critical currents

Dag Hammarskjöld Foundation
Occasional Paper Series

Carbon Trading
How it works and why it fails

no.7
November 2009

critical currents no.7
November 2009

Carbon Trading

How it works and why it fails

Tamra Gilbertson and Oscar Reyes

Dag Hammarskjöld Foundation
Uppsala 2009

The Dag Hammarskjöld Foundation pays tribute to the memory of the second Secretary General of the UN by searching for and examining workable alternatives for a socially and economically just, ecologically sustainable, peaceful and secure world.

In the spirit of Dag Hammarskjöld's integrity, his readiness to challenge the dominant powers and his passionate plea for the sovereignty of small nations and their right to shape their own destiny, the Foundation seeks to examine mainstream understanding of development and bring to the debate alternative perspectives of often unheard voices.

By making possible the meeting of minds, experiences and perspectives through the organising of seminars and dialogues, the Foundation plays a catalysing role in the identification of new issues and the formulation of new concepts, policy proposals, strategies and work plans towards solutions. The Foundation seeks to be at the cutting edge of the debates on development, security and environment, thereby continuously embarking on new themes in close collaboration with a wide and constantly expanding international network.

Critical Currents is an Occasional Paper Series published by the Dag Hammarskjöld Foundation. It is also available online at www.dhf.uu.se.

This issue of Critical Currents is published in cooperation with Carbon Trade Watch (www.carbontradewatch.org), the Transnational Institute (www.tni.org) and The Corner House (www.thecornerhouse.org.uk). It is based on *Carbon Trading: a critical conversation on climate change, privatization and power*, edited by Larry Lohmann and published as *Development Dialogue no. 47* in 2006.

Manuscripts for review should be sent to secretariat@dhf.uu.se.

Series editor: Henning Melber
Editor: Larry Lohmann
Coordination and final text editing: Wendy Davies
Design & Production: Mattias Lasson
Printed by X-O Graf Tryckeri AB
ISSN 1654-4250

Preface

The Copenhagen process must address the reality of the larger eco-systems challenge we face. Healthy ecosystems are a precondition for stabilising the climate system. But the current negotiations are not addressing critical issues related to the resilience of ecosystems and to ecosystem services and are thus seriously flawed.[1]

During the autumn of 2006 the Dag Hammarskjöld Foundation, in collaboration with The Corner House and the Durban Group for Climate Justice, published a pioneering challenge to what had become the core of official international efforts to solve the ever more visible crisis concerning climate change and the urgent need to reduce emissions.[2] Based to a large extent on the work of Larry Lohmann, the publication was at the forefront of a necessary intervention to demystify the dominant exit options on offer – which were only ending in another *cul de sac*.

Since then, public awareness has become more sensitised to the problems of treating carbon trading as a 'silver bullet' for solving the climate crisis. Common sense should already suggest that things are not so simple: setting up a market in a new commodity is bound to be an invitation to traders to focus their ingenuity on profit-seeking even if the results undermine climatic stability.

Our publication soon became a standard reference book, and we registered record hits on our website.[3] The huge demand also resulted in a second imprint, after well over 10,000 hard copies had been distributed. On a more self-critical note, however, as necessary as the fundamental analysis was, the sizeable volume of 350 pages contributed a considerable carbon footprint through the paper and energy needed for its distribution. In addition, while the book laid out convincing arguments, it was not the most effective tool for those who needed a concise introduction to the problem. The idea of producing an updated shorter version therefore emerged quite soon, though the project required some time. Thanks to Oscar Reyes and Tamra Gilbertson and with the support of Larry Lohmann, we are now able to offer this briefer, updated input for the discussions around Copenhagen.

At a time when carbon trading is still being strongly promoted as the central solution to climate change, we continue to stress that it is, instead, part of the problem. But this volume also does not hesitate to look forward and thereby complements a parallel effort looking into the challenges beyond Copenhagen.[4]

Meeting today's climate challenges requires a paradigm shift in our thinking and approaches. Market-based strategies have failed. We need to demystify the claim that price incentives alone will fix matters.

Henning Melber

1 Bo Ekman, Johan Rockström and Anders Wijkman, *Grasping the climate crisis: A provocation from the Tällberg Foundation*, Stockholm: Tällberg Foundation (undated, 2008/2009), p.17.

2 *Carbon Trading: A critical conversation on climate change, privatisation and power* (*Development Dialogue*, no. 48), Uppsala: The Dag Hammarskjöld Foundation, September 2006. Like all recent publications, this volume is accessible for free download at the Foundation's website (www.dhf.uu.se).

3 The combined total number of downloads from the sites of the Corner House and the Foundation amounted to over 820,000 by October 2009, i.e. within three years.

4 Ulrich Brand, Nicola Bullard, Edgardo Lander and Tadzio Müller (eds), *Contours of Climate Justice: Ideas for shaping new climate and energy politics* (*Critical Currents*, no. 6), Uppsala: Dag Hammarskjöld Foundation, November 2009.

Acknowledgements

Special thanks to everyone who helped with this project.

Thanks to Joanna Cabello, Ricardo Carrerre, Calyx Clagg, Tom Goldtooth, Niclas Hällström, Nina Holland, Chris Lang, Marianne Maeckelbergh, Daniela Meirelles, Winfried Overbeek, Pavement, Kittisak Rattanakrajangsri, Pinelopi Sioni, and the Durban Group for Climate Justice.

Review committee: Joanna Cabello, Carbon Trade Watch; Marcelo Calazans, FASE, Brazil; Ricardo Sequeiros Coelho, Universidade do Porto, Portugal; Almuth Ernsting, Biofuelwatch, UK; Justin Fong, Moving Mountains, China; Soumitra Ghosh, NESPON/NFFPFW, India; Tom Goldtooth, Indigenous Environment Network; Amaranta Herrero, Universitat Autònoma de Barcelona; Jutta Kill, FERN, UK; Ivonne Yanez, Oilwatch Sudamerica; Joe Zacune, Friends of the Earth International.

Field research and Chapter 4: Marcelo Calazans, FASE, Brazil; Nishant Mate and Soumitra Ghosh, NESPON and NFFPFW, India; Wiwied Widya Astuti and Mr. Kaka; Jikalihari, Sumatra, Indonesia; Nantiya Tangwisutijit, and The Nam Song Conservation Club, Thailand.

Chapter summary

Chapter 1 »

introduces carbon trading, how it works and some of the actors involved.

Chapter 2 »

explores the origins and key actors involved in building the architecture of emissions trading.

Chapter 3 »

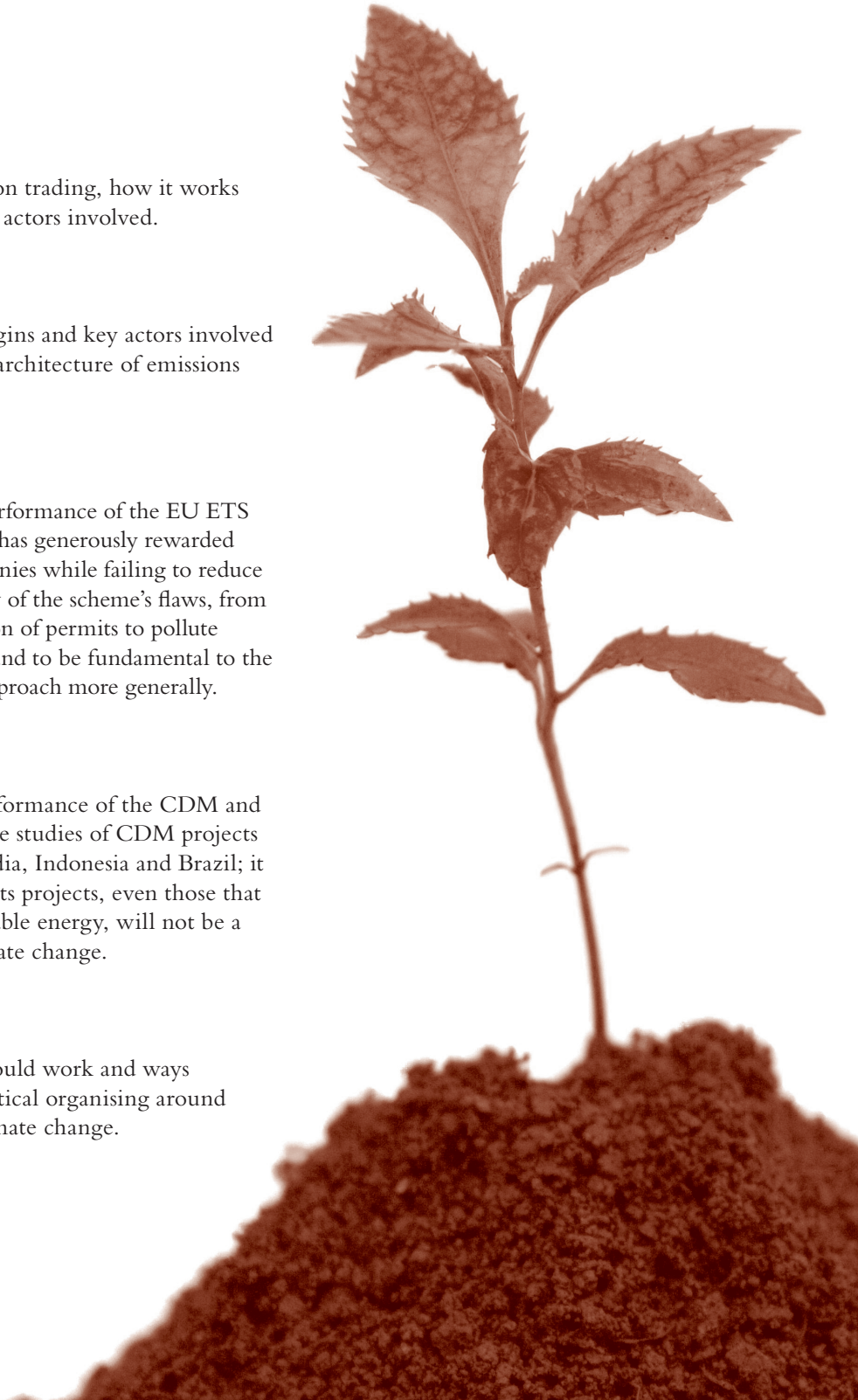
examines the performance of the EU ETS and finds that it has generously rewarded polluting companies while failing to reduce emissions. Many of the scheme's flaws, from the overallocation of permits to pollute onwards, are found to be fundamental to the cap and trade approach more generally.

Chapter 4 »

outlines the performance of the CDM and looks at four case studies of CDM projects in Thailand, India, Indonesia and Brazil; it argues that offsets projects, even those that promote renewable energy, will not be a solution to climate change.

Chapter 5 »

outlines what could work and ways forward for political organising around questions of climate change.



1 » Introduction

The headlines tell the story. 'Billions wasted on UN climate programme'.[1] 'Truth about Kyoto: huge profits, little carbon saved'.[2] 'UN effort to curtail emissions in turmoil'.[3] 'The Carbon Folly: Policymakers' Favourite Global Warming Fix Isn't Working'.[4] 'European Union's efforts to tackle climate change a failure'.[5] 'The great carbon credit con: Why are we paying the Third World to poison its environment?'[6]

Behind these headlines lies a tale of the growing failure of the main tool that governments, financial institutions and corporations have adopted to address climate change. This is carbon trading – a multi-billion dollar scheme whose basic premise is that polluters can pay someone else to clean up their mess so that they don't have to.

Photo: Pinelopi Sioni

Tamra Gilbertson is a researcher with Carbon Trade Watch / Transnational Institute (TNI). She is a co-founder of the Durban Group for Climate Justice.

Photo: Tamra Gilbertson

Oscar Reyes is a researcher with Carbon Trade Watch / Transnational Institute (TNI). He was formerly TNI Communications Officer and co-editor of Red Pepper magazine.

This issue of *Critical Currents* examines what carbon trading is and why it was adopted in the first place. It tells the story of how, from its global beginnings as part of the Kyoto Protocol in 1997, carbon trading has failed to change the way we acquire and use energy, while short-circuiting demands for the fundamental reforms needed. In the process, it has rewarded polluters for continued pollution while at the same time causing social and environmental injustice.

1 John Vidal, 'Billions wasted on UN climate programme', *The Guardian*, 26 May 2008, p.1.
2 Nick Davies, 'Truth about Kyoto: Huge Profits, Little Carbon Saved', *The Guardian*, 2 June 2007, p.1.
3 Jeffrey Ball, 'UN Effort to Curtail Emissions in Turmoil', *Wall Street Journal*, 12 April 2008, p. A1.
4 Emily Flynn Vencat, 'The Carbon Folly: Policymakers' Favorite Global Warming Fix Isn't Working', *Newsweek*, 12 March 2007
5 Channel 4 Evening News, London, lead story, 7 March 2007.
6 Nadine Gouri, 'The great carbon credit con: Why are we paying the Third World to poison its environment?', *Daily Mail*, 1 June 2009; http://www.dailymail.co.uk/home/moslive/article-1188937/The-great-carbon-credit-eco-companies-causing-pollution.html

Climate change: a genuine crisis

Nowadays, few people doubt that the climate is changing and that human activity is the major cause. The evidence is 'unequivocal', according to the 2007 Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), an assessment that synthesises the research of 2,500 scientists.[7] The period from 1997 to 2008 includes the 10 warmest years since global records began in 1850, while average sea level rises are accelerating.[8] The IPCC warns that if present trends continue unchecked, temperatures could rise by over 6 degrees Celsius and sea levels by up to 60 centimetres globally by 2100.[9] This is a conservative estimate compared to more recent studies, which have shown that the geological record of ice melt was non-linear and responded more rapidly.[10] The likely consequences of climate change vary from region to region, but include widespread drought, desertification, flooding and glacial melt.

This message now seems to be getting across. But global efforts to tackle climate change are failing badly, with large and accelerating global increases in greenhouse gas emissions in the decade since Kyoto, as well as a threefold growth in emissions from fossil fuels since the 1990s.[11] This booklet will argue that the market-based solutions advocated by many politicians, celebrities, scientists and large NGOs compound the problem.

There has never been a lack of materials or ingenuity for dealing with climate change. Like many other social problems, global warming is a crisis created by the actions of a minority of the world's peoples – what Ramachandra Guha and Madhav Gadgil have called the omnivores, the development-aided class of modern consumers.[12] For the world's majority, global warming remains a problem for which they already have the solution: forgoing excessive use of fossil fuels. The recent Western fashion for distancing responsibility for climate change, both spatially and temporally, by attributing it to future car-hungry Chinese or Indians, is a diversion possible only under the assumption – shared by elites in North and South alike – that a society that mandates over-consumption is the universal human destiny.

Current global efforts to address climate change, however, look absurdly inadequate. In 1997, the Kyoto Protocol saw 38 industrialised countries commit themselves to cut greenhouse gas emissions by 2012 to a level 5.2 per cent lower than those of 1990. At that time, the IPCC suggested that there would need to be a rapid 50 to 70 per cent emissions reduction if the world were to stand a chance of averting devastating climatic change. It has since revised its projection upwards.[13]

7 Intergovernmental Panel on Climate Change, *Summary for Policymakers of the Synthesis Report of the IPCC Fourth Assessment Report*, IPCC, Geneva, November 2007, p.1.

8 Goddard Institute for Space Studies, 'Global Temperature Trends: 2008 Annual Summation', 16 December 2008; http://data.giss.nasa.gov/gistemp/2008/

9 Intergovernmental Panel on Climate Change, Climate *Change 2007: The Physical Science Basis - Summary for Policymakers*, February 2007, p.6; http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-spm.pdf

10 James Hansen, Makiko Sato, Pushker Kharecha, David Beerling, Robert Berner, Valerie Masson-Delmotte, Mark Pagani, Maureen Raymo, Dana L. Royer, James C. Zachos, 'Target atmospheric CO2: Where should humanity aim?', *Open Atmos. Sci. J.*, vol. 2, 2008, pp. 217-231. This study shows that when temperatures increased to 2-3 degrees Celcius above today's level, 3.5 million years ago, sea levels rose not by the 59 centimetres predicted by the IPCC but by 25 metres.

11 For example, CO2 emissions rose by an average of 3.2 per cent between 2000 and 2005.

12 Ramachandra Guha and Madhav Gadgil, *Ecology and Equity*, Penguin, London, 1995.

13 Intergovernmental Panel on Climate Change, *IPCC Second Assessment: Climate Change 1995,* IPCC, Geneva, 1995.

Several more recent studies have argued that even the latest IPCC figures are an underestimate. For example, James Hansen of NASA has pointed out that the IPCC's earlier calculation failed to take account of 'slow feedback' mechanisms that increase temperature rise caused by greater greenhouse gas concentrations.[14] More generally, in their attempts to meet political demands that a single unit be devised through which the climate impact of one greenhouse gas can be compared simply with another, and then bought and sold in the form of pollution permits, scientists have downplayed the unpredictable, complex and non-linear impacts of climate change to render them easier for policymakers and markets to digest.

Making climate problems fit market solutions

It was clear from the outset that the Kyoto Protocol was inadequate. Shortly after the treaty was signed, a scientific journal pointed out that 30 Kyotos would be needed merely to stabilise the concentration of carbon dioxide (CO_2) in the atmosphere at twice the level it stood at the time of the Industrial Revolution.[15]

But as a prerequisite for agreeing on even such an inadequate 'solution', the United States delegation then introduced into the Kyoto negotiations a series of carbon trading proposals that served to undermine even the weak targets under discussion.

The idea was to allow the industrialised countries included in the treaty, if they did not want to make reductions domestically, to trade away these commitments for the promise of emissions reductions in other countries. The important point, so the theory went, was to achieve an overall balance rather than insisting on each country meeting its own target. The 'hidden hand' of the market would guide the process towards the cuts that were the cheapest to make.

This loosened the lid that Kyoto itself had placed on industrialised countries' emissions. For example, the industrial collapse that took place in the former Soviet countries meant that they were already emitting far less than in 1990. This provided a ready supply of 'hot air' emissions units (as they became known), releasing the pressure on the North to make cuts domestically. Other loopholes quickly appeared too.[16]

Carbon trading

Carbon trading is a complex system which sets itself a simple goal: to make it cheaper for companies and governments to meet emissions reduction targets – although, as we will show, emissions trading is designed in such a way that the targets can generally be met without actual reductions taking place.

Carbon trading takes two main forms: 'cap and trade' and 'offsetting'.

What is cap and trade?

Under a scheme called 'cap and trade', governments or intergovernmental bodies like the European Commission hand out licenses to pollute (or 'carbon permits') to major

14 James Hansen et al., *op. cit.*, *supra*, note 10.

15 David Malakoff, 'Thirty Kyotos Needed to Control Global Warming', *Science*, 278, no. 2, 19 December 1997, p. 2048.

16 These included the exclusion of international shipping and aviation from emissions reduction targets. Official UN statistics show that fuels sold for use in international aviation and international marine transportation increased by 65.9 and 18.4 per cent, respectively in the period from 1990 to 2006. These figures refer only to transport originating from or arriving in Annex 1 countries (those with emissions reductions targets). See UNFCCC, 'National greenhouse gas inventory data for the period 1990–2006', November 2008, p.12; http://unfccc.int/resource/docs/2008/sbi/eng/12.pdf

industries. Instead of cleaning up its act, one polluter can then trade these permits with another who might make 'equivalent' changes more cheaply. This is the approach underlying the European Union's Emissions Trading Scheme (EU ETS), the world's largest carbon market, which was worth US$ 63 billion in 2008 and continues to expand rapidly.[17]

The theory is that the availability of carbon permits will gradually be reduced, ensuring scarcity, so that the market retains its value while at the same time forcing a reduction in the overall level of pollution. The cap part is supposed to do the work, environmentally speaking, setting a legal limit on levels of permissible pollution within a given time period. Each cap reduction is, in effect, a new regulatory measure introduced by governments and/or international bodies to restrict pollution further.

The 'trading' (or 'market-based') component of such a scheme does not actually reduce any emissions. It simply gives companies greater room to manoeuvre in addressing the emissions problem, for which reason carbon trading proposals are sometimes also referred to as 'flexible mechanisms'. Installations exceeding their reduction commitments can sell their surpluses to those who have failed to clean up their act adequately. Companies that want to keep on polluting save money, while in theory companies that are able to reduce beyond legal requirements will seize the chance to make money from selling their spare credits. But this flexibility comes at a cost – what is cheap in the short term is not the same as what is effective in the long term or environmentally and socially just.

17 World Bank, *State and Trends of the Carbon Market 2009*, World Bank, Washington DC, 2009, p.7.

In practice, the scheme has failed to incentivise emissions reductions. For example, a combination of industrial lobbying efforts and measurement difficulties have ensured that the pollution rights granted to private firms within cap and trade schemes are in many cases more generous than the polluters need to cover their existing level of emissions. This surplus of permits can then be sold to other polluters so that they too might avoid reducing their greenhouse gas emissions.

