, rose with unequal economic and ecological exchange.

'We have accepted separately each one of these aggressions. Or worse still, fought among ourselves: inhabitants of one country fighting against another, oil workers against indigenous communities, people from the North against those from the South, the poor of the cities against indigenous and peasant peoples, those ill from

consumption against pacifists, those that propose against those that criticize... And the list goes on and on.

'What are the organizations and networks with whom we can start a positive collaboration in the fight against the oil civilization? What are the social, local and global movements that cannot be ignored in our efforts? What are the international agreements and programs that can best help us in this process? What are the new initiatives that we could and should devise?

'To answer these and other needs, Oilwatch is inviting sympathetic networks to initiate a joint dialogue on our struggles and launch a global campaign against a civilization based on oil.

'We invite you to share your opinions, comments, suggestions and ideas, to build a new path together...where we can reflect each and every one of our struggles. This way, each and every one of our battles will gain a new dimension.'<sup>70</sup>

*Oilwatch*, 16 September 2005

What institutions could conceivably play a part? There are no pat answers, but the question needs to be raised *before* going too far with proposals for paying ecological debt or funding a non-fossil transition in the South.

In the meantime, it might be useful to keep in mind how strange the demand is that the North make up for its historical overuse of the earth's carbon-cycling capacity by paying for clean development in the South, at a time when few moves are being made to curb that overuse. It's a little like demanding reparations for slavery without abolishing slavery. The demand is incontestably legitimate, but it raises the question of whether the problem is being addressed at its root.

*All right, but I'm still troubled by the feeling that the various non-trading approaches for structural change that you mention aren't – well – global enough. Don't global problems such as global warming need global solutions? The 'alternatives' I really want to see are global alternatives, not the hotchpotch of local, regional, and national institutions, movements and initiatives you seem to have been talking about so far. Global warming is not going to be stopped by an uncoordinated and piecemeal attack, but only by a global regime.*

What do you mean by global? In what sense is the Kyoto Protocol, say, global? In what sense are movements supporting local forest commons, say, not global?

The distinguished political journalist Neal Ascherson once referred to what he called the 'dumbbell world' in which Anglo-American foreign policy was most intensively discussed and defined. One end of the dumbbell, in Ascherson's whimsical vision, consisted of a circle enclosing a few government offices, posh neighbourhoods and airports in London. The other consisted of a circle enclosing a few government offices, well-off neighbourhoods and airports in Washington. The two were linked by the contrails of jets flying back and forth across the Atlantic.

Often, what people refer to when they use the word 'global' is something like Ascherson's 'dumbbell world' – a diplomatic and political community residing in very thin but very long habitats consisting of buildings and luxury homes in capital cities around the world, together with the reclining seats on the jet aircraft that link them.

What makes this community and what it does global? Its interests are neither universal nor neutral, but particular to the group. The language it speaks is not a global language spoken by everyone, but merely the provincial dialect of UN offices, state documents and neo-classical economics; and its institutions are local institutions like all other local institutions. Like some other communities, this community does have some frightening powers and friends, and some useful powers and friends. There are certain valuable things it can do; the Montreal Protocol on the ozone layer is perhaps one example. But its territory, while very long, is also very thin, and the community's understanding of and influence over an issue as complex and intercultural as climate change is limited, even when it is able to organise its own members around something like the Kyoto Protocol.

Any approaches to climate change that are 'globally effective' are going to have to be organised, fairly independently, in a great many communities outside the 'dumbbell world'. That means treating the 'hotchpotch' of local, national and regional initiatives with a good deal of respect. The question 'What's your alternative?' must always

be answered in the first instance with another question: ‘Alternative for whom?’ The alternative that a denizen of the ‘dumbbell world’ is looking for may not be the one that a corporate executive is likely to accept – nor a villager in India.

Defining the climate crisis, in good ‘dumbbell world’ fashion, as a problem to be solved through indefinite capital accumulation, state subsidies for large corporations and consultants, transnational capital flows, international trade and national ‘development’, makes it almost impossible to connect top-down emissions targets with support for effective actions at the local level. It also tends to threaten the reserves of flexibility many communities will need to preserve in order to adapt to the degree of climate change that is already inevitable. As researcher R.W. Kates puts it: ‘If the global poor are to adapt to global change, it will be critical to focus on poor people and not on poor countries as does the prevailing North-South dialogue. The interests of the poor are not always the same as the interests of poor countries, since in the interests of “development”, the poor may grow poorer.’<sup>71</sup>

Anthropologist and development specialist Michael Thompson and his colleagues put it in slightly different terms: ‘...the only frameworks that can tell you *anything* about the likely efficacy of a policy are those at the most local level... What is needed is...an approach that places the “mere details”...at the very centre of the stage and relegates to the wings the alarm bell-ringers and their immaculate prescriptions...’<sup>72</sup>

## Conclusion: decentring climate politics

Radical university scholars are sometimes ridiculed for the funny words they use. But behind some of their words lurk useful ideas. One such word is ‘decentring’.

The old standard elite university curricula, many radical academics say, should perhaps not be thrown out, but rather ‘decentred’: modified and expanded to include suppressed voices and achievements. Traditional fields of study should not be abandoned, but supplemented and opened up to critique from outsiders with different stakes in the issues, in the way Indian thinkers have been able to ‘digest’ colonialism,<sup>73</sup> Colombian peasants to rework early European economic thinking for their own purposes<sup>74</sup> and feminists to get under the skin of the biases shaping the work of a Locke or Malthus.

This is perhaps the way that the climate change literature now spilling onto the pages of newspapers worldwide has to be thought about.

Insofar as this literature has been digested only by people of a single social background, it has inspired only limited – and sometimes self-contradictory – political thinking. Its shocking conclusions have led all too often merely to empty calls for political leaders to ‘do something’ or to the technical and market fixes that have been the subject of this special report.

The results are often as disturbing as the climate crisis itself. Confronted by climatologists’ observations, for example, James Lovelock, the renowned scientist who created the concept of Gaia, the self-regulating Earth, has advocated nuclear power as a way of saving ‘our’ electricity. Urging his readers to prepare for future climatic surprises in the same way that ‘travellers from the north’ take anti-malarial drugs before going to the ‘tropical south’ or ‘check how the local war is progressing’ before going to the Middle East, Lovelock concludes that a ‘small permanent group of strategists’ unswayed by the ‘noisy media and special interest lobbies’ is needed in order to ‘act fast enough for an effective defence against Gaia’.<sup>75</sup>

It would be easy to dismiss Lovelock for his advocacy of dictatorship, for his nuclear enthusiasms, or for the staggering if unconscious racism that sees conflict in the Middle East – host to bands of colonialists and imperialists since long before Standard Oil made its first deals in the region – as a matter of ‘local’ wars. But other figures with similar backgrounds and institutional loyalties draw similarly narrow and dangerous conclusions from their understanding of the crisis. Robert Watson, the ozone specialist who, with admirable devotion, helped organise scientists worldwide around a consensus emphasising the seriousness of climate change while deftly countering George W. Bush’s climate misinformation campaign, now works to undermine renewable energy by defending an expansion of the ‘clean coal’ industry from his post at the World Bank.<sup>76</sup> The IPCC, the source of the canonical summaries of climatic trends, generally bypasses serious study of the social roots of the crisis in favour of economic modelling and rubber stamps for carbon trading. Sir Crispin Tickell, who early on raised consciousness with moving essays on global warming, now sits on the board of a carbon ‘offset’ firm, Climate Care. Despairing of the possibility of keeping fossil fuels in the ground, Paul Crutzen, one of atmospheric science’s elder statesmen, now advocates using balloons or artillery shells to sow sulphur dioxide particles into the stratosphere to reflect sunlight and slow down the planet’s warming.<sup>77</sup>

Every individual showing concern over the climate crisis deserves respect. But respect also involves acknowledging that different people have different backgrounds, loyalties and understandings. The notion that the ideas of a Lovelock, a Watson or an IPCC should go uninter-



rogated by Indian villagers, Peruvian fisherfolk, or poor communities across the fence from Louisiana oil refineries is simply irrational. Such ideas need to be evaluated by people who know from experience what commodification of land, water and air mean to the poor, what the effects of nuclear contamination are, and how the World Bank's climate policy works on the ground – and who have their own interests and are evolving their own contributions toward dealing with the crisis. The initiatives of organisations and networks such as Oilwatch, Palang Thai, Platform, Friends of the Earth, the Centre for Science and Environment, Rising Tide, the New Economics Foundation, the Durban Group for Climate Justice and tens of thousands of other groups, many of them located at the grassroots in both South and North, already go far beyond the default thinking of global elites. But work on climate change and the search for ways out of the crisis can't be carried forward fruitfully without an even more thoroughgoing decentring of the debate.