To date, the vast majority of permits have been handed out for free (a practice known as 'grandfathering') in the EU ETS, and the same is true for other cap and trade schemes.[18] The number of permits awarded is calculated according to existing levels of pollution, which means that those who have polluted most in the past are rewarded with the greatest subsidy. This free gift of pollution rights to some of the worst industrial polluters amounts to one of the largest projects for the creation and regressive distribution of property rights in history.[19]

18 This is the case for the EU ETS until 2012. Although the EU and US have both claimed that auctioning could provide a major revenue stream to finance other measures to tackle climate change, this has not yet materialised. In the USA, President Obama initially budgeted for US$ 646 billion as a result of auctioning 100 per cent of carbon permits, but as of September 2009 it is proposed that around 85 per cent be allocated for free. See Jim Efstathiou Jr. and Kim Chipman, 'Carbon Market Backers Split Over Obama Climate Plan', *Bloomberg*, 19 March 2009; http://www.bloomberg.com/apps/news?pid=20601072&sid=aVzbV8Sc35PY.
The European Union also significantly watered down its auctioning plans for the third phase of the EU ETS, with EU finance ministers vetoing calls for the money to be ringfenced for climate-friendly policies. The largest single public revenue stream that remains has been designated for the development of controversial 'carbon capture and storage' technologies.

What are carbon offsets?

The second type of carbon trading is offsetting. Instead of cutting emissions at source, companies, and sometimes international financial institutions, governments and individuals, finance 'emissions-saving projects' outside the capped area. The UN-administered Clean Development Mechanism (CDM) is the largest such scheme, with almost 1,800 registered projects as of September 2009, and over 2,600 further projects awaiting approval.[20] Based on current prices, the credits produced by approved schemes could generate over US$ 55 billion by 2012.[21]

Although offsets are often presented as emissions reductions, they do not reduce emissions. Even in theory, they at most merely move 'reductions' to where it is cheapest to make them, which normally means a shift from Northern to Southern countries. Pollution continues at one location on the assumption that an equivalent emissions saving will happen elsewhere. The projects that count as 'emissions savings' range from building hydro-electric dams to capturing methane from industrial livestock facilities.

The carbon 'savings' are calculated according to how much less greenhouse gas is presumed to be entering the atmosphere than would have been the case in the absence of the project. But even the World Bank officials, accounting firms, financial analysts, brokers and carbon consultants involved in devising these projects often admit privately that no ways exist to demonstrate that it is carbon finance that makes the project possible.[22] Researcher Dan Welch sums up the difficulty: 'Offsets are an imaginary commodity created by deducting what you hope happens from what you guess would have happened.'[23] Since carbon offsets replace a requirement to verify emissions reductions in one location with a set of stories about what would have happened in an imagined future elsewhere, the net result tends to be an increase in greenhouse gas emissions.

The use of 'development' and 'poverty' rhetoric to describe offsets also masks their fundamental injustice: offsets hand a new revenue stream to some of the most highly

19 There is also a question of North-South distribution at stake here. Cap and trade schemes currently exist in Northern countries, where governments award the pollution rights to companies that operate within their borders. For each year of its scheme, the EU has awarded free emissions permits equating to almost 2 billion tonnes of emissions – between 17 and 34 per cent of the world's 'carbon dump'. Loosely translated, this means the EU and companies operating there are in on the fact that they over-pollute – with a carbon price at €30 per tonne, the equivalent asset value would be approximately €60 billion. A proposed cap and trade scheme in the USA, which would cover around 85 per cent of its emissions, would generate an even larger asset value – to be split, most likely, between free passes for industry and revenue for the US government.
It is worth noting, too, that this fundamental inequality in allocations is only marginally improved by auctioning the revenues rather than 'grandfathering' them. When the EU and US plan to auction carbon rights and pay a proportion, the question remains: are these their rights to sell? The defence that is typically used in response to this charge is that a proportion of the auction revenue will be allocated for development funding, which tends to come with 'conditionalities'. This is like owning a house with another person, selling it without their consent, then promising to return a small part of the money as long as they agree to spend it according to criteria you define.

20 UNEP Risoe CDM/JI Pipeline Analysis and Database, 1 September 2009, http://cdmpipeline.org/overview.htm

21 This is based on a UNEP Risoe September 2009 estimate of 279 million Certified Emissions Reductions (CERs) issued by 2012, and assumes a CER price of US$ 20. CERs are the offset credits issued by the CDM.

22 Larry Lohmann, 'Marketing and Making Carbon Dumps: Commodification, Calculation and Counterfactuals in Climate Change Mitigation', *Science as Culture*, vol. 14, no. 3, September 2005, pp. 203-235.

23 Dan Welch, 'A Buyer's Guide to Offsets', *Ethical Consumer*, no. 106, May/June 2007.

polluting industries in the South, while simultaneously offering companies and governments in the North a means to delay changing their own industrial practices and energy usage. As we show in chapter 4, carbon offset projects have resulted in land grabs and the repression of local communities.

Voluntary offsets, which give consumers in the global North a means to make a payment to assuage their guilt about consumption, and companies the chance to present a green face to the public, run into similar problems. Offsets on the voluntary market exist outside UN regulation, but they have similarly negative consequences on the communities forced to endure them. In addition, these personal offsets individualise the response to climate change, distilling the complexities of a systemic problem of how energy is produced and used, and how land is distributed, into a seemingly simple question of authorising a small payment with the click of a computer mouse.[24]

Putting a price on climate change

These market-based approaches form a key part of the architecture for how international financial institutions and governments propose to address climate change. In the words of the UK Government's influential *Stern Review on the Economics of Climate Change*, climate change is 'the greatest market failure the world has ever seen'.[25] Defining the problem in this way suggests that it is simply a market problem. New markets, Stern insists, can repair what existing markets broke. It is assumed that climate change occurred because no price was put on carbon, with the result that it was not valued when economic decisions were made.

This approach suggests that the earth's capacity to regulate its climate can be treated as a measurable commodity. The problem is that while commodity prices can do many things, one thing that they have never achieved is to solve problems that require structural change in so many fundamental areas of industry and agricultural practice. A market price for carbon, says Sussex University's Energy Group's Jim Watson, 'is a very poor weapon in what is supposed to be a war to save humanity'.[26] In the 1970s, high price rises did little to wean industrial societies off oil – and there is little reason to believe that a carbon price can do so either.

The problem is, firstly, that price signals are uncertain – highly so in the case of existing carbon markets. Proponents of carbon trading argue that such markets could affect long-term infrastructure decisions *if only* a stable price signal could be achieved. Yet carbon prices are inherently volatile. The commodity traded as 'carbon' does not actually exist outside of the numbers flashed up on trading screens or the registries held by administrators. But a single tradable unit is needed in order to create a market, and for this purpose a whole set of incommensurable practices, undertaken at different

24 Kevin Smith, *The Carbon Neutral Myth: offset indulgences for your climate sins*, Carbon Trade Watch/ Transnational Institute, Amsterdam, 2007.

25 Nicholas Stern et al., *Stern Review on the Economics of Climate Change,* HM Treasury, London, 2006, p.viii.

26 Jeremy Lovell, 'Carbon Price is Poor Weapon against Climate Change', *Reuters*, 25 September 2007.

places and times – from making industrial processes more efficient to capturing coal-mine methane and generating hydro-electric power – are treated as though they were the same.

This makes putting a price on carbon largely an arbitrary exercise and uncertain as predicting a price of even the most mundane commodity is at best guesswork. Currently, traders may attempt to track carbon prices merely by looking at energy prices, calculating the difference between coal and gas prices or by speculating about future political decisions. That is an unlikely recipe for instituting the deep structural changes that the global warming problem demands.

The numbers game

Carbon trading has created a system whereby different greenhouse gases are treated as equivalent and quantifiable 'things,' opening them up to the possibility of exchange. An emissions cut in one place becomes 'equivalent' to, and thus exchangeable with, a cut or a compensatory measure elsewhere.
At first glace, this may seem uncontroversial. As the World Bank puts it, 'greenhouse gases mix uniformly in the atmosphere, which makes it possible to reduce carbon emissions at any point on Earth and have the same effect'.[27] Climate change is a global problem rather than a local one, so it should not matter whether these reductions are made in Brussels or Beijing. A moment's reflection will show, however, that, in producing such equivalences, carbon trading already drifts away from tackling climate change.

That challenge consists mainly of initiating a new historical pathway that leads away from dependence on fossil fuels, which are by far the major contributor to human-caused climate change. Once taken out of the ground and burned, coal, oil and gas add to the amount of carbon cycling between the atmosphere and the oceans, soil, rock and vegetation. This transfer is, for human purposes, irreversible: once mined and burned, fossil carbon cannot be locked away safely underground again in the form of new deposits of coal, oil or gas, or in the form of carbonate rock, for millions of years.[28]
The transfer is also unsustainable: there is simply not enough 'space'' in above-ground biological and geological systems to park the huge mass of carbon that is coming out of the ground safely without carbon dioxide building up catastrophically in the air and the seas. As biologist Tim Flannery puts it: '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.'[29]

Most untapped coal, oil and gas, in other words, is going to have to stay in the ground. Accordingly, countries currently 'locked in' to fossil fuels need instead to 'lock in' to non-fossil energy, transport, agricultural and consumption regimes within at most a

27 World Bank, *Community Development Carbon Fund Annual Report 2004* World Bank, Washington, 2005, p.5.

28 M. Eby, K. Zickfeld, A. Montenegro, D. Archer, K. J. Meissner and A. J. Weaver, 'Lifetime of Anthropogenic Climate Change: Millennial Time Scales of Potential CO2 and Surface Temperature Perturbations', *American Meteorological Society*, vol. 22, no. 10, May 2009.

29 Tim Flannery, 'Monstrous Carbuncle', *London Review of Books*, vol. 27, no. 1, 6 January 2005.

few decades.[30] Because this shift is structural, the first steps need to be undertaken immediately to minimise future dangers and costs.

While carbon trading encourages ingenuity in inventing measurable 'equivalences' between emissions of different types in different places, it does not select for innovations that can initiate or sustain a historical trajectory away from fossil fuels (the effectiveness of which is less easy to measure).

Business as usual

For both governments and many large corporations, the appeal of carbon trading schemes is that they give the appearance of addressing climate change but do not mandate an immediate start to structural change in existing energy practice, production or consumption patterns. As *The Guardian*'s Nick Davies has pointed out, carbon offsetting is 'an idea which flows not from environmentalists and climate scientists trying to design a way to reverse global warming but from politicians and business executives trying to meet the demands for action while preserving the commercial status quo'.[31]

But climate scientists can succumb to a similar logic. In its Fourth Assessment Report, the IPCC assumes that an international carbon market will be a 'foundation for future mitigation efforts'.[32] This is a remarkably short-sighted conclusion for an organisation whose work recognises the need for urgent action to reduce greenhouse gas emissions. It is possible to conceive of all manner of climate disasters, it seems, but not to think outside the box of the economic systems that are contributing to their happening in the first place.

The message of all this is clear. Industrialised societies can continue to use up fossil fuels until there are none left worth recovering. At the same time, they can create new markets that make it possible to claim that others can clean up the mess, and that it will be economically 'efficient' for them to do so. This is a market, politicians and business leaders 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 out of the same mine.

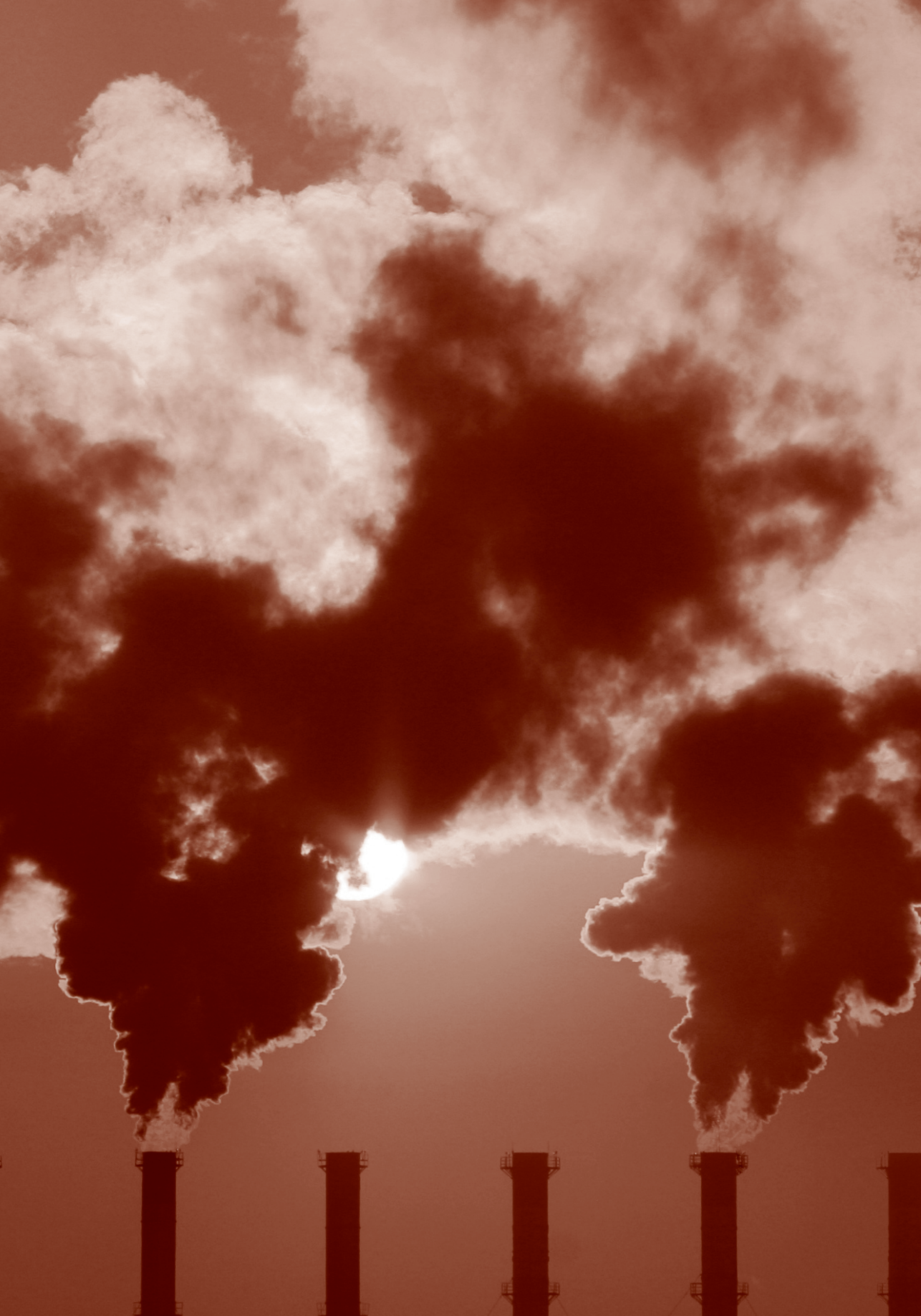
Yet as long as oil, coal and gas continues being taken out of the ground, run through combustion chambers, and transferred to the active carbon pool in the air, oceans, vegetation and soil, the world will remain on a path toward catastrophic climate change. It took millions of years for plants to extract 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. Despite all the schemes selling ways to capture carbon there is no environmentally sound or quick method to safely restore the fossil fuels and carbon deposits at the rate they have been unleashed into the atmosphere.

30 Gregory C. Unruh, 'Understanding Carbon Lock-In', *Energy Policy*, no. 28, 2000, pp. 817-30.

31 Nick Davies, 'The inconvenient truth about the carbon offset industry', *The Guardian*, 16 June 2007, http://www.guardian.co.uk/environment/2007/jun/16/climatechange.climatechange

32 Intergovernmental Panel on Climate Change, *op.cit.*, *supra*, note p.7.

Carbon trading is aimed at the wrong target. It is not directed at reorganising industrial societies' energy, transport and housing systems – starting today – so that they don't need coal, oil and gas. It is not contributing to the de-industrialisation of agriculture or the protection of forests through the recognition of local and Indigenous Peoples' tenure rights or food sovereignty. Instead, it is organised around keeping the wheels on the fossil fuel industry for as long as possible.



2 » A brief history of carbon trading

It is not an exaggeration to brand the mechanisms of the Kyoto Protocol as 'Made in the USA.' . . . The sensitivity of the Protocol to the market was largely instigated by the negotiating positions of the USA.

Michael Zammit Cutajar,
former executive secretary,
UN Framework Convention
on Climate Change, 2004

Over the past decade, carbon trading has emerged as the centrepiece of official efforts to address global warming. This chapter tells the story of how corporations, financial institutions, academics, governments, United Nations agencies and some environmentalists came to promote a neoliberal, market-based approach to climate change emanating from the United States.

The market fix

Carbon trading sets up a framework for dealing with greenhouse gases 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 system does not set a deadline by which fossil fuel use will be mostly phased out. Instead it starts by translating existing pollution into a tradable commodity, the rights to which are allocated in accordance with a limit set by states or intergovernmental agencies. The idea of the cap is that these limits are gradually lowered, although no clear timetable is set, and the means by which public support will be mobilised for shrinking caps is left unspecified. Within whatever overall constraints imposed, however, companies can choose either to buy a greater number of rights to carry on polluting as before, or to make efficiency savings. Those who make extra efficiency savings can sell their surplus pollution rights to those who do not meet their targets.

While this might sound like a neat theory, carbon trading is both ineffective and unjust. Redefining greenhouse gas emissions as a tradable commodity – 'carbon' – whose value lies in what it can be swapped for or what price it can fetch, carbon trading significantly distorts the framework through which we view the problem of tackling climate change, encouraging the growth of an elaborate financial system in which a broad range of industrial and agricultural practices are rendered falsely

equivalent, while obscuring the social, political, technological and historical questions of how rapidly shrinking caps are to be achieved. In addition, all actually-existing carbon trading schemes grant the largest number of rights free of charge to those who have been most responsible for pollution in the first place. Instead of considering polluters culpable for causing a past harm, or imposing a stricter limit upon them because they have already used up their share of 'atmospheric space', carbon trading effectively rewards them for these past misdemeanours.

The neoliberal context

This market fix for global warming could not have become dominant without being part of a longer historical wave of neoliberalism.

Internationally, neoliberalism uses institutions such as the World Bank, and the World Trade Organization, 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 regimes and fights national 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 the US and EU. 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.

The economists and the early years

Although it is not possible to pinpoint a single founder of carbon trading, many of the theories from which it derives can be traced back to the work of economists Ronald Coase, George Stigler and, later, J. H. Dales – who provided a theoretical framework on the basis of which a market-based means to tackle pollution could be developed.[1]

Coase's idea was that the right to pollute is a factor of production just like the right to use land. In both cases, the idea was that exercising one's right would naturally entail some losses to be suffered elsewhere.[2] The question becomes how significant those losses will be.

To find out how best to distribute pollution, Coase argued, you put it on the market together with other commodities 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 with no 'transaction costs' and is inhabited by properly calculating, maximising economic agents with perfect information, the theory suggests that pollution will wind up being used in the way that contributes the most to society's 'total product'.[3]

1 George Stigler, *The Theory of Price*, McMillan, New York, 1987.

2 Ronald Coase, *The Firm, the Market and the Law*, University of Chicago Press, Chicago, 1988, p.155.

3 Ronald Coase, 'Looking for Results: Nobel Laureate Ronald Coase on Rights, Resources and Regulation', *Reason Magazine*, January 1997, http://reason.com/9701/int.coase.shtml.

If that means a lot of pollution, so be it. There's no need to worry that there will be 'too much' pollution, because if a 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.

On this basis, Coase concluded that pollution dumps, as one 'factor of production' among many, would automatically be bargained into the hands of those who could produce the most wealth from them (or best 'improve' them, to use 17th century terminology), and thus the greatest good for society. That is, to allocate property rights to public commons will deliver a socially efficient use of resources, even when externalities are present.[4]

Coase's successors, including the economists J. H. Dales and Thomas Crocker, modified pollution trading theory further. While continuing to emphasise the importance of allowing polluters formal rights to pollute, they suggested that states would be better placed than an imaginary 'perfect market' to set a cap on overall pollution levels.[5] In this way, pollution trading became mainly a way of finding the most cost-effective way for businesses to reach an emissions goal that had been set beforehand.

A number of these early pioneers turned their back on such theories when faced with the messy reality of carbon trading. Thomas Crocker stated, as the cap and trade scheme was passing through the US Congress in summer 2009: 'I'm skeptical that cap-and-trade is the most effective way to go about regulating carbon.'[6] In devising a rationale for pollution trading, Crocker now says, he never imagined that a complex pollution problem with myriad sources could be dealt with under the one scheme, arguing that 'it is not clear... how you would enforce a permit system internationally.' J. H. Dales had previously expressed similar caution, claiming that there were 'lots of situations' in which the theory of emissions trading would not apply.[7]

Sulphur dioxide trading

There had been some early, clumsy attempts to implement cap and trade schemes for pollution by the US Environmental Protection Agency (EPA), such as a scheme which allowed trading of lead credits in gasoline. The most significant experience, however, was the sulphur dioxide (SO_2) trading scheme set up as part of US Clean Air Act Amendments in 1990.

The Clean Air Act intended to use trading to make it cheaper to reduce SO_2 emissions by 10 million tonnes below 1980 levels, thus

4 Ronald Coase, 'The Problem of Social Cost', *Journal of Law and Economics*, no. 3, 1960, pp.1-44; R. Coase, *op. cit.*, *supra*, note 2. See also Deirdre McCloskey, 'The so-called Coase Theorem', *Eastern Economic Journal*, vol. 24, no. 3, 1998, pp.367-371.

5 J. H. Dales, 'Land, Water and Ownership', *Canadian Journal of Economics*, no. 1, November 1969, pp.791-804.

6 Jon Hilsenrathm, 'Cap-and-Trade's Unlikely Critics: Its Creators', *Wall Street Journal*, 13 August 2009.

7 *Ibid*.

reducing acid rain.[8] That paved the way for later US trading programmes in water pollution, wetlands destruction, biodiversity depletion and so on.

While Dales and other proponents of pollution trading had expected that permits would be auctioned, almost all of the SO_2 allowances under the Clean Air Act – like those of later emissions markets – were simply distributed free of charge.[9] Hence, the rights were, and still are, gravitating into the hands of those who have the most power to appropriate them and the most financial interest in doing so. Systems of pollution trading give new commercial powers to those with access to legislation. So just as corporations lobby for exemption from pollution regulations, they lobby to make sure emissions allowances amount to secure property rights.

In common with other emissions trading schemes, the first phase of SO_2 trading generated a significant surplus of pollution permits over and above what was needed for compliance. It covered 263 of the largest coal-fired power stations in the US, which produced emissions 39 per cent above the level the cap at 1995, and on average 23 per cent below the cap for the subsequent four years.[10]

Although this 'over-compliance' has been claimed as a success, this occurred for several reasons that were not closely linked to the programme itself. The utilities covered by the scheme anticipated high compliance costs in the first phase as a result of which they installed scrubbers, an end-of-pipe technology to remove SO_2 from power plant exhaust streams. By 1995, however, productivity improvements in extraction and transport meant that low-sulphur coal had become far more cheaply and readily available in the US. Since this reduced emissions in its own right, the result was an oversupply of permits.[11] A second, major factor was a 'substitution' provision built into the Clean Air Act, which allowed companies to switch the factory specified in the legislation for another of their choice 'and receive allocations of allowances based on the historic emissions of those units instead'.[12]

The net result was that a large surplus of pollution permits was generated which could then be carried over (or 'banked' in the jargon) to the second phase of the scheme, beginning in 2000, which came to include 2,262 electricity-generating units. This surplus, in addition to the emissions being set systematically above the cap between 2000 and 2005, helped these other units to delay meeting their obligations to clean up SO_2 pollution.

This goes some way towards explaining why the US Clean Air Act was significantly *less*

8 M. Bernstein, M. A. Farrell et al., 'The Environment and Economics – The Impact of Restricting the SO2 Allowance Market', *Energy Policy*, vol. 22, no. 9, pp.748-754, 1994; Drury, Belliveau, Kuhn and Bansal, 'Pollution Trading and Environmental Injustice: Los Angeles, Failed Experiment in Air Quality Policy', *Duke Environmental Law and Policy Forum*, no. 45, 1999.

9 Ricardo Coelho, 'Pollution for sale: made in the USA', Presentation at the II Doctoral Meeting, Université de Montpellier, 21 August 2009, p.8. Only a small percentage of the allowances (3.1 per cent in phase 1 and 2.8 per cent in phase 2) were auctioned off. Each allowance permitted the release of 1 tonne of sulphur dioxide into the air after 1995. The price for each allowance was between US$ 122 and US$ 450, much cheaper than paying for flue gas scrubbers to remove sulphur dioxide from their emissions.

10 Lesley McAllister, 'The Overallocation Problem in Cap-and-Trade: Moving Toward Stringency', *Columbia Journal of Environmental Law*, 2009, vol 39, no. 2, p.401. Available at SSRN: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1276405

11 Ricardo Coelho, *op. cit., supra,* note 9.

12 *Ibid.*

successful at reducing SO_2 pollution than equivalent regulations elsewhere. SO_2 emissions in the US had been reduced by 43.1 per cent by the end of 2007, but over the same period 25 members of the European Union saw a decrease in emissions of 71 per cent.[13] These reductions were achieved through regulation, rather than a cap and trade scheme.[14] Beyond this, the lessons of sulphur trading were far from simply applicable to the far larger and more complex array of gases and industrial processes covered by carbon trading. SO_2 emissions emanating from a relatively small number of large fixed sources are far simpler to monitor than the complex mix of gases and processes involved in emissions trading today. As Phil Clapp of the US National Environmental Trust points out: '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.'[15] Another important difference between the two schemes is that SO_2 trading did not allow for the use of offsets.

In addition, as Ruth Greenspan Bell points out, pollution trading is at most only a tool to make more cost-effective an already existing commitment to cut pollution. Where the basic commitment and regulatory power doesn't exist, the tool can do little.[16] In the US, this commitment and regulatory power did exist. Sulfur dioxide trading was not introduced to try to get polluting companies interested in controlling acid rain; they were already required to. The situation is different with global warming. Although the countries engaged in the UN process have formally agreed to control carbon, this is not a strong or enforceable commitment in either North or South.

13 US EPA, data from 'Acid Rain Program 2008 Progress Report', http://www.epa.gov/airmarkets/progress/interactivemapping.html; European Environment Agency, 'Air pollution from electricity-generating large combustion plants', EEA Technical report No 4/2008, p.11. The data includes all current EU members except Romania and Bulgaria.

14 The relevant EU legislation – the Large Combustion Plants Directive (LCPD) – sets a non-tradable limit on the level of SO_2, with plants that 'opt out' of the scheme required to close by 2015. This will lead to the closures of numerous oil and coal-fired power stations – a more effective measure, in terms of reduced carbon emissions, than any climate-specific policy to date. On the LCPD plant closures, see Pete Harrison, 'UK And Poland Top Dirty Coal List, Closures Loom', *Reuters*, 12 February 2009: http://planetark.org/wen/51627. The second piece of directly relevant EU legislation is the International Pollution Prevention and Control (IPPC) Directive, which also sets energy efficiency requirements and pollution limits. Unfortunately, the application of the EU ETS has directly undermined the co-benefits of this legislation for tackling carbon emissions. As the European Environment Agency points out, the IPPC 'requires the definition of both energy efficiency requirements and emission or concentration limits... These requirements could restrict emissions trading. For example, operators of large sources might be obliged to reduce their emissions (in order to comply with the IPPC Directive) when it could be more economically efficient to increase emissions further and buy additional allowances instead. Article 26 of the Emissions Trading Directive therefore amends the IPPC Directive so that permits shall not include CO2 emission limits for installations which are covered by the EU ETS.' European Environment Agency (2008) 'Application of the Emissions Trading Directive by EU Member States – reporting year 2007', EEA Technical Report no. 3/2008, p.27. The EU is currently consulting on whether to revised the IPPC through the development of new nitrous oxide and sulphur dioxide trading schemes – a further example of how the EU ETS is serving to undermine existing environmental regulations.

15 Michael Shellenburger and Ted Nordhaus, 'Break Through: The Death of Environmentalism: Global Warming Politics in a Post-Environmental World', 2004, p.15, available at http://thebreakthrough.org/images/Death_of_Environementalism.pdf.

16 Ruth Greenspan Bell, 'Transforming The Dynamic', Environmental Forum (US), May/June 2009.

Climate trading

Despite these problems and significant differences, the sulphur trading example was, perhaps disingenuously, heralded as a successful model for the tackling of greenhouse gas emissions from the early 1990s onwards.

The Organisation for Economic Co-operation and Development (OECD) and the United Nations Conference on Trade and Development (UNCTAD) set out the terrain for international negotiations.[17] The OECD investigated the US SO_2 emissions trading experience and considered the scope for international emissions trading.[18] UNCTAD, meanwhile, engaged in an extensive work programme to promote a global CO_2 trading system.

At the same time, the US-based NGO Environmental Defense Fund (which is now called Environmental Defense) was an early promoter of emissions trading, and published a 1991 study advocating emissions trading to protect the rainforest – a notion whose afterlife can be seen in current market-based proposals for Reducing Emissions from Deforestation and Degradation (REDD).[19] (See chapter 4). The authors of this paper were UNCTAD consultants at the time, and had recent experience advising the US EPA on sulphur trading.[20]

17 Sebastian Oberthür and Hermann Ott, *The Kyoto Protocol: international climate policy for the 21st century*, Springer, New York, 1999, p.188.

18 OECD, 'Climate Change: Designing a Tradeable Permit System', *OECD Observer*, Paris, 1992.

19 Daniel Dudek and Alice LeBlanc, 'Preserving Brazil's Tropical Forests Through Emissions Trading', Environmental Defense Fund report, 1991.

20 For short biographies, see 'Alice LeBlanc' at http://www.prlog.org/10290563-alice-leblanc-former-director-of-office-of-environment-and-climate-change-at-aig-joins-karbone.html and 'Daniel J Dudek' at http://www.edf.org/page.cfm?tagID=909

Revolving doors

The case of the United Nations Conference on Trade and Development (UNCTAD) starkly illustrates how many of the key actors involved in the promotion of global carbon trading later drew significant material benefits from it.[21]

Frank Joshua, head of greenhouse gas emissions trading at UNCTAD from 1991 to 2000, went on to become global director for emissions trading services at Arthur Andersen, the accountancy firm at the centre of the Enron scandal, before joining NatSource, an environmental services firm specialising in emissions trading.[22] In the early 1990s, Joshua collaborated on an UNCTAD initiative entitled 'Building a Global CO_2 Emissions Trading System' with Richard Sandor, a former head of the Chicago Board of Trade, and one of the originators of the interest rate derivatives which were a precursor of the complex derivatives that contributed to the financial crash of 2008. Sandor went on to head UNCTAD's working group on carbon market design.[23] He later set up the Chicago Climate Exchange (CCX), which today commands a small but growing segment of the carbon markets.

Alice LeBlanc, another key figure in the UNCTAD initiative, was an employee of Environmental Defense at the time. She later joined Sandor at the Chicago Climate Exchange, before becoming head of the climate change office of insurance firm AIG,

21 UNCTAD, 'Global Greenhouse Emissions Trader', 3 December 1997: r0.unctad.org/ghg/download/newsletters/newsltr3.pdf

22 Frank Joshua: http://www.eib.org/infocentre/forum/archives/dublin-2003/speakers/frank-joshua.htm

23 Larry Lohmann, 'Uncertainty Markets and Carbon Markets: Variations on Polanyian Themes', *New Political Economy*, forthcoming, 2009, pp.10-11.

where she devised the firm's carbon market investment strategy.[24]

Two more fundamental trends lie beneath these connections. First, they reflect the extent to which the notion of 'conflicts of interest' has fallen into obsolescence. Second, the interconnections hint at broader links between the rule-setting process for carbon markets and the agencies that established the derivatives markets that contributed to the financial crisis of 2008.[25]

From Rio to Kyoto

Although emissions trading did not directly find its way into the text of the UN Framework Convention on Climate Change (UNFCCC), which was agreed at the Rio Earth Summit in 1992, some of the neoliberal assumptions underlying it were reflected in both the Convention's defence of an 'open economic system' based on economic growth, and in the Summit's overall recuperation of multinational corporations as positive agents of ecological change – 'promoting sustainable development through trade liberalisation', in the words of Agenda 21, another of the Declarations agreed at Rio.[26]

In addition, the UNFCCC noted that 'the largest share of historical and current global emissions of greenhouse gases has originated in developed countries'. As a result, countries were felt to have 'common but differentiated responsibilities' in tackling climate change, with the industrialised countries (identified as Annex 1) obliged to shoulder the burden of cleaning up a problem they had been disproportionately responsible for creating.

In 1994 developed countries made voluntary commitments to reduce their greenhouse gas emissions to 1990 levels by 2000. It quickly became clear that there was little chance that these targets would be adhered to, however, and negotiations on legally binding targets began at the first Conference of the Parties (COP) to the UNFCCC in Berlin in 1995.

A UNFCCC Annex 1 Expert Group, guided by the International Energy Agency (IEA) and OECD, developed proposals for industrialised nations within the UN process and became an important forum for the elaboration of an emissions trading system within the Kyoto Protocol.[27]

As negotiations gathered pace for a follow-on agreement to the Convention, the US government began to design a carbon trading proposal, announcing in 1996 that this kind of 'flexibility' would be 'the key requirement for accepting binding targets'.[28]

In December 1997, the third COP was held in Kyoto, Japan, resulting in a Protocol that was to become the major pillar of international climate policy. Although most

24 Carbon Control News, 'Insurance Giant AIG Poised To Issue Climate Change Strategy, ' 5 April 2006. http://carboncontrolnews.com/index.php/igb/show/494

25 For a more detailed analysis on this theme, see Larry Lohmann, *op. cit., supra,* note 23.

26 Pratap Chatterjee and Matthias Finger, *The Earth Brokers: Power, Politics and World Development*, Routledge, New York, 1995. See Agenda 21, ch.2, section 1: http://www.un.org/esa/dsd/agenda21/

27 Sebastian Oberthür and Hermann Ott, *The Kyoto Protocol: international climate policy for the 21st century*, Springer, 1999, p.188 The Annex I Expert Group still exists, and is promoting proposals for new 'sectoral' carbon markets in advance of the COP15 global climate negotiations at Copenhagen in December 2009.

28 Deborah Stowell, *Climate Trading: Development of Greenhouse Gas Markets*, Palgrave, Basingstoke, 2005, pp.15-16.

governments insisted that emissions reductions should be made domestically by parties to the agreement, the US delegation, led by Vice President Al Gore, again insisted upon 'flexibility'. As journalist George Monbiot recalls:

> Gore demanded a series of loopholes big enough to drive a Hummer through. The rich nations, he said, should be allowed to buy their cuts from other countries. When he won, the protocol created an exuberant global market in fake emissions cuts... He also insisted that rich nations could buy nominal cuts from poor ones. Entrepreneurs in India and China have made billions by building factories whose primary purpose is to produce greenhouse gases, so that carbon traders in the rich world will pay to clean them up.[29]

The most significant of these loopholes was the Clean Development Mechanism, a carbon offset mechanism which was included at a late stage in the Kyoto negotiations.[30] A second offsetting scheme, called Joint Implementation, was also included in the Protocol.

Joint Implementation

Joint Implementation (JI) is a UN offsetting scheme that is similar to the Clean Development Mechanism – the key difference being that it involves projects hosted in countries that already have binding targets for the reduction of their greenhouse gas emissions.

Most of the projects are in 'transition economies' (Russia, Ukraine and Central and Eastern Europe), which tend to be the cheapest places to host them, although they have also emerged in Germany, France and New Zealand.

By September 2009, the UN had registered 214 JI projects. These tend to be larger in scale than CDM projects, with the largest proportion (34 per cent) accounted for by methane gas reduction projects, which are mostly associated with coal mines.

The origin of offsets

The idea of offsetting did not begin with the Kyoto Protocol or with carbon trading. Early in the history of pollution trading, governments and private firms sought ways of injecting extra, inexpensive pollution permits into the market, to make meeting targets even easier than it would be under simple cap and trade schemes.[31] In 1976, the US EPA promulgated a policy allowing major new pollution sources to be sited in locations where standards were not being attained as long as they obtained 'offset' pollution credits generated from other projects that saved or reduced emissions.

29 George Monbiot. 'We've been suckered again by the US. So far the Bali deal is worse than Kyoto', *The Guardian,* 17 December 2007: http://www.guardian.co.uk/commentisfree/2007/dec/17/comment.world

30 The CDM is not the only hole in the Kyoto Protocol, however. As noted in chapter 1, the ability to trade emissions between countries has resulted in a significant quantity of 'hot air' emissions in the system – in particular, following the collapse of the Soviet Union. Another significant hole is the exclusion of international aviation and shipping from the calculations underlying the Kyoto Protocol.

31 Richard A. Liroff, *Reforming Air Pollution Regulation: The Toil and Trouble of EPA's Bubble,* Conservation Foundation, Washington, 1986, p.100.

In order to become tradable for emissions allowances, offset credits had to be made 'equivalent' to emissions reductions. In the 1970s and 1980s, various US authorities and regulated corporations eager to build a pollution offset market tried to commensurate reducing pollution from industrial installations with buying up and scrapping old cars or by making material process substitutions elsewhere.[32] Environmentally, the experiment failed. For example, entrepreneurs sold credits for destroying cars that in fact had already been abandoned, while states lured industry by providing it with offsets created through substitution processes that were already occurring for non-environmental reasons.[33]

Under one California smog trading programme, the Sacramento Metropolitan Air Quality Management District issued 5 tonnes per year of volatile organic compound pollution credits created by the decommissioning of B-52 bombers that had been based in the region. The credits were bought by companies such as Intel, Campbell's Soup and Aerojet, who were able to avoid installing pollution control equipment as a result. The credits arguably functioned to increase pollution above what it would have been otherwise, because the bombers had been slated for destruction anyway under the terms of the START treaty. Because companies carried on polluting, the B-52s in effect continued to 'pollute from the grave'.[34] Such credits quickly earned the sobriquet 'anyway tonnes', meaning that they represented actions that would have happened anyway.

32 Drury *et al. op. cit.*, *supra*, note 8; Liroff, *op. cit., supra*, note 31.

33 Drury et al., *ibid*; Liroff, *ibid*., pp.16, 117.

34 Drury *et. al. op. cit., supra*, note 8; Liroff, *op, cit., supra*, note 31, pp.16, 117.

Environmental Services and Land Use Offsets[35]

Costa Rica pioneered the development of Payments for Environmental Services (PSA or *pagos por servicios ambiamental*) in the 1990s, establishing a national plan to compensate landowners to preserve forests and reforest 'degraded' lands, including tree plantations. Landowners were given the opportunity to sell the carbon storage capacity of forests on their territory to the national government, which then sold these on to voluntary markets. The scheme was paid for by a 15 per cent consumer tax on fossil fuels which was later reduced. Carbon trading 'was expected to provide significant funding through sales of certified tradable offsets. However, no significant market for carbon abatement has emerged. The only sale has been to Norway, which consisted of US$ 2 million in 1997 for 200 million tonnes of carbon sequestration.'[36] Further funding came through a World Bank loan and a Global Environmental Facility (GEF) grant. Costa Rica went on to create Certified Tradable Offsets (CTOs) in 1998 to 'grow' carbon from 500,000 hectares of forest, setting in motion an unfinished debate on the value and legitimacy of 'carbon sinks'.[37]

35 See Larry Lohmann, 'Democracy or Carbocracy? Intellectual Corruption and the Future of the Climate Debate', The Corner House briefing 24, October 2001.

36 G. Arturo Sanchez-Azofeifa, Alexander Pfaff, Juan Andres Robalino, and Judson P. Boomhower, 'Costa Rica's Payment for Environmental Services Program: Intention, Implementation, and Impact', *Conservation Biology*, DOI: 10.1111/j.1523-1739.2007.00751, 2007. The notion of 'carbon sequestration' (or 'sinks') was already established as part of the UNFCCC. See 'United Nations Framework Convention on Climate Change', 1992, article 4.d.

37 http://projects.wri.org/book/export/html/11

These early experiences of offsetting in Costa Rica resulted in a push for the inclusion of tradable carbon sequestration offsets or carbon 'sinks' in UNFCCC legislation.[38] During the Kyoto negotiating years in the 1990s Northern countries like the US, Canada and Australia had a vested interest in getting 'sinks' included in any climate deal as a means to make their emissions targets cheaper and easier to attain. The Intergovernmental Panel on Climate Change responded to the pressure with a 377-page review on land use and land use change, released in May 2000 as 'Land Use and Land Use Change and Forestry' (LULUCF).[39] Many NGOs and governments cautioned against using the biosphere to create an international offsets market.[40]

The earlier pressure had paid off for the Northern elites. The LULUCF report outlined how credits could be generated from 'sinks'.[41] At the contentious COP 6 in The Hague in November 2000, one of the major controversies concerned the technical possibility of countries claiming carbon credits for 'additional land and forest activities' within their borders as part of their Kyoto Protocol 'reduction' commitments. The concept of carbon sequestration was accepted, but the ability to trade credits from the environmental service of 'avoided deforestation' was not.

Two-thirds of the LULUCF document authors and editors were from the North. Many of these authors assumed that there were wide open 'degraded' lands in the South (but not in the North) which had no better function than to be converted into plant growth to absorb CO_2.[42] Beyond the obvious lack of evidence that short-cycle tree or plant growth locks in CO_2 permanently, this displays a shocking lack of analysis regarding social mechanisms of deforestation, commons regimes, social resistance, development systems and local history. Tellingly, there were no Indigenous Peoples' Organisations (IPOs) on the panel.