Any study of 'alternatives' must begin with this truth – not with a call for yet more formulas to feed to, and nourish, the institutions that bear so much of the responsibility for the climate crisis and many others. This special report has been a modest plea for greater understanding of that truth.

- 1 Ruth Greenspan Bell, 'Choosing Environmental Policy Instruments in the Real World', Organisation for Economic Cooperation and Development, Global Forum on Sustainable Development, OECD, Paris, 11 March 2003, pp. 4-5: 'countries most in trouble are not getting a well-rounded picture about what is achievable . . . trading is not the dominant approach to US environmental protection, even in a fully developed market system'.
- 2 Walt Patterson, 'Decentralising Networks', *Co-Generation and Onsite Power Production*, January/February 2005, <http://www.chathamhouse.org.uk/pdf/research/sdp/WParticle0105.pdf>; Mae Wan Ho et al., *Which Energy?*, Institute of Science in Society, London, 2006; Amory B. Lovins et al., *Winning the Oil Endgame*, Rocky Mountain Institute, Snowmass, CO, 2004, [http://www.rmi.org/images/other/WtOE/WtOEg\\_72dpi.pdf](http://www.rmi.org/images/other/WtOE/WtOEg_72dpi.pdf).
- 3 Lovins et al., *op. cit. supra*, pp. 19-22.
- 4 Steve Rayner, Testimony in House of Commons Environmental Audit Committee, *The International Challenge of Climate Change: UK Leadership in the G8 and EU. Fourth Report of Session 2004-5*, The Stationery Office, London, 2005, Ev 136.
- 5 Bretton Woods Project, "'Cleaning" Energy: Ambiguous Framework Proposes Coal and Large Hydro', 19 June 2006, <http://www.brettonwoodsproject.org/art.shtml?x=538529>. According to some estimates, the money the World Bank lends every year for fossil-fuel projects would be enough to provide small-scale solar installations supplying electricity to 10 million people in sub-Saharan Africa with electricity (Christian Aid, *The Climate of Poverty: Facts, Fears and Hope*, London, May 2006, p. 22).
- 6 See, e.g., Chris Greacen, 'Inexpensive, Secure Electricity? Coal vs. Clean Energy', 2005, <http://www.palangthai.org>.
- 7 These figures are due to Greg Muttitt of Platform, <http://www.carbonweb.org>.
- 8 See, for example, <http://www.wrm.org.uy>.
- 9 The Progressive Forum, 'Interview with Lester Brown', 26 April 2006, <http://www.energybulletin.net/15705.html>.
- 10 Gar Lipow, *Cooling It! No Hair Shirts Solutions to Global Warming*, forthcoming, 2006, <http://www.nohairshirts.com>; Ross Gelbspan, 'Toward a Global Energy Transition', *Foreign Policy in Focus*, January 2004, <http://www.fpi.org/pdf/petropol/ch5.pdf>.
- 11 For example, corporations often invest in control over labour rather than energy-saving equipment that, given tax incentives, saves more money (Lipow, *op. cit.*). In the UK, many investments in waste minimisation, water conservation and other efficiency measures that began to yield positive returns to industry in three years or less were not made until government regulation required them, and would have taken much longer for industry to get around to if the only incentive was taxation. See <http://www.envirowise.gov.uk/page.aspx?o=168584>.
- 12 Lipow, *op. cit. supra* note 10.
- 13 David Driesen, *The Economic Dynamics of Environmental Law*, MIT Press, Cambridge, 2003, pp. 139-201.
- 14 Fred Pearce, 'Take Greenhouse Polluters to the Cleaners', *New Scientist* 2519, 1 October 2005, p. 42.
- 15 Rayner, *op. cit. supra* note 4, Ev 136.
- 16 Roda Verheyen, *Climate Change Damage and International Law*, Martinus Nijhoff, Leiden, 2005.
- 17 See, e.g., New Economics Foundation, *Collision Course: Free Trade's Free Ride on the Global Climate*, London, 2000.
- 18 See, e.g., Working Group on Climate Change and Development, *Africa - Up in Smoke?*, New Economics Foundation, London, 2005; Larry Lohmann, 'Democracy or Carbocracy? Intellectual Corruption and the Future of the Climate Debate', Corner House Briefing Paper No. 24, October 2001, <http://www.thecornerhouse.org.uk>; Neil Adger, 'Social Vulnerability to Climate Change and Extremes in Coastal Vietnam', *World Development* 27, 2, 1999, pp. 249-69.
- 19 Elizabeth Malone and Steve Rayner, 'Ten Suggestions for Policymakers', in Malone and Rayner, eds, *Human Choice and Climate Change*, Battelle Press, Seattle, 1998, vol. 4, p. 114.
- 20 Ruth Greenspan Bell, *op. cit. supra* note 1, p. 3.
- 21 See, e.g., Robert A. Caro, *The Power Broker: Robert Moses and the Fall of New York*, Knopf, New York, 1974.
- 22 For 'extraordinarily effective' but often 'forgotten' energy-saving regulation by US states during the 1970s and 1980s, see Lovins et al., *op. cit. supra* note 2, p. 216.
- 23 On commons regimes, see, e.g., E. P. Thompson, *Customs in Common*, Free Press, London 1990; Ivan Illich, *Gender*, Pantheon, New York, 1983; James Acheson and Bonnie McCay, *The Question of the Commons*, University of Arizona Press, Tucson, 1990; Simon Fairlie et al., *Whose Common Future? Reclaiming the Commons*, Earthscan, London, 1993; Elinor Ostrom, *Governing the Commons*, Cambridge University Press, Cambridge, 1990.
- 24 Communities in Burma, Malaysia, Nicaragua, Colombia, Nigeria, Chad, Thailand, Bolivia and Ecuador have won the revocation of fossil fuel concessions in their territories. In doing so, they

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- 25 See <http://www.grupoadela.org>.
  - 26 Kenny Anthony, Prime Minister of St. Lucia, presentation at the Sixth Conference of the Parties of the Framework Convention on Climate Change (UNFCCC), The Hague, 16 November 2000.
  - 27 Swedish Society for Nature Conservation, *The Challenging Communities*, Stockholm, 2000.
  - 28 John Vidal, 'Sweden Plans to be World's First Oil-Free Economy', *The Guardian*, 8 February 2006.
  - 29 D. Knight, 'US Unrivalled as Top Carbon Polluter', Third World Network, July 2001, citing research by the World Resources Institute.
  - 30 Roddy Scheer, 'China Considering Increasing Renewables Commitment by 50 Per Cent', *E Magazine*, 12 September 2005; Victor Mallet, 'China's Chance to Save our Overheated Planet', *Financial Times*, 6 July 2006.
  - 31 Fred Pearce, 'Cities Lead Way to a Greener Planet', *New Scientist* 2502, 4 June 2005; Dan Worth, 'Accelerating toward Climate Neutrality with the US Government Stuck in Neutral', *Sustainable Development Law and Policy* 5, 2, Spring 2005, pp. 4-8; Eli Sanders, 'Rebuffing Bush, 132 Mayors Embrace Kyoto Rules', *New York Times*, 14 May 2005.
  - 32 Miguel Bustillo, 'A Shift to Green', *New York Times*, 12 June 2005; Canadian Broadcasting Corporation News, 'Business Leaders Call for Climate Change Action', 17 November 2005.
  - 33 Point Carbon, 'Sweden Aims to Ban Fossil Fuel Subsidies', 19 June 2006; 'Swedish Parliamentary Committee Calls for EU Ban on Fossil Fuel', 2 June 2006, <http://www.pointcarbon.com>. For more information on subsidies, see <http://www.earthtrack.net/earthtrack> and <http://www.priceofoil.org>. See also Doug Koplow and John Dernbach, 'Federal Fossil Fuel Subsidies and Greenhouse Gas Emissions: A Study of Increasing Transparency for Fiscal Policy', *Annual Review of Energy and the Environment* 26, 2001, pp. 361-89; Doug Koplow and Aaron Martin, *Fueling Global Warming: Federal Subsidies to Oil in the United States*, Greenpeace, Washington, 1998 and Norman Myers et al., *Perverse Subsidies: Tax Dollars Undercutting Our Economies and Environments Alike*, International Institute for Sustainable Development, Winnipeg, 1998.
  - 34 OECD Economic Outlook, *The Economics of Climate Change*, Brussels, June 1998, p. 198, <http://www.oecd.org/dataoecd/58/50/29173911.pdf>. The figure does not count transition costs.
  - 35 See [http://www.oilwatch.org/doc/declaracion/decla2005\\_montreal-ing.pdf](http://www.oilwatch.org/doc/declaracion/decla2005_montreal-ing.pdf).
  - 36 'Massive US Support for Renewable Energy', STAT Communications, 9 March 2006, <http://www.statpub.com>. Public support for action on global warming is also very high in other countries whose governments hold a backward position, such as Australia. See Peter Christoff, 'Policy Autism or Double-Edged Dismissiveness? Australia's Climate Policy under the Howard Government', *Global Change, Peace and Security* 17, 1, 2005, pp. 29-44. In the UK, the Science and Technology Committee of the House of Lords found 'deplorable' the government's lack of commitment to supporting renewable energy and recommended large increases: 'We could find no one at the executive level whose responsibility it was to ensure continuity of supply. We were told simply that market forces would solve the problem. We are not convinced...' (House of Lords Science and Technology Committee, 'Renewable Energy: Practicalities', 4th Report of Session 2003-04, Volume 1, The Stationery Office, London, 2004, p. 8).
  - 37 Paul Brown, 'Government's Climate Change Policy is Failing', *The Guardian*, 16 May 2005.
  - 38 Stefania Bianchi, 'Ethnic Communities Challenge Level of Greenhouse Gases', Inter Press Service, 20 June 2005, <http://www.gasandoil.com/goc/company/cna52977.htm>.
  - 39 'Global Climate Change to Spawn Future Lawsuits', *Rednova News*, 29 May 2005, <http://www.rednova.com/news/science>.
  - 40 Juliette Niehuss, 'Inuit Circumpolar Conference v. Bush Administration: Why the Arctic Peoples Claim the United States' Role in Climate Change has Violated their Fundamental Human Rights and Threatens their very Existence', *Sustainable Development Law and Policy* 5, 2, Spring 2005, pp. 66-67.
  - 41 See <http://www.msnbc.msn.com/id/13554243/from/ET/>.
  - 42 See, for example, Steve Radley, 'Energy Climate Changes for the Worse', *The Guardian*, 1 August 2005: 'Longer-term, there must be questions as to whether emissions trading makes the [climate change] levy redundant'. See also 'Advisors Wary on EU Aviation Climate Trading', *Environment Daily* 1879, 17 May 2005: 'The "real danger", according to [an EC advisory] forum, is that adding aviation to the [EU] trading scheme from 2008 "would be seen as a sufficient commitment by the industry... so that other policy measures would no longer be pursued."' The EU statistical agency Eurostat suggests that environmental taxation may have peaked in Europe due to an increasing fashion for instruments such as the EU Emissions Trading Scheme. See *Environment Daily* 1975, 4 January 2005.