Offsetting proposals went global in the 1990s as traders, economists, consultants, non-government organisations and UN technocrats began to set up institutions through which offset credits could be mixed with the permits on which cap and trade would be based. Whereas earlier projects had sought mainly to replace one type of pollution reduction with an 'emissions sav-

38 G. Arturo Sanchez-Azofeifa, *et. al. op cit., supra,* note 36.

39 R. T. Watson, I.,Noble, B. Bolin et al. (eds), *Land Use, Land Use Change and Forestry* (a Special Report of the IPCC), Cambridge University Press, Cambridge, 2000.

40 The German Advisory Council on Global Change, 'The accounting of Biological Sinks and Sources under the Kyoto Protocol – A step Forward or Backwards for Global Environmental Protection?', Bremerhaven, EBGU, 1998, p.39.

41 R. T. Watson et al., op. *cit., supra,* note 39, p.181.

42 In this context, the term 'degraded lands' is a descendant of the colonial-era administrative term 'waste', used to signify what were in fact common lands under intense and varied use. For the deployment of this term in the British Raj, see, for example, R. A Houghton,et al., 'Current Land Cover in the Tropics and its Potential for Sequestering Carbon', *Global Biogeochemical Cycles*, vol. 7, no. 2, 1993, pp.305-320; R. Dixon et al. (eds) *Assessment of Promising Forest Management Practices and Technologies for Enhancing the Conservation and Sequestration of Atmospheric Carbon and their Costs at Site Level, Environmental Protection Agency*, Washington, 1991; A. Grainger, 'Modelling the Impact of Alternative Afforestation Strategies to Reduce Carbon Dioxide Emissions', in *Proceedings of the Conference on Tropical Forestry Response Options to Global Climate Change*, 1990; and M. Trexler and C. Haugen, *Keeping it Green: Tropical Forestry Opportunities for Mitigating Climate Change*, World Resources Institute, Washington, 1995.

ing' made elsewhere, these new schemes extended the logic of offsetting to include the displacement of claimed reductions from one country to another.

The basic economic idea was to find the cheapest location to tackle the climate change problem, irrespective of where it had been caused. Larry Summers, the current president of the White House Economic Council, infamously elaborated upon this in a 1991 memo sent while 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.'[43]

In 1992, the World Bank and the government of Norway began to co-finance a series of Joint Implementation arrangements involving 'carbon offset generation'. The Global Environment Facility, which was initiated by the Bank in 1991 and subsequently adopted as the financial mechanism for the UNFCCC, also began to research methodologies for certifying carbon offsets.[44] These JI proposals elaborated on a relatively obscure piece of wording in the Convention agreed at the Rio Earth Summit, which stated that measures taken by developed countries to cut their greenhouse gas emissions to 1990 levels could be taken 'individually or jointly'.[45]

The G-77 and China grouping of developing countries initially contested this interpretation, with many countries expressing concern at what they saw as a neocolonialist measure that would allow developed countries to avoid their domestic and historic responsibilities to tackle climate change.[46] Nevertheless, pressure from Northern countries and the openness of a few Central American countries to such schemes led to an agreement at the 1995 Berlin COP to start piloting 'activities implemented jointly' between industrialised and developing countries.

The Kyoto surprise

The Brazilian government claimed that these new schemes amounted to 'a reinterpretation of the concept of "Joint Implementation" by developed countries as a means to avoid "the strict fulfilment of their targets"'.[47] As a parallel proposal, it put forward the idea of a Clean Development Fund (CDF) which would penalise developed countries that exceeded their targets in order to finance clean energy in the South for climate change mitigation (90 per cent) and adaptation projects (10 per cent).

However, at the initiative of the US and amid internal disagreements within the G-77 and China group, this was transformed late into the Kyoto negotiations into the Clean Development Mechanism. The new scheme laid the groundwork for projects in developing countries to create credits that can be purchased and utilised by developed

43 Patrick Bond, 'The World Bank in the Time of Cholera', *Z Net* Commentary, 13 April 2001. http://www.zmag.org/sustainers/content/2001-04/13bond.htm

44 World Bank, *The World Bank and the Environment,* Washington, IBRD/World Bank, Washington, 1993, p.118.

45 United Nations, *United Nations Framework Convention on Climate Change*, 1992, Article 4.2(b).

46 Joyeeta Gupta, *Our Simmering Planet: What to do about global warming?* Zed Books, 2001, p.65.

47 Brazilian position on Activities Implemented Jointly (1996-7), cited in Gupta, *ibid*., p.66.

countries to meet their emission reduction obligations. The fund was transformed into a trading mechanism, fines were transformed into prices, and a judicial system was transformed into a market.

The EU, trying to maintain some legitimacy, cautioned that 'flexibility must never become a backdoor through which rich countries can get away by paying other countries instead of doing their homework'.[48]

However, the US later claimed during negotiations in The Hague in 2000 that any limit on the use of flexible mechanisms – as the G-77 and China group and the EU were requesting – would lead to unacceptably high domestic costs.[49] Later in 2001 the Bush administration, shortly after coming into power, confirmed a unilateral decision to abandon its Kyoto targets altogether.[50]

The origins of the EU Emissions Trading Scheme

In response to the US walking away from Kyoto, the EU strengthened its support for emissions trading and went about designing an EU-wide scheme that became the EU ETS, now being used as a model for other trading systems (see chapter 3).

The European Commission, which has responsibility for proposing European Union legislation, first discussed the emissions trading scheme as part of its post-Kyoto strategy in 1998. Consultations on the scheme began in March 2000.[51]

While many corporate and corporate-backed groups were still pouring millions of dollars into disinformation campaigns to cast doubt on whether climate change was happening, a self-proclaimed 'progressive' wing of big business was positioning itself to influence the rules of this new trading regime.[52]

In 1999, a number of UK companies formed an 'Emissions Trading Group' to develop a voluntary scheme as an alternative to carbon tax proposals. The point was to develop non-tax alternative to save industry money. In Denmark, power companies ran a prototype for a small national emissions scheme in 1999, which proved a failure.[53] Undeterred, Norwegian business adopted a similar scheme while, elsewhere, some companies began to experiment internally with emissions trading. BP and Shell were among the leading actors, with BP in particular using its experiences to set the policy agenda for emissions trading – first in the UK, and then at an EU level.[54]

48 Statement by Ritt Bjerregaard after a September 1998 informal meeting in Japan, quoted in Loren Cass, 'Norm Entrapment and Preference Change: The Evolution of the European Union Position on International Emissions Trading', *Global Environmental Politics*, May 2005, Vol. 5, No. 2, p.52.

49 Norman J. Vig and Michael G. Faure, 'Green Giants? Environmental Policies of the United States and the European Union', *Massachusetts Institute for Technology*, 2004, p.349.

50 Vig and Faure, *ibid*.

51 Marcel Braun, 'The evolution of emissions trading in the European Union – The role of policy networks, knowledge and policy entrepreneurs', Ruprecht Consult, Forschung und Beratung GmbH, Cologne, Germany, 2008, p.2.

52 On corporate lobbying as a form of climate change denial, see Larry Lohmann, *Carbon Trading: a critical conversation on climate change, privatization and power, Development Dialogue*, No. 48, Dag Hammarskjöld Centre, Uppsala, 2006, pp.41-42.

53 Braun, *op.cit., supra,* note 51.

54 *Ibid*.

Environmental Defense was involved once again, this time forming a partnership with BP. Instead of indulging in pure climate change 'denial', BP acted on the assumption that its long-term interests would be better served by a trading scheme as a cheap policy alternative to regulation – and one which did not impinge too heavily on its core financial interests. With the aid of Environmental Defense, and with the vocal endorsement of BP CEO John Browne, the company set up an internal trading system for its 'non-extractive emissions' – that is, emissions other than those resulting from either extracting oil from the ground or burning that oil.[55] A pilot scheme began in autumn 1998, with the full system in operation from 2000. BP's goal of a 1 per cent emissions reduction was easily met, since an over-optimistic calculation of the growth of BP's business meant that allowances were over-allocated.[56] A tighter cap of 10 per cent was made for 2001, which was achieved largely through reductions in natural-gas venting and flaring. The company heralded the scheme as a success – with the previously flared gas now available for sale, and generating an additional US$ 650 million in revenue.[57]

This corporate influence had a significant impact on how the rules of the EU ETS were ultimately set – with European industry associations successfully lobbying in favour of a free handout of credits (or 'grandfathering') at the outset of the scheme.[58] It also resulted in certain sectors, including the chemical industry and aluminium, being excluded from the scheme's first phase.[59]

By October 2003 the European Emissions Trading Directive was passed into law, with the scheme coming into effect on 1 January 2005.[60] Since then, the EU ETS has become the largest carbon trading scheme in the world.

55 John Browne has subsequently revised his judgment of emissions trading. In March 2009, he told *The Observer* newspaper: 'My view has shifted over time. Pinning all your hopes on the European Union ETS and carbon trading is wrong.' See Tim Webb and Terry Macalister, 'Carbon trading wrong, says Lord Browne', *The Observer*, 8 March 2009. http://www.guardian.co.uk/business/2009/mar/08/oilandgascompanies-carbon-emissions

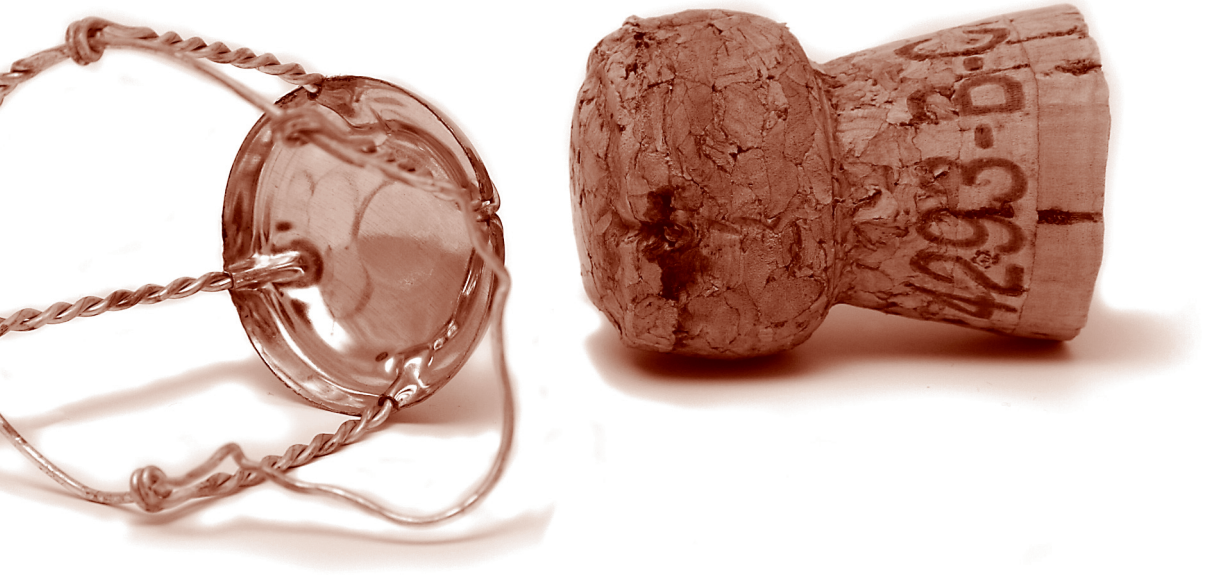
56 D. Mackenzie, 'Making Things the Same: Gases, Emission Rights and the Politics of Carbon Markets', February. Available at: http://www.sps.ed.ac.uk/staff/sociology/mackenzie_donald ; accessed 5 June 2008.

57 D. Victor and J. House, 'BP's Emissions Trading Scheme', *Energy Policy*, no. 34, 2006, pp.2100-2112.

58 See P. Markussen and G. T. Svendsen, 'Industry lobbying and the political economy of GHG trade in the European Union' *Energy Policy*, no. 33, 2005, pp.245–255.

59 *Ibid*.

60 Braun, *op. cit., supra,* note 51.



3 » When the cap does not fit – Cap and trade and the failure of the EU Emissions Trading Scheme

The European Union Emissions Trading Scheme (EU ETS) is the world's largest carbon trading scheme, and the longest established cap and trade carbon market.[1] It also serves as a model for similar cap and trade schemes that are proposed in the USA, Australia and other industrialised nations.[2] For these reasons, it is the main focus of this chapter, the aim of which is to demystify claims that emissions trading is working now or will improve with age. The EU ETS also has a considerable bearing on how the global carbon trade works and is shaping up for the decades ahead. For each year of its operation, the EU ETS has continued to enclose and privatise the global atmospheric commons – awarding property rights to polluting companies based in the industrialised nations at the expense of the South.

1 World Bank Report, 'State and Trends of the Carbon Market 2009', World Bank, Washington DC, 2009.

2 The exact number was 11,359 in 2008, 213 fewer than in 2007 as a result of some smaller installations being withdrawn from the scheme. Norway, Liechtenstein and Iceland (which are not EU members) joined the EU ETS in 2008, but no installations in Norway yet report as part of the scheme. See European Commission (DG Environment), 'Emissions trading: EU ETS emissions fall 3% in 2008', 15 May 2009, http://europa.eu/rapid/pressReleasesAction.do?reference=IP/09/794&format=HTML&aged=0&language=EN&guiLanguage=en

The EU ETS has contributed significantly to a process of shifting responsibility outside of Europe's borders for the historical legacy of creating climate change. Cap and trade presents itself as a system designed to make it cheaper for corporations to reduce their carbon emissions, the idea being that governments give out a limited number of permits to pollute; the scarcity of such permits should encourage their price to rise; and the resulting additional cost to industry and power producers should then encourage them to pollute less. The empirical evidence presented here, however, suggests that the incentives created by the scheme work very differently – awarding profits to polluters and encouraging continued investment in fossil fuel-based technologies while disadvantaging industry focused on transition away from fossil fuels. This is not an arbitrary product of misapplied rules, we will show, but a product of how these markets reinforce existing power relations and hiatuses in economic decision-making.

Shifting the burden

The basic commodity traded within the EU ETS – carbon permits known as European Union Allowances (EUAs) – are allocated

through political intervention. The EU ETS covers approximately 11,500 power stations, factories and refineries in 30 countries which include the 27 EU member states, plus Norway, Iceland and Lichtenstein. These account for almost half of the EU's CO_2 emissions, covering most of the largest single, static emissions sources, but excluding direct emissions from road transport, aviation, shipping, agriculture and forestry.[3]

The starting point for this allocation process was an agreement within the EU to ratify the Kyoto Protocol, which set 1990 as the 'baseline' against which emissions are compared. The original 15 EU members, in Western Europe, were expected to reduce their greenhouse gas emissions by 8 per cent compared to 1990 levels by 2012.

At the outset, the expectation for each EU country was re-adjusted according to a Burden Sharing Agreement, which allowed some countries to continue increasing their emissions – by up to 27 per cent in the case of Portugal – while others were given stricter limits, most notably the UK and Germany, which are the two largest economies within the EU.

Burden sharing is usually presented by the EU as a redistribution of obligations to help poorer countries grow their GDP, while the richer states bear the brunt of reduction requirements. The 'tough' obligations on the UK and Germany take advantage of considerable reductions that were achieved before the start of the EU ETS, however. In the case of the UK, the power sector saw a significant shift in capacity from coal to gas in the early 1990s after most of the country's coal mines were closed, while in the case of Germany, the most significant drop in emissions came about through the closure of industry in the former East Germany after the country's unification in 1990.[4]

Moreover, the inclusion of the 12 Central and Eastern Europe countries that have joined the EU since the original Burden Sharing Agreement was made have considerably eased the commitments required of Western European states under the EU ETS. This bloc of countries has considerably overachieved on its Kyoto targets (which take 1990 as a baseline year) as a result of the economic collapse and industrial restructuring that took place after the fall of the Berlin Wall in late 1989. The EU ETS serves to re-distribute this surplus (commonly called 'hot air', since it does not represent a reduction on the basis of proactive policy adjustments to tackle climate change), making it easier for countries in Western Europe, which have increased their

3 EU Commission (DG Environment),'Questions & Answers on Emissions Trading and National Allocation Plans', 8 March 2005, http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/05/84&format=HTML&aged=1&language=EN&guiLanguage=en

4 The claims made in UN statistics on carbon emissions do not accurately reflect the full impact of a country's emissions. Setting aside the considerable 'outsourcing' of emissions achieved by production elsewhere (e.g. in China for a UK consumer market), there are numbers of other holes. In 2005, for example, the UK government reported emissions of 656 million tonnes of CO_2 to the UN. However, its own national environmental accounts showed emissions for that year of 733 million tonnes of CO_2. The main difference lies in the fact that UN data excludes aviation and shipping, which have been amongst the fastest growing sources of UK CO_2 emissions. See John Vidal, 'Government figures hide scale of CO_2 emissions, says report', *The Guardian*, 17 March 2008. A secondary factor in the German case has been a more proactive renewable energy policy, in particular through the use of 'feed in' tariffs. See European Environment Agency, *Greenhouse Gas Emission Trends and Projections 2008*, EEA, Copenhagen, 2008; Gwyn Prins and Steve Rayner *The Wrong Trousers: Radically Rethinking Climate Policy,* London School of Economics, London, 2007, p.16.

emissions, to make the on-paper 'reductions' required of them.

Baseline bingo

The overall cap is only the start of the EU ETS allocation process. It sets the scale of the commitments to be made, but says little about how that will be achieved in practice. The next, and most significant, step of the process is for each country to agree on a National Allocation Plan (NAP). These Plans allocate targets for all of the individual power plants, factories and other industrial sites included in the scheme, which add up to an overall 'cap' for heavy polluters in each country.

The method chosen for allocating emissions varies considerably between countries, and is currently agreed through a complex negotiation among the European Commission, the executive branch of the European Union, and its member governments.[5] However, in the third phase of the scheme, which runs from 2013 to 2020, this will be replaced by an overall EU-wide allocation. Proponents argue that this makes the scheme more coherent, which should make it more effective. However, greater consistency is not necessarily a marker of greater environmental effectiveness.[6]

Despite the variations, a few trends in how emissions allowances are allocated have been clear from the outset. As Jos Debelke, deputy director general of the EU's Directorate General for Environment, which has overall responsibility for administering the scheme, puts it, 'the basic principle has...been to allocate free allowances based on historical emissions, with the negative effect of favoring less efficient facilities.'[7] In other words, the largest allocations have gone to what have historically been the worst polluters.

A second key trend has been a more stringent allocation of allowances in the power generation sector than for the other industries covered by the scheme. The rationale for this is that energy companies can pass any cost incurred for the scheme on to their consumers, whereas other industries may face increased international competition from outside the EU if it imposes greater costs upon them. This cost 'pass-through,' as we shall see, has actually proven to be highly profitable for the power companies. The flip side of the coin is that the allocations for other industries have been far more lax – awarding them more permits than they need to cover their actual emissions, and the ability to profit from selling this surplus. This is symptomatic of a

5 The Commission applies the rules governing the EU ETS, but these rules themselves are agreed through a legislative process involving the European Parliament and Council (the latter being the representative of national governments within the EU system). Once these are agreed, they need to be passed into European legislation. The Burden Sharing Agreement that saw the EU agree, collectively, to ratify the Kyoto Protocol was signed in 2002. The Directive that established the EU ETS was agreed in 2003. A further Linking Directive was passed in 2004. This was subsequently revised, with a new Directive agreed in December 2008 as part of a broader EU Climate and Energy Package. See European Union, 'Directive of the European Parliament and of the Council amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community', 26 March 2009, http://register.consilium.europa.eu/pdf/en/08/st03/st03737.en08.pdf

6 See Belen Balanya Ann,Doherty,, Olivier Hoedemann, Adam Ma'anit and Erik Wesselius, *Europe INC: Regional and Global Restructuring and the Rise of Corporate Power*, Pluto Press, London, 2004.

7 Jos Debelke, 'Written statement to Hearing by the Senate Committee on Finance on "Auctioning under Cap and Trade: Design, Participation and Distribution of Revenues"', 7 May 2009, p.6.

third key trend – an overall surplus of permits within the scheme, exacerbated by the ability to use large numbers of carbon offsets, which has further inflated its 'cap' on emissions.

Throwing their caps over the mills

There is clear evidence in the first phase of the EU ETS that too many emissions permits were handed out across the five sectors covered by the scheme: power and heat generation, oil refineries, metals, pulp and paper, and energy-intensive industry (including cement and lime sectors).

When the first emissions data for the scheme was released in April 2006, it showed an overallocation of 4 per cent.[8] The price of carbon permits collapsed as a result and never recovered. From a peak of around €30, the price slid below €10 in April 2006, and below €1 in the spring of 2007.[9]

As the UK Parliament's Environmental Audit Committee reported in October 2007: '[M]ost observers believe that too many allowances to emit carbon have been allocated in phase 1, meaning there is overall little or no incentive for firms to cut back on their emissions, and thus that the entirety of this phase is likely to be ineffective in driving down emissions.'[10]

Nor was it just the first year of the scheme that was overallocated. The following table uses EU data to compare the caps (allocations) and the actual (verified) emissions for the first phase of the EU ETS.[11]

Overallocation in EU Emissions Trading phase 1

	2005	2006	2007	Total
Allocation	2096.4	2071.8	2153.1	6333
Verified emissions	2014	2035.6	2164.7	6121.9
Over allocation	82.4	36.1	11.6	130.1
% Over allocation	4.1	1.8	0.5	2.1

Source: EU Community Independent Transaction Log. Emissions figures in oooos MtCO2 e

The table clearly shows that the EU ETS consistently allocated more permits to pollute than the actual level of pollution taking place in its first phase. At the end of phase 1, emitters had been permitted to emit 130 million tonnes more CO_2 than they actually did, a surplus of 2.1 per cent.