- 43 See Ecoequity, 'Cutting through the Smoke on Trading', [http://ecoequity.typepad.com/ecoequity/2005/12/cutting\\_through.html#comments](http://ecoequity.typepad.com/ecoequity/2005/12/cutting_through.html#comments). See also Nina Eliasoph, "'Everyday Racism' in a Culture of Political Avoidance: Civil Society, Speech and Taboo', *Social Problems* 46, 4, November 1999, pp. 479-502.
- 44 Noam Chomsky interviewed by David Barsamian in *Imperial Ambitions. Conversations on the Post-9/11 World*, Metropolitan Books, New York, 2005, p. 39.
- 45 Jeffrey S. Dukes, 'Burning Buried Sunshine: Human Consumption of Ancient Solar Energy', *Climatic Change* 61, 2003, pp. 31-44.
- 46 Stephen Pacala and Robert Socolow, 'Stabilization Wedges: Solving the Climate Problem for the Next 50 Years with Current Technologies', *Science*, 13 August 2004, 968-72; Robert Socolow *et al.*, 'Solving the Climate Problem: Technologies Available to Curb CO<sub>2</sub> Emissions', *Environment* 46, 10, 2004, pp. 8-19. See also Mae Wan Ho *et al.*, *op. cit. supra* note 2.
- 47 Lovins, *op. cit. supra* note 2.
- 48 Lipow, *op. cit. supra* note 10.
- 49 Friends of the Earth, 'Bright Future: Friends of the Earth's Electricity Sector Model for 2030', London, March 2006, p. 3.
- 50 Roger Levett, 'Infrastructure: Prevention is Better than Palliation', presentation to the TCPA Commission on England's Future, 18 March 2005, [http://www.tcpa.org.uk/reg\\_futures/roger\\_levett-englands\\_future.pdf](http://www.tcpa.org.uk/reg_futures/roger_levett-englands_future.pdf). Starting from the assumption that a 60 per cent emissions cut is necessary by 2050, the Tyndall Centre's *Decarbonising the UK: Energy for a Climate-Conscious Future* also explores various 'technically and economically viable' low-carbon scenarios, stressing, as do many other analysts, that lower energy consumption means more resilience, more security and less need for wasteful large infrastructure ([http://www.tyndall.ac.uk/media/news/tyndall\\_decarbonising\\_the\\_uk.pdf](http://www.tyndall.ac.uk/media/news/tyndall_decarbonising_the_uk.pdf)). Britain's Royal Commission found that elementary energy efficiency measures such as high quality insulation of new buildings could cut energy use in the service sector by 18 per cent within a few years, and that proper insulation, good design and using combined heat and power plants to provide local hot water and electricity could together slash energy use in homes by between 25 and 34 per cent in a few years ([www.rcep.org.uk](http://www.rcep.org.uk)). The Institute for Science in Society (Mae Wan Ho *et al.*, *op. cit. supra* note 2) meanwhile stresses the benefits in reduced food miles and fossil fuel use from a more self-reliant, organic agriculture – which must be promoted for other reasons as well.
- 51 Lipow, *op. cit. supra* note 10.
- 52 'Super-adobe' is a refinement on rammed-earth construction in which wet soil under pressure (mixed with a little cement) is pumped into bags that are coiled together and bound with barbed wire. The technique is low-impact and results in sturdy, earthquake-proof buildings. See California Institute of Earth Art and Architecture, *CalEarth Forum*, July 2005, <http://www.calearth.org/>.
- 53 China reported large reductions in emissions in the late 1990s, attributed partly to technical improvements in boiler technology. But recent analysis suggests that these 'reductions' may be mainly due to bureaucratic changes in who was doing the reporting. Pre-1996 emissions figures may have been inflated by coal mine officials eager to show they had met production targets, which were later discontinued. See Knight, *op. cit. supra* note 29; Fred Pearce, 'Kyoto Promises are Nothing but Hot Air', *New Scientist* 2557, 22 June 2006, p. 10.
- 54 See <http://www.atelierten.com/ourwork/profiles/0513-federation-square.pdf>.
- 55 See The Climate Group, *Carbon Down, Profits Up*, London, 2005, [http://www.theclimategroup.org/assets/CDPU\\_2005\\_v2.pdf](http://www.theclimategroup.org/assets/CDPU_2005_v2.pdf).
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- 61 Ivan Illich, *Energy and Equity*, Marion Boyers, London, 1974.
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- 63 World Bank, 'Clean Energy and Development: Towards an Investment Framework', World Bank, Washington, 2006, [http://siteresources.worldbank.org/DEVCOMMINT/Documentation/20890696/DC2006-0002\(E\)-CleanEnergy.pdf](http://siteresources.worldbank.org/DEVCOMMINT/Documentation/20890696/DC2006-0002(E)-CleanEnergy.pdf), p. 91. For a critique see Peter Bosshard, 'Business as Usual will not Achieve Climate and Development Goals', International Rivers Network, Berkeley, April 2006.

- 'The US alone accounts for nearly 25 per cent of the global carbon dioxide emissions. In comparison, meeting the basic human needs for electricity of all the 1.6 billion people who presently have no access to modern energy would only increase global carbon emissions by 2 per cent.'
- 64 For a useful list of extraction projects only, see Jim Vallette and Steve Kretzmann, *The Energy Tug-of-War: Winners and Losers of World Bank Fossil Fuel Finance*, Institute for Policy Studies, Washington, 2004, pp. 27-31.
- 65 Daphne Wysham, 'Fossil Fuels and Foreign Aid for Energy Sector Projects', Institute for Policy Studies, Washington, November 2003.
- 66 Jules Pretty and Hugh Ward, 'Social Capital and the Environment', *World Development* 29, 2001, pp. 209-227, provide some perspective on the numbers of the people thwarted or left out. In the best traditions of academic bean-counting, Pretty and Ward estimate that the number of new local groups protecting watersheds, irrigation systems and forests and working in microfinance, integrated pest management, and farmers research in 25 countries emerging in the decade to 2001 alone comes to around 408,000-478,000.
- 67 Douglas Kysar points out that, on one view, the US has deliberately undermined various international environmental agreements as a prelude to pointing to their 'inefficacy' as a reason for adopting 'market liberalism'. ('Sustainable Development and Private Global Governance', *University of Texas Law Review* 83, 2005, pp. 2109-2166).
- 68 Centre for Science and Environment, CSE Dossier Factsheet 6, New Delhi, 1998, p. 4.
- 69 The income gap between the fifth of the world's people in the richest countries and the fifth in the poorest took 30 years for the ratio to double from 30 to 1 in 1960 to 60 to 1 in 1990 and only seven years to jump to 74 to 1 in 1997. See <http://www.wcc-coe.org/wcc/what/jpc/dossier.html>. According to Andrew Simms of the New Economics Foundation, during the 1980s, USD 2.20 out of every USD 100 worth of economic growth reached society's poorest. In the 1990s, this figure fell to USD 0.60.
- 70 See <http://www.indymedia.no/newswire/display/19605/index.php> for the full text.
- 71 R. W. Kates, 'Cautionary Tales: Adaptation and the Global Poor', *Climatic Change* 45, 2000, pp. 5-17. Wolfgang Sachs adds that a 'claim for equity on the basis of conventional development' - a perennial interest of ruling elites in the South as well as the North - 'is simply not credible', since development doesn't lead to equity (interview in *Climate Equity Observer*, 12 May 2001, [www.ecoequity.org/ceo/ceo\\_3\\_4.htm](http://www.ecoequity.org/ceo/ceo_3_4.htm)).
- 72 Michael Thompson et al., *Uncertainty on a Himalayan Scale*, Milton Ash, London, 1986, pp. 71, 87-88, 106.
- 73 Ashis Nandy, *The Intimate Enemy: Loss and Recovery of Self under Colonialism*, Oxford University Press, New Delhi, 1989.
- 74 Stephen Gudeman and Alberto Rivera, *Conversations in Colombia: The Domestic Economy in Life and Text*, Cambridge University Press, Cambridge, 1990.
- 75 James Lovelock, *The Revenge of Gaia: Why the Earth is Fighting Back and How we can Still Save Humanity*, Allen Lane, London, 2006, pp. 155, 153. For more on environmentalists supporting nuclear power, see, e.g., Felicity Barringer, 'Old Foes Soften to New Reactors', *New York Times*, 15 May 2005 and Pew Centre on Global Climate Change, 'Pew Centre on Global Climate Change Releases First Comprehensive Approach to Climate Change', press release, Washington, 8 February 2006.
- 76 Bretton Woods Project, *op. cit. supra* note 5.
- 77 'Top Scientist Offers Way out of Global Warming', *Times of India*, 1 August 2006, <http://timesofindia.indiatimes.com/articleshow/1833408.cms>.