The EU's own explanation of the first phase of the scheme seeks to present failure as success, claiming: 'The first trading period successfully established the free trading of emission allowances across the EU, put in place the necessary infrastructure and developed a dynamic carbon market.'[12] But even the EU acknowledges, understatedly, the failure to reduce emissions, which it explains away in the following terms:

> The environmental benefit of the first phase may be limited due to excessive allocation of allowances in some Member States and some sectors, due mainly to a

8 European Environment Agency, *Application of the Emissions Trading Directive by EU Member States – reporting year 2008*, EEA, Copenhagen, January 2009, p.14.

9 *Ibid*.

10 Environmental Audit Committee, 'Eighth Report: Impacts of Phase I on UK emissions', 16 October 2007, http://www.publications.parliament.uk/pa/cm200607/cmselect/cmenvaud/1072/107205.htm

11 Community Independent Transactions Log, http://ec.europa.eu/environment/climat/emission/citl_en.htm. Each number is calculated on the basis of the exact figure, but the table displays rounded figures.

12 EU Commission (DG Environment), 'Questions and Answers on the revised EU Emissions Trading System', 18 December 2008, http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/08/796

reliance on emission projections before verified emissions data became available under the EU ETS. When the publication of verified emissions data for 2005 highlighted this 'overallocation', the market reacted as would be expected by lowering the market price of allowances.[13]

Was the initial overallocation in the EU ETS merely a technical hiccup resulting from a lack of available data? A comparison with other emissions trading schemes casts serious doubt on this view, with the experience of the United States Acid Rain Program, the Los Angeles Region Clean Air Market (RECLAIM), the Chicago Emissions Reduction Market System (ERMS) and the Regional Greenhouse Gas Initiative all showing a similar level of generosity to polluters at the outset.[14]

A more plausible explanation of the generous allocation of permits to polluters over and above their *actual* levels of pollution can be found when the corporate influence on the allocation process is factored in. As the economist John Kay, writing in the *Financial Times*, put it, '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'.[15] The record of the first phase of the EU ETS shows how this interaction played out – with companies affected by the scheme claiming that it would adversely affect their 'competitiveness' – an argument that had a receptive audience at the ministries responsible for allocating permits.[16]

What's wrong with banking?

Various advocates of emissions trading have claimed that the price volatility within the first phase of the EU ETS was exacerbated by the fact that the credits could not be banked for use in the second phase.[17] True, EUAs' limited shelf life reduced their value, yet had banking been allowed in the first phase of the EU ETS, the carrying over of an excess 211 million allowances would have kept bogus 'reductions' in the system for years to come. Despite this obvious drawback, the EU has lifted the restrictions on banking in subsequent phases of the EU ETS. The proposed Waxman-Markey cap and trade scheme in the US also allows the banking of credits.[18]

13 *Ibid*.

14 Lesley McAllister, 'The Overallocation Problem in Cap-and-Trade: Moving Toward Stringency', *Columbia Journal of Environmental Law*, San Diego Legal Studies Paper No. 08-076, 2008, http://ssrn.com/abstract=1276405; Michael Grubb, 'Reinforcing carbon markets under uncertainty', *Climate Strategies*, Cambridge, 4 March 2009, p.1.

15 John Kay, 'Why the key to carbon trading is to keep it simple', *Financial Times,* 9 May 2006, http://www.johnkay.com/in_action/441

16 European Union, 'Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC', October 2003, article 7, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32003L0087:EN:NOT. Article 7 emphasises the avoidance of 'distortions in competition' as a key criterion to be considered when deciding upon how permits should be allocated.

17 A. Denny Ellerman and Paul L. Joskow, *The European Union's Emissions Trading System in Perspective*, Pew Center on Global Climate Change, Cambridge MA, May 2008, p.41.

18 *American Clean Energy and Security Act*, Washington, 16 May 2009, p.431, http://energycommerce.house.gov/Press_111/20090515/hr2454.pdf. Unlimited banking is established as a basic principle, although the legislation leaves open the possibility that the regulator of the scheme can set limits to establish when a credit 'expires.'

The capacity to bank credits is also a problem in relation to the Kyoto Protocol. Through a combination of 'hot air' credits – post-1990 reductions from Ukraine, Russia, Central and Eastern Europe – and the US non-ratification of the Kyoto Protocol, there is likely to be a significant surplus of Assigned Amount Units (AAUs, Kyoto reduction units) by 2012. The banking of such credits would represent a serious loophole in any post-2012 global climate agreement, allowing historical reductions as a result of economic decline and restructuring in the former Soviet bloc to be counted as equivalent to future domestic actions by the rich, industrialised nations.[19]

The widespread use of banking clearly signals the 'diametrically opposed motivations' of carbon trading, as Jutta Kill of the Forest and European Union Resource Network (FERN) explains: 'The principles of trading require good liquidity and thus advocate for banking, but the principle of reducing emissions would advocate against banking as it delays the transition [away from fossil fuels]. The fact that banking is expanding is a sign that carbon trading is taking on a life of its own, decoupled from...the climate objective used as the justification for setting it up.'[20]

Windfall profits

A further major criticism levelled at the first phase of the EU ETS is that it generated huge 'windfall profits' for power producers, helping them to make large unearned financial gains as a result of flaws in the rules rather than any proactive measures taken to reduce emissions through structural changes. Exact figures for the whole scheme are difficult to ascertain, since they would require a far higher degree of transparency in financial reporting by energy companies than is currently the case, but various estimates have been made.[21]

An inquiry by the UK Parliament's Environmental Audit Committee found that '[it is widely accepted that UK power generators are likely to make substantial windfall profits from the EU ETS amounting to £500 million a year or more'.[22] The German environment minister cited figures from his own ministry which showed that the four biggest power producers in his country – Eon, RWE, Vattenfall and EnBW – would reap profits of between €6 billion and €8 billion from the first phase of the scheme.[23] Even Jos Debelke, deputy director general of the EU's Directorate General for Environment, acknowledges that 'due to its ability to pass on full costs, including the opportunity costs of allowances that were received for free, there were significant 'windfall profits' to the power sector.'[24]

19 EU Commission (DG Environment), 'Towards a comprehensive climate change agreement in Copenhagen – Extensive background information and analysis, Part 2', Brussels, January 2009, p.23. Russia is currently 29 per cent above its Kyoto Protocol target, while Ukraine was 55 per cent over its target, according to 2005 data (both countries had a 0 per cent reduction target on 1990 levels).

20 Personal communication, 14 September 2009.

21 J. Sijm, K. Neuhoff and Y. Chen, 'CO_2 cost pass-through and windfall profits in the power sector', *Climate Policy*, vol. 6, no. 1, 2006, pp.49-72. Empirical studies on Germany and The Netherlands show opportunity cost pass-through rates vary between 60 per cent and 100 per cent for the wholesale electricity market.

22 UK Department for Food, Environment and Rural Affairs, 'Government Response to the Environmental Audit Committee Fourth Report of Session 2004-5', p.6.

23 Kevin Smith, 'Profiting From Pollution: the G8 and climate change', *Red Pepper*, June 2007.

24 Jos Debelke, *op. cit., supra*, note 7.

At first glance, this seems somewhat contradictory and cryptic. How can polluters profit when the value of the credits in the scheme fell to almost nothing? And what are 'opportunity costs' anyway?

The answer lies in how energy companies account for the costs of the EU ETS. The costs that are indirectly passed on to consumers through an increase in wholesale energy prices do not reflect what carbon credits *actually* cost, but rather what the companies assume they could cost. This leaves considerable scope for overestimates: first, by assuming a larger than necessary need to buy permits or credits; second, by assuming that there will be a high carbon price; and third, by assuming the costs of replacing EUAs, irrespective of their actual use of offset credits which have consistently commanded lower prices. Yet if these assumptions turn out to be over-generous, the surplus is more often pocketed as profit than returned to the consumer.

The 'opportunity cost' of the EU ETS refers to an economic calculation that is made once carbon has been registered as an asset on the company's books. Irrespective of the fact that most carbon permits were given out for free, the power companies treat them as having monetary worth.[25] They then seek to maximise the value of these permits – so while the cost passed on to consumers approximates to the cost of reducing emissions in accordance with a cap, what the company actually does is whatever it considers to be cheapest – which may be to buy EU ETS permits from other installations in the scheme, or buy offset credits instead. By this means, power companies 'generate large net profits at the expense of their customers – including other sectors in the EU ETS'.[26]

It may be assumed that this 'pass-through' profiteering would at least have one positive environmental side effect – increasing the electricity prices for industrial users, and so helping to limit their output. This has not tended to be the result, however. For the most part, costs are passed through to households and small consumers, whilst the bargaining power of the larger industrial users ensures that they are relatively insulated. These industries are also generously compensated in other ways by the EU ETS, as the Carbon Trust points out: '[T]he tendency to give energy intensive sectors almost everything they project they need, in an attempt to compensate for this [pass-through cost], weakens the incentive effect.' [27]

Playing at the margins

Despite all of these fundamental failings, it has nevertheless been claimed that the EU ETS did result in a few emissions reductions. This argument is based on data showing that the power sector as a whole needed to purchase some credits, and that a few countries, most notably the UK, had a deficit of permits across the whole 2005-2007 period.[28] But it is actually quite misleading to aggregate the results in this way, because the overall shortfall of permits is explained away by a handful of large coal-fired power stations which needed to buy additional pollution rights, while the vast majority of individual installations had a surplus of permits.

25 A. Denny Ellerman and Paul L. Joskow, *op.cit., supra*, note 17, p.16. Windfall profits in part arise from the difference between an 'opportunity' cost (the price permits might be sold for) and an 'acquisition' cost (what the company paid for the permits, which is typically zero at present).

26 The Carbon Trust, *EU ETS Phase II allocation: implications and lessons*, London, May 2007, p.12.

27 *Ibid*.

28 Frank Convery, Christian De Perthuis and A. Denny Ellerman, 'The European Carbon Market in Action: lessons from the first trading period', *MIT Working Paper,* March 2008, pp.30-32. web.mit.edu/globalchange/www/ECM_InterimRpt_Marcho8.pdf

Proponents of the EU ETS argue that flexibility in transfers of permits across national boundaries within the EU and between different sectors is the fundamental strength of the scheme, providing the 'flexibility' for reductions to be achieved at the lowest cost. In practice, though, this has offered an 'escape hatch' for companies in the wealthier nations to avoid making any reductions by buying permits that are overallocated elsewhere.

The effect was relatively understated in the first phase of the EU ETS, because the whole scheme was overallocated, but there was still a significant proportion of cross-border trade. The UK was the largest importer, with a net import of 17 per cent of its EUA permits, while Lithuania was a net exporter of 33 per cent of its surplus to other countries.[29]

In the UK case, the 'shortfall' of permits amounted to a few of the largest and dirtiest power stations needing to reduce emissions or purchase extra allowances. They universally chose the latter route. For example, 'the surrender data for one of the coal-fired power plants in the UK that was most short of allowances show that it acquired permits from long installations in 19 of the 24 other EU Member States'.[30]

The Lithuanian surplus also conceals an instructive story. The EU demanded the closure of Ignalina, a nuclear power plant with a similar design to Chernobyl, for safety reasons. Lithuania responded by claiming that the replacement power generation capacity would come from dirty coal plants instead, and that it should therefore gain extra allowances.[31] By overstating the CO_2 emissions increases that would result from the closure of Ignalina, Lithuania gained a large surplus of permits, which were then sold on and treated as 'emissions reductions' in the UK and other countries.[32]

This problem was compounded by a more general overallocation, as the Lithuanian National Audit Office concluded: 'In Lithuania only 3 installations out of 93 emitted more CO_2 than they received allowances in 2005. Such a situation formed an attitude of Lithuanian enterprises towards the emissions trading scheme as some kind of European Union Assistance, not as an obligation.'[33]

29 R. Trotignon and A. Denny Ellerman, 'Compliance Behavior in the EU-ETS: Cross Border Trading, Banking and Borrowing', 2008, p.9, web.mit.edu/ceepr/www/publications/workingpapers/2008-012.pdf . The UK Parliament's Environmental Audit Committee has pointed out clearly the misleading reporting that follows from this: 'A Defra [Department for Environmernt, Food and Rural Affairs] press release from January 2007, for instance, reported that actual emissions for the whole of the UK were 554.2 $MtCO_2$ in 2005, some 6.4 per cent down on 1990 levels; but that "Adjusted for emissions trading, UK CO_2 emissions in 2005 were about 527 million tonnes – approximately 11 per cent lower than 1990 levels." To reflect the impacts of the EU ETS in this case, then, the Government has subtracted 27 $MtCO_2$ from the actual figures for emissions from the UK for that year. Our first concern here is that buying emissions credits from other countries does not *necessarily* translate into cutting emissions – whether in those countries, or in fact anywhere.' See Environmental Audit Committee, *op. cit., supra*, note 10.

30 Convery et al., *op. cit., supra*, note 28, p.12.

31 Ignalina operates two units, one of which was scheduled for closure between 2005 and 2007, and a second scheduled for closure by the end of 2009.

32 Lithuania saw the opportunity for an even larger loophole in the second phase of the scheme, arguing that a special 'reserve' be allocated for this closure. The EU Commission challenged this aspect of the Lithuanian NAP. In response, Lithuania has taken the EU Commission to the European Court.

33 National Audit Office of the Republic of Lithuania, 'Evaluation of the allocation and trading scheme of greenhouse gas emissions allowances', October 2007, p.11.

Phase 2: surviving the crash test

The most common way to insulate optimistic assumptions about emissions trading from the dismal failure that was the first phase of the EU ETS is to present it as simply a 'trial' or a 'learning by doing' phase, with subsequent adjustments assuring that its limitations will not be repeated.[34] Supporters of the scheme claim that caps are now far tighter – although, as we will show, this claim is disingenuous because the volume of offset credits that can be traded within the scheme is so great that it actually requires no domestic emissions reductions to take place.

Stress is laid on the fact that a market was established, while brushing over the awkward fact that it failed to reduce any emissions. But if you run a crash test and the vehicle collapses in a heap, it is generally unwise to declare this a success and try to drive a larger vehicle faster the next time out. This is however precisely what is happening with the second phase of the EU ETS. Running from 2008 to 2012, the scheme involves five new countries, and some additional sectors – including glass, mineral wool, integrated steelworks and offshore oil and gas flaring. France, The Netherlands and Norway have also included nitrous oxide (N_2O), a greenhouse gas not considered in the first phase of the ETS, in their allocation plans.

Same trick, different phase

It is true that some of the early tricks to help polluters avoid their obligations cannot be repeated. Better data now exists on emissions, making it hard to overstate levels again. But the underlying susceptibility to industry lobbying remains backed up by the 'national interest' that EU governments perceive in setting their caps as low as possible.

Most EU countries continued to allocate allowances based on historic emissions, disproportionately rewarding heavy polluters, while even larger profits are projected from the 'pass-through' of costs in the power sector than in the first phase.[35] Research by market analysts Point Carbon and WWF, for example, calculated that the likely 'windfall' profits made by power companies in phase 2 could be between €23 billion and €71 billion.[36] They also found that these profits tend to be concentrated in 'countries with emissions intensive (coal) plants setting the price the majority of the time', because this implies an assumption that the 'normal' state of affairs is to pollute a lot, and so sets a very loose standard against which all other activity is judged. As a result, the scheme encourages a continued reliance on coal in precisely the countries where proactive structural changes in energy production

34 A. Denny Ellerman and Paul L. Joskow, *op.cit., supra*, note 17; and Commission Draft Directive Jan 2008.

35 Karsten Neuhoff, Markus Åhman, Regina Betz, Johanna Cludius, Federico Ferrario, Kristina Holmgren, Gabriella Pal, Michael Grubb, Felix Matthes, Karoline Rogge, Misato Sato, Joachim Schleich, Andreas Tuerk, Claudia Kettner, Neil Walker, 'Implications of announced phase II national allocation plans for the EU ETS', *Climate Policy*, no. 6, 2006, pp.411-422.

36 Point Carbon, WWF, *EU ETS Phase II – The potential and scale of windfall profits in the power sector,* March 2008, http://assets .panda.org/downloads/point_carbon_wwf_windfall_profits_mar08_final_report_1.pdf. A further report by Ofgem, the UK government regulator, suggested that UK power companies alone would gain GBP 9 billion in windfall profits from the scheme; see National Audit Office, *European Union Emissions Trading Scheme,* NAO, London, March 2009, p.47.

should be made most rapidly to avert dangerous climate change.[37] Far from setting a carbon price that makes coal uncompetitive, then, the EU ETS is supporting a continued reliance upon it as a power source.

New entrants

New Entrant Reserves (NERs) within the EU ETS are supposed to ensure that installations entering the scheme for the first time are not disproportionately affected by it. However, the allocations for new entrants actually allow for significant growth in emissions and expansions in fossil fuel extraction. A study by the UK Carbon Trust found that the NERs of The Netherlands, Belgium and France in the second phase of the EU ETS would allow them to expand their emissions beyond their Kyoto Protocol targets.[38]

The allocation of free allowances to new entrants offers a subsidy to polluters that cleaner energy sources cannot access. The rules set out in some NAPs exacerbate this problem – most notably, in Germany, which offers 'technology-specific' allowances that give new coal power stations about twice as many as gas, and further adds a 'load factor' correction, meaning that the most polluting plants (lignite) are granted an additional 10 per cent more allowances than less greenhouse gas intensive means of fossil fuel based energy production.[39] The UK Carbon Trust has warned: 'This implicit subsidy creates perverse incentives to construct new, high emitting facilities that would last for decades.'[40]

The UK, meanwhile, chose to define 'new entrants' to include 'installation modifications to enhance the recovery of offshore oil and gas reserves'.[41] One of the largest 'new' entrants to date is the Fawley Power Station, which was allocated 3,340,309 permits in 2008 for the second phase of the scheme.[42] The station, which opened in the 1960s, runs on heavy fuel oil – and verified emissions data show that it has received a massive overallocation.[43]

Carbon crunch

The fundamental problem of 'overallocation' remains, and has been exacerbated by the financial crisis. In May 2009, the EU reported that emissions for sectors covered by the scheme were '3.06 per cent lower than the 2007 level', claiming that this was 'partly due to businesses taking measures to cut their emissions in response to the strong carbon price that prevailed until

37 *Ibid.*, p.2.

38 The Carbon Trust, 'EU ETS hits crunch time', 7 November 2006, http://www.carbontrust.co.uk/News/presscentre/2006/071106_euets.htm

39 The Carbon Trust, *op. cit., supra* note 26, p.14.

40 *Ibid.*, p.3.

41 UK Department for Business, Enterprise and Regulatory Reform (BERR) 'New Entrant Reserve (NER) for Phase 1 of the EU ETS (2005- 2007) – Q&A', www.berr.gov.uk/files/file27005.pdf, p.1.

42 See UK Environment Agency, *EU Emissions Trading Scheme: Summary Report on Applications to the New Entrant Reserve for Phase II of the Scheme (2008 – 2012),* 3 August 2009. http://docs.google.com/gview?a=v&q=cache:FlnuAbU2Y0IJ:www.environment-agency.gov.uk/static/documents/Business/090803_Phase_II_NER_Report.pdf+fawley+Summary+Report+on+Applications+to+the+New+Entrant+Reserve+for+Phase+II+of+the+Scheme+(2008+-+2012)&hl=en&gl=uk

43 The EU's official ETS data source, the Community Independent Transaction Log lists an allocation of 706,633 for 2008, compared to verified emisisons of 199,913 – see European Commission, '2008 Compliance Data (extract from CITL 12/06/2009 incl. VE for Bulgaria)', http://ec.europa.eu/environment/climat/emission/pdf/vesu2008public.xls

the economic downturn started'.[44] A closer examination of the numbers shows this to be disingenuous. The EU's figures show an overall reduction in emissions of around 50 million tonnes, but these figures were inflated by over 80 million tonnes of CDM (and a few JI) credits. In other words, more than the entire claimed 'reduction' was covered by carbon offsets generated by projects outside of Europe.

The repeated failure of the scheme was exacerbated by the economic downturn. A price collapse in early 2009 was triggered by the expectation that the number of permits would again exceed the need to reduce emissions. EUA prices peaked at €31 in the summer of 2008, then crashed to €8 in February 2009 before recovering slightly (to around €14 in September 2009).