# Appendix

## Climate Justice Now! The Durban Declaration on Carbon Trading

As representatives of people's movements and independent organisations, we reject the claim that carbon trading will halt the climate crisis. This crisis has been caused more than anything else by the mining of fossil fuels and the release of their carbon to the oceans, air, soil and living things. This excessive burning of fossil fuels is now jeopardising Earth's ability to maintain a liveable climate.

Governments, export credit agencies, corporations and international financial institutions continue to support and finance fossil fuel exploration, extraction and other activities that worsen global warming, such as forest degradation and destruction on a massive scale, while dedicating only token sums to renewable energy. It is particularly disturbing that the World Bank has recently defied the recommendation of its own Extractive Industries Review which calls for the phasing out of World Bank financing for coal, oil and gas extraction.

We denounce the further delays in ending fossil fuel extraction that are being caused by corporate, government and United Nations' attempts to construct a "carbon market", including a market trading in "carbon sinks".

History has seen attempts to commodify land, food, labour, forests, water, genes and ideas. Carbon trading follows in the footsteps of this history and turns the earth's carbon-cycling capacity into property to be bought or sold in a global market. Through this process of creating a new commodity – carbon – the Earth's ability and capacity to support a climate conducive to life and human societies is now passing into the same corporate hands that are destroying the climate.

People around the world need to be made aware of this commodification and privatization and actively intervene to ensure the protection of the Earth's climate.