What happened, in essence, was that allocations for the second phase of the scheme were made on the assumption that European economies would keep growing. The recession has reduced output and power consumption, leaving companies with a surplus of permits. Since these were mainly given out for free, the net effect is directly opposite to the scheme's intention: polluting industries are offered a lifeline in the form of the option of cashing in their unwanted permits, while the supposed 'price signal' that is meant to change their polluting ways has been neutered.[45]

44 EU Commission (DG Environment), 'Emissions trading: EU ETS emissions fall 3 % in 2008', 18 May 2009, http://europa.eu/rapid/pressReleasesAction.do?reference=IP/09/794&format=HTML&aged=0&language=EN&guiLanguage=en

45 The option to 'bank' permits means that some traders will see an advantage in buying at the current low prices, even if there are relatively few companies who need to buy to meet the present requirements of the cap.

Offsetting as overallocation

The economic circumstances surrounding the price collapse in early 2009 should not distract from the more fundamental problems of overallocation that remain. As the UK's National Audit Office found, 'The maximum level of allowable emissions within the EU is higher than the cap' once offset credits are taken into account.[46] According to Michael Wara of Stanford University, 'European-based polluters are likely to buy so many permits from carbon-reduction projects based outside the trade bloc that industries will have emitted roughly 1 percent more in 2008 than they did in 1990.'[47]

As we will see in more detail in chapter 4, the claimed reductions achieved by these offsets are routinely based on unprovable hypothetical scenarios and take little account of the negative social or environmental impacts of the development model within which they are embedded.

Once again, the problem starts with the allocation of permits themselves. The UK's National Audit Office calculates that 'in relation to 2005 verified emissions, the maximum use of project credits in phase 2 as set out in approved National Allocation Plans would result in an increase in emissions of seven per cent'.[48]

46 UK National Audit Office, *op. cit., supra*, note 36, p.19. Other policy measures can also inflate the cap for EU ETS sectors. For example, The Netherlands argued that it would meet a significant proportion of its reductions by increasing the proportion of biofuels used in road transport.

47 James Kanter, 'Do Carbon Offsets Cause Emissions to Rise?', *New York Times*, 8 May 2009, http://greeninc.blogs.nytimes.com/2009/05/08/do-carbon-offsets -cause-emissions-to-rise/#more-8281

48 UK National Audit Office, *op. cit., supra*, note 36, p.19.

Officially, EU rules state that each country should demonstrate that its plans to purchase CDM or JI credits is consistent with the principle that the majority is 'supplemental to domestic action' rather than simply replacing it outright. They also state that a high government purchase of CDM and JI credits should be taken into account when establishing the rules for individual installations within the country. However, these criteria were routinely flouted by both EU governments and the EU itself in agreeing National Allocation Plans for phase 2 of the scheme.

Take the example of The Netherlands, which is one of the most active government purchasers of CDM credits within the EU.[49] In its NAP for 2008-2012, The Netherlands stated its intention to purchase 20 million tonnes of offset credits every year towards its reduction target.[50] This would be equivalent to outsourcing all of its emissions reductions commitments during that period.

Further guidance on NAPs states that the level of government purchases of Kyoto credits should be taken into account when setting the rules governing individual installations. In its response to the Dutch NAP, the EU calculated that The Netherlands had reached the maximum level allowed, and that were Dutch-based companies allowed to buy further offsets this would allow for more reductions to be imported than the level of the cap itself.[51] Having drawn this conclusion, the EU nevertheless concluded that 'the general importance of promoting the international carbon market' was more important than the environmental integrity of the scheme, and granted Dutch companies the right to purchase further offset credits (up to a limit of 10 per cent of their emissions) anyway.[52]

As a result, the Dutch government has achieved a 'reduction target' that allows emissions within The Netherlands to continue increasing. This was achieved in three stages. First, the Dutch government has planned to cover the whole of its emissions reduction commitment by purchasing offset credits. Second, it then allows Dutch-based companies to buy offset credits too. Third, the limit for offset purchases by these companies is 10 per cent, but the Dutch reduction commitment for the 2008-2012 period is only 6 per cent.[53] The Dutch case is by no means an isolated example, and shows how the 'caps' in phase 2 remain so loose that emissions within Europe could continue to increase. Given the circumstances of the economic downturn, it also allows for the possibility that a surplus of permits and credits that enter the scheme in phase 2 could be 'banked' to ensure that the EU's post-2012 targets far easier to attain.

49 There is a notable conflict of interest here, as the head of CDM purchasing at the Dutch Ministry of Housing, Spatial Planning and the Environment (VROM), Lex De Jonge, is also the head of the CDM Executive Board which is responsible for issuing credits.

50 The Netherlands' Ministry for Economic Affairs and Ministry for Housing, Spatial Planning and the Environment (VROM), 'Netherlands national allocation plan for greenhouse gas allowances 2008-2012', p.10.

51 European Commission (DG Environment), 'Commission Decision of 16 January 2007 concerning the national allocation plan for the allocation of greenhouse gas emission allowances notified by The Netherlands in accordance with Directive 2003/87/EC of the European Parliament and of the Council', p.15.

52 *Ibid*.

53 The '10 per cent threshold' specifies the volume of emissions that can be exchanged for offsets. While figures vary greatly per installation, this is higher than the average 6 per cent reduction required across The Netherlands.

All shall have prizes

Underlying the overall surplus of permits, there remain significant differences between sectors regarding the generosity of allocations. The UK National Allocation Plan provides a clear example, explaining that '[t]he reduction in allowances against business as usual will be borne entirely by the Large Electricity Producers...[since] this sector is relatively insulated from international competition and can pass on the cost of carbon to consumers'.[54] A similar pattern of allocation can be observed across all 27 EU states. The flip side of this is that every other sector gets a virtually free ride.

It makes more sense, then, to view the EU ETS as two parallel schemes: one that encourages the power sector to buy extra allowances – which, as we have seen, passes the notional cost on to consumers to generate large profits for the energy companies – and another that awards a large surplus of free permits to heavy industry, requiring no emissions reductions but allowing them to sell permits back to the power sector to generate large profits.[55]

With the majority of permits still allocated for free, the EU ETS is effectively providing a subsidy stream for highly polluting industry. The example of ArcelorMittal, the world's largest steelmaker and the holder of the greatest surplus of EU ETS permits, is instructive. The EU's own data on emissions showed that ArcelorMittal's verified emissions increased by 6.7 per cent in 2006 and by 15.5 per cent in 2007, with a downward trend of -8.4 per cent in 2008 due to the economic crisis. Yet whether its emissions increased or decreased, the fact that it was awarded massively more permits than it would have needed even to begin reducing emissions remained a constant: a 36.9 per cent overallocation in 2005, 26.9 per cent in 2006, 25 per cent in 2007 and 31.7 per cent in 2008.[56]

The main economic benefit here is more straightforwardly linked to the price at which EUAs sell, since ArcelorMittal has no use for this excess of permits to abate its own emissions and is unlikely to do so at any point soon. Corporate Europe Observatory analysed this data, relating the surpluses to actual EUA prices, and found that the company is likely to have made over €2 billion in profits from the EU ETS between 2005 and 2008, with over €500 million of this achieved in 2008 alone – yet has needed to make no proactive changes to its emissions to do so.[57]

The contrast between ArcelorMittal's allocation and its emissions in 2009 is certain to be even more stark, with the company making temporary plant closures across much of Europe. Such closures, which hurt the company's workers to protect its shareholders,

54 UK Department for Environment, Food and Rural Affairs (DEFRA), *EU Emissions Trading Scheme, Approved Phase II National Allocation Plan 2008-2012* p.11. The production of the UK's NAP was the responsibility of DEFRA in consultation with the Department of Trade and Industry.

55 In 2008, the power sector was the major purchaser of credits, while steel, iron ore, pig iron, paper, cement, glass and ceramic products remained considerably overallocated – by 28 per cent in the case of ceramics, pig iron and steel. European Environment Agency, 'European Union Emissions Trading Scheme (EU ETS) data viewer', http://dataservice.eea.europa.eu/PivotApp/pivot.aspx?pivotid=473

56 D. Leloup, 'Analysis of ArcelorMittal EU ETS Data', 16 May 2009, https://spreadsheets.google.com/ccc?key=pl52s4qQrteOKP6fVq6vYFg

57 Corporate Europe Observatory, 'Steel idol with green feet of clay: ArcelorMittal, biggest profiteer of the EU Emission Trading Scheme', May 2009.

currently count within the EU ETS as a 'mitigation' strategy, meaning that Arcelor-Mittal's receives exactly the same number of permits for 2009 as it would if its plants were operating to full capacity. Yet, clearly, a programme of temporary cutbacks does nothing to restructure the company's output so that it might contribute to a cleaner, less fossil fuel-dependent future.

Here, again, a large part of the explanation lies with the fundamental susceptibility of carbon trading to the influence of corporate lobbyists. Strong steel lobbies had tilted the balance of permit allocations, persuading governments to award more to steel companies and less to utilities, an EU official told Reuters press agency.[58] One industry analyst was more blunt in their assessment: 'The steel sector has received more permits than it should have... Steelmakers are using the EU Emissions Trading Scheme (EU ETS) as a cash cow.'[59]

Phase 3: more of the same?

In December 2008, the EU agreed significant changes to the EU ETS for the third phase of the scheme, which runs from 2013 to 2020. New rules set a formal limit on the use of offset credits; the NAPs have been scrapped in favour of an EU-wide allocation; and a far greater use of auctioning was envisaged.

These changes have been promoted as a further tightening of the cap, with the suggestion that this should force greater reductions as well as pushing carbon prices up to a level that would induce a shift towards low carbon technologies. Yet a closer look at how the rules are being set shows that significant loopholes remain with a number of new ones introduced for the first time. The banking of surplus credits from the second phase; rule-waivers for sectors exposed to international competition (or 'carbon leakage' in the jargon); the ability to trade offset credits widely in non-ETS sectors as part of a new Effort Sharing agreement; the inclusion of a series of new sectors, including aviation; the broadening of the scheme to include the full range of greenhouse gases; and the increasing complexity of the financial instruments, futures markets and derivatives through which carbon is traded – all point towards the continued existence of massive holes in the cap.

Banking

The third phase of the EU ETS is in significant trouble before it has even begun. The ability to bank permits left unused in phase 2 without limits means that phase 3 could start with a significant surplus. Projections based on 2008 data from the EU show that industrial sectors have been massively over-allocated – the cap having been set according to projected growth prior to the recession. These assumptions are reflected in the New Entrants Reserve, which is an allocation of permits set aside for installations that are entering the scheme for the first time. This reserve covers new factories and power stations, but also includes capacity increases at existing sites.[60] With the economic

58 Michael Szabo 'EU steel reaps $1.5 bln benefit from carbon trade' *Reuters*, 9 April 2009, http://www.reuters.com/article/latestCrisis/idUSL9933905

59 'EU mills selling carbon permits as production falls', *Metal Bulletin*, 27 April 2009, http://www.metalbulletin.com/Article/2187660/Iron/EU-mills-selling-carbon-permits-as-production-falls.html

60 UK Department for Business, Enterprise and Regulatory Reform (BERR), *op. cit., supra*, note 41.

downturn delaying such projects, this reserve now offers a significant surplus that can simply be rolled forward. An analysis by Sandbag, a campaigning organisation in favour of the EU ETS but arguing for rule changes within it, estimates that there could be up to 700 million surplus permits by the end of phase 2 – equivalent to 14 times the 'reduction' claimed by the EU in 2008.[61] If companies decide to purchase offset credits and 'bank' the surplus of credits for a later phase of the scheme as well – which would currently be the cheapest option for compliance – this permit surplus could be supplemented by over 900 million more surplus offset credits. The 'bankability of permits and credits means that nearly 40% of Phase 3 effort could be met by carry-over from Phase 2', concludes the Sandbag study. This would mean that 'the ETS will not require domestic emissions reductions for the next seven years.'[62]

Sharing the offsets

The inclusion of carbon offsets in the EU ETS also remains a more general problem. Although the EU has set a formal limit of 50 per cent on the use of CDM and JI credits for the third phase of the scheme, this is a poor measure of the quantity of European emissions reductions that are likely to be outsourced, since the ability to bank credits from phase 2 of the scheme can inflate this number. In addition, new EU rules called the Effort Sharing Decision allow companies operating in sectors outside of the EU ETS to make significant use of offsets to avoid making reductions domestically. Using European Commission data and policy statements, the NGO FERN calculated that the actual emissions reduction required within the EU between 2013 and 2020 is just 3.9 per cent compared to 2005 levels, with nearly 60 per cent of this figure coming from offsetting.[63] As a result, the EU looks set to remain a major driver of demand for the creation of such projects.

Linking the holes

A formal limit on offsets is only as strong as the weakest link in the chain of linked markets, and one of the key stated aims of EU climate policy is to connect its EU ETS with other carbon markets to form an OECD-wide carbon market by 2015. At present, EU rules exclude certain types of credits from the scheme – including those from Land Use, Land Use Change and Forestry (LULUCF), and from hydroelectricity projects that do not comply with World Commission on Dams guidelines. Yet, as an EU Parliament

61 Anna Pearson and Bryony Worthington, *EU ETS S.O.S: Why the flagship 'EU Emissions Trading Policy' needs rescuing* Sandbag, London, July 2009, p.4.

62 *Ibid.*, p.14.

63 FERN, 'Reducing Emissions or Playing with Numbers?' *EU Forest Watch*, March 2009. This is broadly consistent with an earlier estimate by the Climate Action Network Europe, which found that a 3.5 per cent reduction would be required EU-wide by 2020, with around two-thirds (65.7 per cent) able to be met by the purchase of offset credits outside the EU. See CAN Europe, 'Effort Sharing Proposal: Background Briefing', 8 December 2008, http://www.climnet.org/Effort%20Sharing%20BRIEFING.pdf. A further calculation by Greenpeace calculated the overall reduction as being less than 3.5 per cent, and the proportion of offsets as 72 per cent. Greenpeace, 'MEPs must exercise their democratic power and reject the EU's 'effort sharing' law', Brussels, 16 December 2008, http://www.greenpeace.org/raw/content/eu-unit/press-centre/reports/MEPs-must-exercise-democratic-power.doc. The net result is to undermine significantly the EU's claim that it intends to reduce 20-30 per cent of its emissions by 2020 (which, in turn, is already insufficient compared to the scale of reductions that climate science suggests is required):

report admits, the linking of carbon markets opens the way for credits formally excluded from the EU scheme to enter it by the back door, 'administrators would never be able to tell whether an incoming allowance has maybe been freed up by use of an external trading unit which they themselves would not accept for compliance.'[64]

The Waxman-Markey American Clean Energy and Security Act of 2009, which is progressing through the US Congress at the time of writing (September 2009), would allow for 2 billion tonnes of offsets per year, with up to 1.5 billion of these able to be generated by international projects. This is roughly equivalent to 27 per cent of US greenhouse gas emissions – which could help the US to avoid domestic emissions reductions until 2026. Were the US and EU markets to be joined up, this could open the way for ranching and landfill projects, for example, in the US to be rendered equivalent to reductions made in the EU.[65]

The potential linkage between the EU scheme and a proposed Australian Carbon Pollution Reduction Scheme (CPRS) offers another example of how the EU's 50 per cent offset limit could easily be circumvented. The CPRS sets no threshold on the inclusion of offsets – allowing for 100 per cent of reduction commitments to be met by offsetting. The resulting surplus of credits within the Australian scheme could then simply be sold on to the EU or US.[66]

The carbon leakage myth

The new holes introduced as part of the EU's Climate and Energy Package also include a series of rule waivers for coal-dependent Central and Eastern European states; and for industrial producers who claim that making emissions reductions would render their products uncompetitive.

Although the EU claims that the scheme will now be allocated predominantly by auctioning rather than free allocation (known as 'grandfathering'), the remaining scope for the free allocation of allowances remains significant. Initial results suggest that over half of the 258 industrial sectors assessed so far will be counted as at risk of significant exposure to international competition, and therefore eligible for free permits.[67]

A further provision allows EU member states to 'temporarily compensate certain installations... for costs related to green-

64 Ralf Schüle and Wolfgang Sterk, 'Options and Implications of Linking the EU ETS with other Emissions Trading Schemes', March 2008, p.12, www.europarl.europa.eu/activities/committees/studies/download.do?file=19802. The report authors suggest that fixed exchange rates or rule harmonisation could avoid this problem, but the rules for currently proposed and active schemes suggest that neither possibility is likely.

65 Payal Parekh, 'Waxman-Markey Bill: No Cuts until 2026', *International Rivers*, 15 April 2009. http://internationalrivers.org/en/blog/payal-parekh/waxman-markey-bill-no-cuts-until-2026

66 An amendment proposed in the course of passing the Australian scheme through the country's Senate illustrates one way that such a process might work – proposing the inclusion of controversial 'soil-based carbon storage' into the scheme, which could then be exported as offsets to the US to generate revenues additional government revenues of up to Aus$2 billion per year. Tom Arup, 'Single-desk carbon trade "could earn billions"', *Sydney Morning Herald,* 31 July 2009. At the time of writing (September 2009), this particular amendment has been blocked, and negotiations on the Australian scheme remain deadlocked.

67 'Huge array of sectors to get free ETS allowances', ENDS Europe Daily, 8 May 2009; see also http://ec.europa.eu/environment/climat/emission/carbon_en.htm

house gas emissions passed on in electricity prices,'[68] adding a potentially large source of new subsidies for some of the most polluting industries.

These concessions were introduced as a means to avoid 'carbon leakage' – the risk that capping emissions in the EU could lead to net increases in emissions.[69] If industry decides to relocate from the EU to countries like India and China where there is no cap – so the argument runs – the net effect will be to increase emissions, since the energy intensity of industrial production in those countries tends to be higher.

Even though 'leakage' could in theory become a problem, the level of concern within EU policy and lobby circles is out of kilter with the extent of the problem – whilst ignoring the most salient factors affecting industrial outsourcing decisions.

Producers of steel, cement and aluminium are among those lobbying most heavily on the 'leakage' question, yet a 2008 International Energy Agency study found that '[t]he EU emissions trading scheme (EU-ETS) has not, so far, triggered observable carbon leakage' in these sectors.[70] This finding was backed up by a further study of the first phase of the EU ETS, which found no evidence 'demonstrating a correlation between European carbon prices and a loss of competitiveness' in the cement, refining, iron and steel, paper and pulp, petrochemicals, glass, or aluminium sectors.[71] Such a pattern is likely to continue, since carbon prices remain a relatively marginal factor in infrastructure investment decisions.[72]

In the steel sector, the EU's own evidence suggests that 'the economics of blast furnace operation [favour] production close to where raw materials are situated'.[73] Insofar as there have been shifts in industrial production, these have tended to favour port locations for cheaper access to materials mined in the South, rather than a shift to facilities outside of Europe itself.[74]

While there has been a long-term trend towards relocating industry from the EU to the South, this has been driven by the liberalisation of international trade, and reductions in the marginal cost of international aviation and shipping – in which the continued availability of unsustainably cheap fossil fuels has remained a key factor.[75]

The main function of the 'leakage' argument has been to enable heavy industry to introduce significant loopholes in both the stringency of the caps and the allocation of free emissions permits. In the third phase of the EU ETS, this included a coordinated campaign

68 European Union, 2009, *op. cit., supra*, note 4, Article 27.

69 Juua Renaud, *Climate policy and carbon leakage: impacts of the European Union Emissions Trading Scheme on Aluminium,* OECD/IEA, Paris, 2008 p.2.

70 Juua Reinaud, *Issues behind Competitiveness and Carbon Leakage,* OECD/IEA October, Paris, 2008, p.4.

71 Convery et al., *op. cit., supra*, note 28, p.21.

72 This relative insignificance results from a combination of low prices and volatility, a pattern that is unlikely to change because the underlying commodity – 'carbon' – is itself highly unstable. Indeed, this volatility may grow worse under phase 3 of the EU ETS as non-CO_2 gases enter the system in increased numbers, and new, more complex carbon derivatives continue to emerge.