Carbon trading will not contribute to achieving this protection of the Earth's climate. It is a false solution which entrenches and magnifies social inequalities in many ways:

- The carbon market creates transferable rights to dump carbon in the air, oceans, soil and vegetation far in excess of the capacity of these systems to hold it. Billions of dollars worth of these rights are to be awarded free of charge to the biggest corporate emitters of greenhouse gases in the electric power, iron and steel, cement, pulp and paper, and other sectors in industrialised nations who have caused the climate crisis and already exploit these systems the most. Costs of future reductions in fossil fuel use are likely to fall disproportionately on the public sector, communities, indigenous peoples and individual taxpayers.
- The Kyoto Protocol's Clean Development Mechanism (CDM), as well as many private sector trading schemes, encourage industrialised countries and their corporations to finance or create cheap carbon dumps such as large-scale tree plantations in the South as a lucrative alternative to reducing emissions in the North. Other CDM projects, such as hydrochlorofluorocarbons (HCFC) reduction schemes, focus on end-of pipe technologies and thus do nothing to reduce the impact of fossil fuel industries' impacts on local communities. In addition, these projects dwarf the tiny volume of renewable energy projects which constitute the CDM's sustainable development window-dressing.
- Impacts from fossil-fuel industries and other greenhouse-gas producing industries such as displacement, pollution, or climate change, are already disproportionately felt by small island states, coastal peoples, indigenous peoples, local communities, fisherfolk, women, youth, poor people, elderly and marginalized communities. CDM projects intensify these impacts in several ways. First, they sanction continued exploration for, and extraction refining and burning of fossil fuels. Second, by providing finance for private sector projects such as industrial tree plantations, they appropriate land, water and air already supporting the lives and livelihoods of local communities for new carbon dumps for Northern industries.
- The refusal to phase out the use of coal, oil and gas, which is further entrenched by carbon trading, is also causing more and more military conflicts around the world, magnifying social and environmental injustice. This in turn diverts vast resources to military budget which could otherwise be utilized to support economies based on renewable energies an energy efficiency.

In addition to these injustices, the internal weaknesses and contradictions of carbon trading are in fact likely to make global warming worse rather than “mitigate” it. CDM projects, for instance, cannot be verified to be “neutralizing” any given quantity of fossil fuel extraction and burning. Their claim to be able to do so is increasingly dangerous because it creates the illusion that consumption and production patterns, particularly in the North, can be maintained without arming the climate.

In addition, because of the verification problem, as well as a lack of credible regulation, no one in the CDM market is likely to be sure what they are buying. Without a viable commodity to trade, the CDM market and similar private sector trading schemes are a total waste of time when the world has a critical climate crisis to address.

In an absurd contradiction the World Bank facilitates these false, market-based approaches to climate change through its Prototype Carbon Fund, the BioCarbon Fund and the Community Development Carbon Fund at the same time it is promoting, on a far greater scale, the continued exploration for, and extraction and burning of fossil fuels – many of which are to ensure increased emissions of the North.

In conclusion, ‘giving carbon a price’ will not prove to be any more effective, democratic, or conducive to human welfare, than giving genes, forests, biodiversity or clean rivers a price.

We reaffirm that drastic reductions in emissions from fossil fuel use are a pre-requisite if we are to avert the climate crisis. We affirm our responsibility to coming generations to seek real solutions that are viable and truly sustainable and that do not sacrifice marginalized communities.

We therefore commit ourselves to help build a global grassroots movement for climate justice, mobilize communities around the world and pledge our solidarity with people opposing carbon trading on the ground.

Signed 10 October 2004  
Glenmore Centre, Durban, South Africa



## Durban meeting signatories

Carbon Trade Watch  
 Indigenous Environmental Network  
 Climate & Development Initiatives, Uganda  
 Coecoceiba-Amigos de la Tierra, Costa Rica  
 CORE Centre for Organisation Research &  
 Education, Manipur, India  
 Delhi Forum, India  
 Earthlife Africa (ELA) eThekweni Branch, South  
 Africa  
 FERN, EU  
 FASE-ES/Green Desert Network Brazil 2  
 Global Justice Ecology Project, USA  
 groundwork, South Africa  
 National Forum of Forest People And Forest  
 Workers(NFFPFW), India  
 Patrick Bond, Professor, University of  
 KwaZulu Natal School of Development  
 Studies, South Africa  
 O le Siosiomaga Society, Samoa  
 South Durban Community Alliance (SDCEA),  
 South Africa  
 Sustainable Energy & Economy Network, USA  
 The Corner House, UK  
 Timberwatch Coalition, South Africa  
 World Rainforest Movement, Uruguay

and, at the time of printing this report, 289 other organisations and individuals.

To sign on to this declaration please  
 send an email to [info@fern.org](mailto:info@fern.org) or visit [www.sinkswatch.org](http://www.sinkswatch.org)