73 EU Commission (DG Energy and Transport), *The Market for Solid Fuels in the EU in 2004-2006 and Trends in 2007,* Brussels, 2008, p.16, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52008SC2870:EN:NOT

74 This is the strategy favoured by ArcelorMittal, for example, which has focused new investments at coastal locations. See http://www.arcelormittal.com/index.php?lang=en&page=545

75 Vaclav Smil, *Energy at the Crossroads: Global Perspectives and Uncertainties,* MIT, London, 2003

from most key sectors of European industry.[76] 'The real agenda of companies like Mittal/Arcelor and Lafarge is to get completely off the hook from EU climate change efforts,' says Green MEP Claude Turmes.[77]

Nor is this a line of attack that is restricted to the EU. Industry lobbyists in Australia have been shown to be similarly disingenuous in their claims about carbon leakage.[78] In the US lobbyists have also used arguments about 'leakage' and, more straightforwardly, a loss of 'international competitiveness' to win a string of concessions in the Waxman-Markey Bill.[79]

What lies at the root of the 'leakage' argument is an idealised conception of 'free competition' that is out of kilter with how corporations (or, indeed, national economies) actually behave. Yet it is strongest in sectors where competition itself is weak – including in cement, steel and petrochemicals, where a few major transnational companies dominate the market. In sum, the leakage argument has been used as a coordinated effort to ensure that the 'cap' on carbon emissions remains full of holes.[80]

Aviation

The inclusion of aviation in the EU ETS from 2012 represents a further significant expansion of the scheme. The EU incorporated aviation in the EU ETS with a baseline calculated from 2004-2006 emissions, rather than 1990 as with the rest of the scheme. The use of later data means that the aviation industry can avoid taking responsibility for the boom in aviation post-1990, which has been driven forward by the advent of 'low frills' airlines in the EU.[81]

76 The Key Stakeholders Alliance for EU ETS Review, 'Lowering Production is no Benefit for the Environment, says European Industry', Brussels, 21 May 2007. The group consisted of lobbies from CEFIC (chemical industry), CEMBUREAU (cement), CEPI (paper), CERAME-UNIE (ceramics), CPIV (glass), EULA (lime), EUROCHLOR (chlor-alkali), EUROFER (iron and steel), EUROMETAUX (metals), IFIEC (industrial energy consumers), who were critical of even the possibility that 'reducing production volume' should be considered as a mitigation strategy.

77 Claude Turmes, 'Wolf or sheep? – myth and realities behind energy intensive industry lobby efforts to dilute the EU climate package', *EurActiv*, March 2008, http://www.euractiv.com/29/images/Turmes%20European%20Spring%20Council%202008-Background_tcm29-170918.doc

78 Ross Gittins, 'Carbon trading: big business vote of no confidence in itself', *Sydney Morning Herald*, 25 August 2008.

79 The 'leakage' argument has been raised by a broad range of industries and associations in the US, including (but not limited to) the USCAP coalition of NGOs and businesses, and the steel sector. See USCAP, 'Issue overview: energy intensive industries', 15 January 2009, http://www.us-cap.org/blueprint/issuebriefs/energy.asp; Robert Guy Matthews, 'Steel braces for impact', *Wall Street Journal*, 22 May 2009, http://online.wsj.com/article/SB124286482447141439.html#articleTabs%3Darticle. In Europe, some of the most intensive lobbying on the issue came from German chemical industry. BASF, the largest player in this market, has also carried 'leakage' concerns across the Atlantic. See Wolfgang Weber, BASF 'Industrial Competitiveness Under Climate Policies: Lessons from Europe: statement to the United States Senate Committee on Foreign Relations', 8 July 2009, foreign.senate.gov/testimony/2009/WeberTestimony090708p.pdf

80 Were 'carbon leakage' actually to become a significant problem, another means to tackle it might be to impose import tariffs. It is notable that the US has proposed this type of measure in July 2009 in the course of negotiations for a global carbon treaty. Although there are circumstances where such tariffs might be appropriate on environmental grounds, a strong argument can be made that these should be weighed against the relative contributions of different states to causing climate change – see Martin Khor, 'Moves to tax South's imports on climate grounds are unfair', Third World Network, August 2009, http://www.twnside.org.sg/title2/climate/briefings/Bonn04/TWN.BP.Bonnaugust1.doc

81 Alice Bows and Kevin Anderson, *A bottom-up analysis of including aviation within the EU's Emissions Trading Scheme,* Tyndall Centre Working Paper 126, Tydall Centre for Climate Change Research, Manchester, November 2008, p.18.

Beyond this, it is highly implausible that a carbon price will affect investment decisions in the aviation sector. A Tyndall Centre study found that the likely price of carbon would add fewer than four cents to a litre of kerosene – a level that is far lower than the tax breaks afforded for aviation fuels by EU governments.[82] The same study concludes that carbon prices would have to rise to a level of between €100 and €300 per tonne to have any significant impact on the continued expansion in aviation, conceding that even this might remain 'insufficient'. This is an order of magnitude beyond all estimates of future carbon prices – and, in the exceedingly unlikely event that the price moved towards these levels, the record of existing lobbying around emissions trading suggests that significant pressure from aviation (and other industries), which could either force an upper price cap on the scheme or equivalent exceptions and subsidies.[83]

There is one major effect that the inclusion of aviation in the EU ETS is already having, though – giving proponents of aviation ammunition in their efforts to expand the sector. The UK government, for example, argues that emissions increases that would result from the planned expansion of London's Heathrow Airport will be offset by the purchase of EU ETS permits from other sectors.[84]

Finally, the treatment of aviation within the EU ETS clearly demonstrates how the need for a single tradable commodity (carbon) obscures differential environmental impacts. Emissions from aviation arise from CO_2, as well as significant amounts of nitrogen oxide, water vapour, sulphate and soot particles, and their impact is compounded by the formation of contrails. Some studies show these combined impacts to be far greater than the impact of CO_2 alone, yet the EU ETS would tackle only CO_2 emissions from aviation (even when the scheme as a whole is extended to these other gases).[85] In effect, the carbon market provides a means to 'offset' aviation with a series of cheaper reductions in CO_2 emissions in other sectors – but the environmental impacts are vastly different.

82 *Ibid*.; Transport and Environment, *Including Aviation in the EU's Emissions Trading Scheme (EU ETS)*, June 2008, p.6. In the UK alone, the zero tax and VAT-free status of aviation fuel amounts to an estimated GBP 10 billion per year. See World Development Movement, *Dying on a Jet Plane,* March 2007, http://wdm.gn.apc.org/sites/default/files/dyingonajetplane19032007.pdf

83 On aviation lobbying around the EU ETS, see Corporate Europe Observatory, 'Climate Crash in Strasbourg: An Industry in Denial. How the aviation industry undermined the inclusion of aviation in the EU Emissions Trading Scheme', December 2008, archive.corporateeurope.org/docs/climatecrash.pdf

84 See remarks of Ed Miliband, Secretary of State for Energy and Climate Change, Debate on Aviation, UK House of Commons, 23 April 2009, http://www.publications.parliament.uk/pa/cm200809/cmhansrd/cm090423/debtext/90423-0002.htm

85 European Union, 'Directive 2008/101/EC of the European Parliament and of the Council of 19 November 2008 amending Directive 2003/87/EC so as to include aviation activities in the scheme for greenhouse gas emission allowance trading within the Community', 13 January 2009, article 19. The EU suggests that its own research 'indicates that the total climate impact of aviation could be around two times higher than the impact of carbon dioxide alone' and notes 'highly uncertain cirrus cloud effects'. Claiming not to know how to account for these emissions, the EU adopts what it calls the 'precautionary principle' of taking no account of them at all in its calculations.

New sectors, new gases, greater complexity

From 2013, the EU ETS plans to expand to cover more greenhouse gases, taking the UNFCCC definition of this term as its guide.[86] Aside from aviation, it plans to additionally cover a range of other new sectors, most significantly aluminium and a range of chemical industries which emit non-CO_2 greenhouse gases.[87]

At the outset, the EU ETS was limited to CO_2 emissions from large fixed sources (especially the power sector) in order to reduce the uncertainty of calculations. The rationale behind this decision was to ensure that the marginal, year-on-year reductions that the scheme sought should be greater than the margin of error in measurement. This objective is far from being met, and while it is true that the effectiveness of any policy measure (whether or not it involves trading) is subject to robust measurement, a market-based scheme exacerbates the problem.[88] In a system where each installation had fixed targets, for example, measurement problems could be isolated and ring-fenced. A flexible, market-based mechanism, however, allows the worst cases to generate excessive credits which can then be sold on as equivalent to reductions elsewhere. Moreover, treating such gases as equivalent reductions abstracts from how and where those changes are made.

This is not merely a theoretical problem, as the example of the CDM shows. The largest number of credits under this system has not come from supposed CO_2 reductions, but from projects that claim to reduce HFC23, a potent greenhouse gas used for refrigeration. Since it is relatively cheap *and* easy to reduce this gas, such projects proliferated as a means to avoid having to make more expensive abatements. An investment of around US$ 100 million yielded US$ 4.6 billion in profits for HFC plants, according to a study in *Nature*.[89]

The result is the addition of a new loophole in the EU ETS: where power producers (the main purchases of carbon permits) could previously purchase from overallocated industries or buy CDM credits, they will now also have the potential to purchase extra permits through a series of cheap non-CO_2 reductions.

There is a significant chance that many of these will not be reductions at all. Once multiple gases are introduced in the same scheme, the norm is to use 'conversion factors' to calculate reductions in terms of 'CO_2 equivalence.' These factors vary over time, however, and changes can result in large volumes of 'reductions' appearing at the stroke of a pen. The measurement process itself is also highly imprecise and is conducted by proxy rather than directly. For example, a

86 This UNFCCC currently recognises six greenhouse gases, but further highly potent F-gases could be added under terms of a new global climate agreement.

87 For a full listing see European Union, 2009, *op. cit., supra*, note 4, Annex I, pp.3-7.

88 The uncertainty of calculations ranged from 4 to 21 per cent. Suvi Monni, Sanna Syri and Ilkka Savolinen, 'Uncertainties in the Finnish Greenhouse Gas Emission Inventory', *Environmental Science and Policy*, no. 7, 2004, pp.87-98.

89 Michael Wara, 'Is the global carbon market working?' *Nature,* 8 February 2007.

study in Finland found that measurements relating to nitric acid production – the most significant of the non-CO_2 greenhouse gas sources by volume – were 'the most uncertain industrial source category with an uncertainty of -60 [to] +100%'.[90]

Expanding the EU ETS to other gases makes sense from the point of view of carbon traders – for whom a more 'liquid' market with larger trading volumes is liable to yield greater potential profits. Yet it makes the 'carbon' that is traded a still more unstable commodity. The uncertainties involved in comparing these processes are overlooked in order to ensure that a single commodity can be constructed and exchanged.

As the market matures, even this set of equivalences will become harder to measure. The EU ETS is already witnessing the development of more complex carbon market products, which package together permits and credits from several installations, then slice these up and resell them. In essence, this is the same structure that brought the derivatives market to its knees, and the same problem: carbon markets involve the selling of a product that has no clear underlying asset – fertile conditions for the creation of a new 'bubble'. Not only do traders not know what they are selling, but it becomes increasingly meaningless to talk about 'emissions reductions' in this context, since what is reduced on paper is so far removed from any process of any measurable change in industrial practice or energy production.

Conclusion

A failure to cap emissions once might be considered an accident, and twice a coincidence – as the saying goes – but a third failure starts to look like a consistent trend. In this chapter, we have shown empirically that the EU's Emissions Trading Scheme is not living up to its billing as a means to reduce carbon emissions.

In phase 1 of the scheme, too many permits were in circulation as a result of over-generous allocations across the board. This problem has been repeated in the second phase of the scheme, with the ability to trade emissions within the EU for offset credits from outside the trading bloc the main means of over-allocation. In both cases, the free allocation of permits to the power sector, coupled with the ability to pass greater costs to consumers than have been incurred in purchasing permits, has resulted in significant profits, while 'competitiveness' concerns have seen polluting industries materially benefit from a scheme which, far from 'capping' their emissions, offers them a new source of subsidies. In the third phase of the EU ETS, some of these loopholes may be closed, but the increasing complexity and international linking of the European with other carbon markets means that others will be opened – allowing emissions 'reduction' permits to continue circulating without a significant need actually to reduce emissions domestically.

90 Suvi Monni, 'Uncertainties in the 200 Finnish Greenhouse Gas Emission Inventory', VTT Working Paper no. 5, 2004, p.19.

4 » Regenerating responsibility

Introduction

Carbon offsets are not emissions reductions. Each offset that is developed in the South allows pollution from fossil-fuelled power stations or heavy industry in the global North to continue over and above reduction limits while the same companies and industrialised countries claim compliance with paltry reduction targets on paper. To date, the UN's Clean Development Mechanism (CDM) has actually resulted in an increase of CO_2 emissions worldwide – displacing emissions cuts in the North in favour of offset projects that have already awarded billions in free subsidies to some of the world's most polluting industries.

As the CDM grows, it is increasingly funding new fossil fuel power generation projects, as well as a plethora of renewable energy schemes. Yet, as the case studies in this chapter will show, even renewable energy projects cannot automatically be assumed to be clean or sustainable.

Hydroelectricity and biomass projects, which are rapidly becoming important sources of CDM credits, generate significant side-effects that could have greater climate change impacts than if they had never happened. In addition, such projects typically support a development paradigm that is insensitive to the needs of local communities, including their health, land use and water requirements.

How the CDM increases emissions

Perhaps the most fundamental point to note about carbon offsets is that they increase global emissions rather than decrease them. Even if an emissions 'reduction' sold by an offset project developer could be verified as successful, any gain would by definition be nullified by increased emissions allowed to the buyer, delaying the transition to a post-fossil fuel economy elsewhere. If every project were designed and implemented perfectly, the net result would be to move emissions from one place to another with no net reduction.

In practice, the CDM is riddled with inadequacies, as this chapter will show. One such defect lies in that a significant proportion of projects – anywhere between one-third and three-quarters – does not represent 'emissions

savings' by any reckoning.[1] The companies behind such projects are paid to do what they would have done anyway, while the credits allowed companies in industrialised countries to exceed their emissions cap.

The underlying problem is that emissions savings are defined as anything that is 'additional.' A baseline assumption is made about what the future would have held without the project; the CDM is assumed to have altered the future, and credits are awarded as a result. Credits from such a scheme are in principle unregulatable, since they are calculated relative to a claim about what would have happened in the future. The future is impossible to predict, yet the CDM accords it a false certainty, and even goes so far as to quantify an exact number of emissions to be 'saved.'

In addition, the counterfactual 'baseline' is measured against the purported emissions savings of a carbon offset project, and these are calculated over 100 years. For example, a wind farm in India may claim to be generating carbon credits because it is saving on the burning of fossil fuels. However, as Kevin Anderson of the Tyndall Centre for Climate Change Research explains:

> ...those wind turbines will give access to electricity that gives access to a television that gives access to adverts that sell small scooters and then some entrepreneur sets up a small petrol depot for the small scooters and another entrepreneur buys some wagons instead of using oxen and the whole thing builds up over the next 20 or 30 years, so it is the same thing. The additionality test would be, if you can imagine Marconi and the Wright brothers getting together to discuss where they will be in 2009, easyJet and the internet will be facilitating each other through internet booking. That is the level of...certainty you would have to have over that period. You cannot have that. Society is inherently complex.[2]

Easy pickings

A second assumption underpinning carbon offsets is that the cheapest reductions should be made first – with a market-based approach assumed to be the best means of achieving this goal. Yet the evidence of how the CDM and voluntary offsets schemes have performed to date shows this to be deeply flawed as a means to tackle climate change or stimulate a greener development path.

Most CDM offset credits, called Certified Emissions Reductions (CERs), are generated by projects that contribute nothing to a transition to a non-fossil dependent society. As of September 2009, three-quarters of the offset credits issued were manufactured by large firms making minor technical adjustments at a few industrial installations to eliminate hydrofluorocarbons (HFCs) and

1 International Rivers Network, 'Rip-offsets: The Failure of the Kyoto Protocol's Clean Development Mechanism', 2008, p.3. International Rivers Network found that 76 per cent of the projects approved by 1 October 2008 were already up and running by the time they were approved to generate CDM credits, strongly suggesting that they would all have happened anyway. As a result of a separate analysis, David Victor of Stanford University concluded that 'between one and two thirds of all the total CDM offsets do not represent actual emission cuts.' Interview with John Vidal, 'Billions wasted on UN climate programme', *The Guardian*, 26 May 2008.

2 UK House of Commons Environmental Audit Committee, 'Inquiry into Carbon Budgets', 23 June 2009, http://www.parliament.the-stationery-office.co.uk/pa/cm200809/cmselect/cmenvaud/uc616-ii/uc61602.htm

nitrous oxide (N_2O).[3] This picture is unlikely to change dramatically by the time the Kyoto Protocol's first commitment period expires. By the end of 2012, HFC and N_2O credits are still expected to account for the largest shares of the CDM (28.5 per cent and 14.4 per cent respectively), followed by hydro-electricity projects (10.8 per cent). Solar power is expected to account for 0.03 per cent of CDM credits by 2012.[4]

As Michael Wara of Stanford University puts it:

> [T]he CDM market is not a subsidy implemented by means of a market mechanism by which CO_2 reductions that would have taken place in the developed world take place in the developing world. Rather, most CDM funds are paying for the substitution of CO_2 reductions in the developed world for emissions reductions in the developing world of industrial gases and methane. Indeed, the industrial gas emissions that account for one third of CDM reductions do not even occur in the developed world...because Annex B industries [those in developed countries], after recognizing the threat posed by these emissions and the low cost of abating them, have opted to voluntarily capture and destroy them.[5]

The key lesson here is that we should be challenging the claims that markets offer the cheapest solutions for tackling climate change, and ask instead: cheapest for whom and cheapest when? HFC-23 projects have generated massive profits for a handful of companies producing refrigerant gases, and others that use it as a primary feedstock for production of polytetrafluoroethylene (PTFE), commonly referred to as Teflon. In fact, the sale of carbon credits from these activities rapidly became far more valuable to the companies than the production of the refrigerants and coatings that lead to its creation in the first place.[6]

Various studies even found that the CDM could even have accelerated the production of these gases, to maximise the credits generated through capturing them.[7] Wara estimates that a straightforward subsidy to regulate HFC-23 emissions would have cost less than €100 million – yet, by 2012, up to €4.7 billion in carbon credits will have been generated by such projects.[8] A similar story

3 According to Risoe data, 56 per cent of the emissions reductions arise from HFC-23 projects, with a further 20 per cent from N_20 projects. HFC-23s are a powerful greenhouse gas produced as a byproduct in refrigerant production.

4 UNEP Risoe CDM/JI Pipeline Analysis and Database, 'expected figures' 135437, www.cdmpipeline.org

5 Michael Wara, 'Measuring the Clean Development Mechanism's Performance and Potential', *UCLA Law Review*, no. 55, 2008, p.1780.

6 M. Wara and D. Victor, 'A Realistic Policy on International Carbon Offsets', PESD Working Paper no. 74, 2008, p.11.

7 Wara and Victor, *op.cit*, *supra*, note 6, pp.1786-7; Joint Committee of UK Parliament on the draft climate change bill, Final report, Volume I, August 2007. The CDM board tried, belatedly, to deal with the perverse incentives to overproduce HCFC-22 (an ozone-depleting refrigerant and greenhouse gas) in order to capture and destroy HFC-23 (a byproduct of HCFC-22 production, which the Intergovernmental Panel on Climate Change considers to be a greenhouse gas 14,000 times more potent than carbon dioxide),, by approving only projects that already had HCFC-22 production capacity in the 2000-2004 period. But Wara finds evidence that the suppliers have, in response, manipulated the base year data to overstate the inefficiency of their plants and ramp up production of the gas to receive extra CDM credits.

8 Michael Wara, 'Is the global carbon market working?', *Nature,* 8 February 2007.

could be told about N_2O reduction projects, which generally capture emissions from adipic acid production, part of the process of manufacturing synthetic fibres like nylon.

What was cheap and profitable for the companies cashing in on such projects turns out to be an extraordinarily expensive subsidy to a highly polluting industry with a long record of blighting the lives of local citizens and the environment surrounding these factories.[9]

Rhodia cashes in

Rhodia, a French chemical firm, makes adipic acid at a factory in South Korea. By investing US$ 15 million in equipment that destroys nitrous oxide – an unwanted by-product – the company is set to produce US$ 1 billion in UN-approved carbon credits for sale to polluting industries in industrialised countries.[10] Nitrous oxide is a greenhouse gas said to be around 300 times more potent than carbon dioxide, so Rhodia can generate 310 tonnes of carbon credits just by burning one tonne of the compound.

The trade does not reduce overall greenhouse gases, because customers buy Rhodia's credits only so that they can continue to invest in fossil fuels. Nor does it help Korea decarbonise: at best, it is irrelevant; at worst, it encourages the country to build more dirty industries so that it can make money by cleaning up later. Nor does the trade encourage green innovation. The technology Rhodia uses dates from the 1970s. Rhodia already makes 35 times more money selling carbon credits than it does from the adipic acid market.

As the world's largest adipic acid producer, Rhodia has sought to repeat this trick elsewhere, with a number of similar CDM projects in South Korea and Brazil, where it also owns factories. In May 2009, Rhodia gained approval for a similar Joint Implementation project in southern France.[11]

A greener future?

Proponents of the CDM suggest that a new balance of future projects will gradually give incentives for cleaner energy production and more sustainable development. Yet the evidence does not support this conclusion, most obviously in relation to the plethora of fossil fuel projects that are supported by the CDM. To apply for the scheme, a project simply needs to prove that it is cleaner than the norm for existing power production in the region or country where it is located. As new plants are generally more efficient than old ones, this is rarely a difficult task. A study of new gas-fired power stations in China, for example, found that all 24 new combined cycle gas turbine plants under construction between 2005 and 2010 had applied for CDM subsidies.[12]

The same trick looks set to be repeated with new 'supercritical' coal-fired power plants, which have been eligible for CDM credits since autumn 2007 – despite the fact that coal is amongst the most CO_2 intensive sources of power. Fifteen projects had sought validation under this methodology as of September

9 Nadene Ghouri, 'The great carbon credit con: Why are we paying the Third World to poison its environment?', *Daily Mail*, 1 June 2009. http://www.mailonsunday.co.uk/home/moslive/article-1188937/The-great-carbon-credit-eco-companies-causing-pollution.html

10 Jeffrey Ball, 'French Firm Cashes In Under UN Warming Program', *Wall Street Journal*, 23 July 2008.

11 'Rhodia gets Kyoto carbon credits for French plant', *Reuters*, 20 May 2009.

12 Wara and Victor, *op.cit*, *supra*, note 6, p.1793.

2009, including the Tata Mundra project, a complex of coal-fired power plants in Gujarat, India.[13] With the support of the International Finance Corporation, the private investment arm of the World Bank, this project claims that it will emit 3.6 million tonnes of CO_2 less than would otherwise be the case, generating an estimated US$ 50 million per year from the sale of carbon credits. Yet the scheme as a whole is expected to emit 700 million tonnes of CO_2 during its operating life, which is greater than one year's greenhouse gas emissions for the whole of the UK.

Instead of supporting clean energy, the CDM proposes to support a dirty energy source on the grounds that it is a marginal improvement on the current, incredibly dirty practice. This overlooks the likely emergence of supercritical technology as a norm for new large coal-fired power stations, since its adoption is in any case backed by other fiscal and policy incentives.[14] Further, it sets up a perversely circular structure. Instead of envisaging a rapid transition to clean energy, the CDM is subsidising the lock-in of fossil fuel dependence through providing incentives for coal-fired power stations in the South, rather than energy infrastructure based on local needs. With the credits that these new plants will generate, the CDM is at the same time encouraging a continued reliance on coal-fired power stations in the North as well.

Why even 'good' projects are bad projects

The growth of CDM investment in fossil fuel power generation is not the whole story, however, as proponents of the scheme might still claim that it will expand investments in 'renewable' sources at a similar rate.

Typically, the calculations for hydroelectric projects are that they will replace energy that would otherwise have been sourced from fossil fuels. However, a survey of Chinese hydropower projects submitted for CDM validation found that over three-quarters were expected to start generating credits within 12 months of their validation. Since hydropower plants normally take several years to build, the likelihood is that most projects were under construction before beginning the CDM validation process.[15] Such projects also create significant local environmental and social impacts in their own right.[16] The likelihood of increased emissions of methane (a more

13 CDM methodology ACM0013, 'New grid connected fossil fuel fired power plants using a less GHG intensive technology', was devised by Perspectives, a CDM/JI consultancy founded by carbon market analyst Axel Michaelowa. The methodology was approved in September 2007, and 15 projects had been submitted as of September 2009; see http://cdmpipeline.org/publications/CDMpipeline.xls In response to controversy over its inclusion, the CDM Executive Board has limited its use to 15 per cent of power generation within any given country.

14 The Indian government is proposing to waive import duties on supercritical technology and income taxes on revenue generated from supercritical coal plants. In China, the government has instructed power companies to choose supercritical plants rather than subcritical plants because they use less coal – a policy directive that makes the 'additionality' claim attached to such projects highly questionable. See Subhash Narayan, 'Tax sops for supercritical tech', *The Economic Times*, 21 August 2009. http://economictimes.indiatimes.com/News/News-By-Industry/Energy/Tax-sops-for-supercritical-tech/articleshow/4917200.cms ; Wara, *op. cit.*, *supra*, note 5, pp.1796-7.

15 Barbara Haya, 'Letter to CDM Executive Board On Non-Additional Chinese Hydros', 12 October 2007, http://www.internationalrivers.org/node/1892

16 The NGO International Rivers maintains a non-exhaustive list of controversial CDM hydroelectricity projects: http://www.internationalrivers.org/en/taxonomy/term/482. See also Tamra Gilbertson, 'The Bhilangana Dam on Troubled Waters', *Mausam*, vol. 2, pp.3-5, Oct 2008-Sept 2009.

potent greenhouse gas than CO_2) as a result of dam building also remains unconsidered within the CDM approval process.[17]

A similar assessment could be made of biomass power projects, which tend simply to count the methane (CH_4) emissions that are avoided because it is burned rather than allowed to biodegrade – without considering the huge emissions caused by cutting down forests or draining carbon-rich peatlands to set up plantations in the first place.

The attempt by carbon offset promoters to distinguish between 'good' and 'bad' projects misses the point, since even the most renewable projects are inserted within a system that generates credits to carry on polluting elsewhere. But such projects not only perpetuate the old problems of coal, oil and gas; they often promote local conflict as well. Not designed to deal with the real complexities and intricacies of communities and livelihoods, they require enormous quantities of land, water, machinery and are not set up to benefit the local communities or ecology. They generally take place in regions where people have little political power, thereby deepening the North-South gap.

The resulting conflicts often come as a surprise to idealists convinced that carbon offset projects – whether set up under the auspices of the Kyoto Protocol's CDM or under voluntary private schemes – will bankroll community-friendly renewable energy and set the South on a low-carbon path to industrialisation. But as argued in chapter 3, the carbon market is not designed in a way that would make the attainment of such goals possible. Because its purpose is, rather, to provide cost savings in the achievement of minimal, short-term abstract emissions targets, it is ineffective in channelling investment to long-term development pathways that could result in a fossil-free future, with the market taking no account of community needs or local environmental impacts when selecting which projects receive financing..

As the case studies in this chapter will outline, in order to generate carbon credits from trees or energy crops, plantation companies have to maintain their hold on land that citizens may need for other purposes. In order to generate carbon credits from burning rice husks, developers dismiss local people's need of a valuable resource. In order to keep track of the carbon that their agroforestry schemes generate, rural development organisations have to divert resources from their traditional work. In order to obtain carbon credits for building wind farms, companies annex land for showcase 'green' projects whose principle purpose is to gain from tax and depreciation benefits rather than to generate power, while depriving local communities of common grazing lands.

The conflicts that result from such projects are inevitable, with the big, highly-capitalised firms or agencies that are in the best position to hire carbon consultants and accountants, liaise with officials or pay the fees needed for UN registration tending to be the worst corporate 'bad citizens' in many localities. As a result, common ground exists between communities resisting carbon offset projects and those suffering from other aspects of the fossil fuel economy.

17 Duncan Graham-Rowe, 'Hydroelectric power's dirty secret revealed', *New Scientist,* February 2005.

If most fossil fuels must be kept in the ground, then renewable energy is going to become increasingly important to energy economies and livelihoods worldwide. But there are blind ways of promoting renewable energy. The following case studies serve as a warning of how *not* to go forward. If renewable projects are embedded inside existing 'development' frameworks – North-South power relations – and used indirectly to promote more dirty industries, they become incapable of promoting a future of truly 'sustainable' renewable energy.

Reduced Emissions from Deforestation and Forest Degradation (REDD)

Reducing Emissions from Deforestation and Degradation (REDD) schemes are among the most controversial within the climate debate. The concept assumes that deforestation happens because too little economic value is placed on intact forests, and that providing money for conservation to forested countries in the South will help to protect them.[18] Yet this idea is challenged by many Indigenous Peoples (IPs) and forest communities, who warn that putting a price on forests will encourage further land grabs by large companies and governments and that this is already the experience of some REDD pilot projects. Many IPs and forest peoples' organisations stress that the real drivers of deforestation are the major construction, mining, logging and plantation developments whose owners stand to be rewarded by REDD funds.

Several REDD schemes are already underway, some hosted by the UN and the World Bank, others in response to bilateral agreements between countries.[19] A number of countries, including Ecuador, have started their own REDD funds, positioning themselves to reap the profits of a new global climate agreement.[20] A number of private conservation funds and voluntary offset projects have also established new REDD schemes.[21]

18 The concept of payments for environmental services was discussed in the lead-up to the Kyoto Protocol, but was rejected (see box, 'Environmental Services to LULUCF, chapter 2, p. 25). In 2005, a group of countries, the Coalition of Rainforest Nations developed a proposal on REDD which was put forward at the 2007, UNFCCC Conference of the Parties in Bali (COP 13).

19 The Norwegian government has committed US$ 600 million a year to REDD; Australia is involved in REDD projects in Australia and Vanuata; and the German technical cooperation agency (GTZ) is setting up projects in Indonesia and Laos.

20 Ecuador is currently seeking donations from organisations and governments for its new 'Forest Partners Program' ('Programa Socio Bosque'), set up to capitalise on future REDD funds. See http://www.ambiente.gov.ec/paginas_espanol/sitio/index.html The programme (and a counterpart, called Socio-Paramo) has been criticised by the Confederation of Indigenous Peoples from the Ecuadorian Amazon (CONFENIAE, the Ecuadorian member organisation of COICA). The statement from the First Congress of Women of the CONAIE declared: 'We reject the implementation of the Socio-Bosque Program and the Socio-Paramo Program because they impose "conservation" without recognizing our rights to sustainably manage forest resources according to our needs. We also reject the proposals to sell the carbon of the Amazonian rainforests'; 28 and 29 August 2009, http://www.conaie.org/index.php?option=com_content&view=article&id=50%3Aprimer-congreso-de-mujeres-conaie&catid=1%3Alatest-news&Itemid=50&lang=en

21 These include REDD projects sponsored by NGOs, including The Nature Conservancy, Conservation International, WWF US, Environmental Defense Fund, Woods Hole Research Center, CIFOR, and the Wildlife Conservation Society – a number of which have been accused of coercing Indigenous Peoples to hand over their lands for new REDD schemes with little or no consultation. See www.redd-monitor.org and www.wrm.org.uy

UN REDD

UN-REDD was set up by the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP) the Food and Agriculture Organisation (FAO) and the World Bank, and is currently running pilot projects in Bolivia, Democratic Republic of Congo, Indonesia, Panama, Papua New Guinea, Paraguay, Tanzania, Vietnam and Zambia.

Indigenous Peoples Organisations (IPOs) note the current lack of a formal consultative process for Indigenous Peoples within the climate change negotiations as evidence that REDD will flout the UN Declaration on the Rights of Indigenous Peoples (UNDRIP), which was adopted by the UN General Assembly in 2007. More specifically, neglect of rights to Indigenous territories as well as to free, prior and informed consent (FPIC) granted by the UNDRIP is also a concern for IPs. It is highly unlikely that these rights will be recognised by any new deal negotiated at the UN Climate Conference in Copenhagen in December 2009.

The Framework Document that established UN-REDD itself admits a range of potential failings – noting that REDD could 'deprive communities of their legitimate land-development aspirations' and 'marginalise the landless'; that 'hard-fought gains in forest management practices might be wasted'; that it could 'lock-up forests by decoupling conservation from development'; and that it might 'erode culturally rooted not-for-profit conservation values.'[22] Yet no real answers to these potential rights violations and difficulties are offered. It is asserted without evidence that putting a cash value on forests will help to avoid deforestation, and that if this theory proves correct the net result of the scheme will be beneficial.

This is a symptom of a more general failure of REDD schemes to take account of the unjust realities of current land tenure regimes. 'In many tropical countries, states… legally define the remaining forests as so-called "state land",' explains Tom Griffiths of the Forest Peoples' Programme. With REDD payments administered top-down by governments, companies and conservation NGOs, the risk is that forest-dependent peoples would be evicted in order to 'protect lucrative forest carbon "reservoirs"'.[23]

World Bank funds

The World Bank's Forest Carbon Partnership Facility (FCPF) was launched at the UN Climate Conference in Bali in 2007, amid protests that demanded 'World Bank out of my forest' and 'No carbon market for forests'. The FCPF was initiated without Indigenous Peoples' input or recognition.

To date, the FCPF consists of two funds, the Readiness Fund and the Carbon Fund, the former to support country readiness efforts, the latter to buy certified emissions reductions for trading on the carbon market. According to the Indigenous Environment Network (IEN), 'the World Bank isn't waiting for the UN to adopt a REDD implementation framework: they have moved forward with their own REDD-type projects through R-PINs

22 UN-REDD Framework Document, p4-5, www.undp.org/mdtf/UN-REDD/docs/Annex-A-Framework-Document.pdf , Poverty Environment Partnership (PEP) Policy Brief www.povertyenvironment.net/?q=filestore2/download/1874/PEP-REDD-policy-brief-Oct-08.pdf

23 Tom Griffiths, *Seeing 'RED'? 'Avoided deforestation' and the rights of Indigenous Peoples and local communities*, Forest Peoples Programme, June 2007, http://www.forestpeoples.org/documents/ifi_igo/avoided_deforestation_red_jun07_eng.pdf

(Readiness Plan Idea Notes) and through its other carbon and climate funds.'[24]

By June 2009, 37 countries submitted readiness concept notes, the first 20 of which have priority status for funding until June 2010. After that date all of the 37 countries may be eligible for funding.[25] In addition, the World Bank already funds REDD-type projects through its BioCarbon Fund and Forest Investment Programme.

The World Bank's track record on forests and carbon markets is hardly impressive. During the 1980s, it funded a series of disastrous commercial logging projects, mega-dams and road-building programmes that opened the way to widespread deforestation.[26] Mounting criticisms led to a new forest policy in 1991 which, at least on paper, ended the Bank's support for commercial logging, while stressing conservation and local people's rights. In practice, though, the Bank continued to incentivise forest destruction through its structural adjustment programmes.

A 2007 study by the International Alliance of Indigenous and Tribal Peoples of the Tropical Forests documented the 'servitude' suffered by Batswa Pygmies under the World Bank Ibi-Batéké carbon sink plantation.[27] Hailed as an inspiring model for Africa, the tree plantation grows trees to burn them for fuelwood and charcoal and claims to be the Democratic Republic of the Congo's first clean development project. However, Pygmy leaders have repeatedly denounced the World Bank for funding deforestation of their ancestral forests, violating their rights, leading to the destruction of their livelihood and causing social conflict.

REDD and carbon markets

The FCPFs 'ultimate goal is to jump-start a forest carbon market', says Benoit Bosquet, a World Bank senior natural resources management specialist who has led the development of the Facility.[28] These are unoriginal

24 Indigenous Environment Network, 'No REDD!' booklet, Sept. 2009. www.ienearth.org

25 Bank Information Center, http://www.bicusa.org/en/Issue.50.aspx . To date, three countries (Indonesia, Panama and Guyana) have submitted Readiness Preparation Proposals (R-PPs) and are poised to receive readiness funding once the World Bank has completed its due diligence and the countries have addressed concerns raised by the World Bank, an independent assessment panel and the governing body of the FCPF.

26 World Rainforest Movement (2002) 'The World Bank in the forest', http://www.wrm.org.uy/actors/WB/index.html

27 International Alliance of Indigenous and Tribal Peoples of the Tropical Forests report, 'Indigenous Peoples and Climate Change: Vulnerabilities, Adaptation, and Responses to Mechanisms of the Kyoto Protocol', 2007; S. Makelo, 'The DRC Case Study: the impacts of carbon sinks of Ibi-Batéké Project on the indigenous Pygmies of the Democratic Republic of Congo', pp.45-74, especially 62-64, http://www.international-alliance.org/documents/Climate%20Change%20-%20DRC.pdf .The human rights violations against Pygmies are acute throughout the country. See also 'Pygmies beg UN for aid to save them from Congo cannibals', http://www.timesonline.co.uk/tol/news/world/article1135111.ece. See also World Bank, 'DRC Ibi Bateke Carbon Sink Plantation', http://wbcarbonfinance.org/Router.cfm?Page=Projport&ProjID=43647 .World Bank documents claim no Indigenous Peoples affected, on pages 4 and 8, http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/06/04/000333037_20090604015605/Original/487470ISDS0rev110Batekeo0Box338924B0.doc; 'Four million dollar investment from World Bank Carbon Finance', http://web.worldbank.org/external/projects/main?Projectid=P096414&Type=Financial&theSitePK=40941&pagePK=64330670&menuPK=64282135&piPK=64302772. But it is worth noting that the Inspection Panel shows the Bank broke its own rules; see for example, http://www.bicusa.org/EN/Article.3645.aspx; Forest Carbon Inventory Project, http://www.forestcarbonportal.com/inventory_project.php?item=294

28 http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:21581819~pagePK:64257043~piPK:437376~theSitePK:4607,00.html

words. In 1999 the World Bank launched its first carbon fund, the Prototype Carbon Fund (PCF) with the aim of creating 'a short-term catalyst to jump-start the transfer of finance for clean energy technologies to developing countries'.[29] What followed, in the form of the CDM, was anything but such a catalyst.

At the Bali climate negotiations in 2007, the International Indigenous Peoples Forum on Climate Change (IIPFCC) warned that '[u]nder REDD, states and carbon traders will take more control over our forests'. At UN climate negotiations in Bangkok in September 2009, the IIPFCC stated: '[T]he recognition of our rights must be in accordance with international human rights law and standards including the UNDRIP and ILO Convention 169, among other human rights instruments. If there is no full recognition and full protection for Indigenous Peoples' rights, including the rights to resources, lands and territories, and there is no recognition and respect of our rights of free, prior and informed consent of the affected indigenous peoples, we will oppose REDD and REDD+ and carbon offsetting projects, including CDM projects.'[30]

REDD is already linked to the carbon market, with almost all of the 100 pilot projects underway assuming that they will be able to generate offset credits. In Papua New Guinea (PNG), carbon traders are accused of coercing villagers to 'to sign over the rights to their forests' for REDD.[31] The *Sydney Morning Herald* has reported that 'scores of carbon traders...have been active in PNG and Indonesia trying to sign landowners'. Tim King, from the Wilderness Society, said there had been 'a tsunami of carbon traders spreading across PNG. Carbon finance and REDD have triggered a "gold rush" mentality.'[32]

Cap and trade legislation in the US, passing through Congress at the time of writing, also looks towards massively increasing the volume of offsets – with international forest offsets projected to account for a significant proportion of US carbon reduction targets.[33] The mere prospect of deforestation credits being recognised in a new US climate bill has been enough to spark a REDD land grab in central Africa.[34]

Avoided responsibility and other criticisms

A number of further criticisms have been levelled at REDD proposals. The UN definition fails to differentiate between forests and plantations, which means that companies could replace intact forests with monoculture tree plantations and still qualify for REDD subsidies.[35] Such plantations have devastating impacts on Indigenous Peoples' and forest-dwelling communities' livelihoods.[36]

29 www.worldbank.org

30 Press Release International Indigenous Peoples' Forum on Climate Change, Bangkok, Thailand, 29 September 2009. REDD+ is an addition to include other forms of biotic carbon stores such as soils and projects to theoretically increase carbon storage. See for example www.biofuelwatch.org.uk.

31 *Sydney Morning Herald*, 3 September 2009, http://www.smh.com.au/environment/i-am-a-top-foreigner-in-papua-new-guinea-says-carbon-kingpin-20090903-fa0m.html

32 Marian Wilkinson and Ben Cubby, 'Australian firm linked to PNG's $100m carbon trading scandal', *Sydney Morning Herald,* 4 September 2009. http://www.smh.com.au/environment/australian-firm-linked-to-pngs-100m-carbon-trading-scandal-20090903-fa2y.html

33 'The Green Gold Rush', http://www.businessspectator.com.au/bs.nsf/Article/The-big-green-rush-pd20090907-VN255?OpenDocument.

34 Point Carbon, 'Firm Targets US Buyers with African REDD Credits', 20 July 2009, http://www.pointcarbon.com/news/1.1166150.

35 Chris Lang, 'REDD: an introduction', http://www.redd-monitor.org/redd-an-introduction/

36 See for instance the film 'Our Land Our Struggle', http://www.carbontradewatch.org/index.php?option=com_content&task=view&id=161&Itemid=45; www.wrm.org.uy and the case study on Plantar in the next chapter.

In addition, REDD schemes tend to reduce complex forest ecosystems to a simple carbon store – undervaluing them as water catchment areas and habitats for biodiversity, as well as their inestimable role in sustaining livelihoods, cultures and peoples.[37]

Creating a trade in forest carbon requires an accounting system far beyond what is technically possible. Significant doubts remain even about basic matters such as the ability to measure accurately deforestation rates, to say nothing of techniques for equating forest and fossil carbon. As Jutta Kill of the Forests and the European Union Resource Network (FERN) points out, 'Carbon in forests is always released into the atmosphere at some point, as part of a cycle, whereas the release of fossil carbon is a one-way road.'[38] Such concerns were among the reasons for the limitations placed on tree plantations as carbon 'sinks' within the CDM, and are the reason why the EU ETS currently excludes credits from land use, land use change and forestry (LULUCF).

There is also a serious risk of wide-scale corruption. Peter Younger, Interpol environment crimes specialist has warned that '[f]raud could include claiming credits for forests that do not exist or were not protected, or by land grabs. It starts with bribery or intimidation of officials, then there's threats and violence against those people. There's forged documents too… Carbon trading transcends borders. I do not see any input from any law enforcement agency in planning REDD.'[39]

Despite these warnings, REDD schemes on the negotiating table at Copenhagen are already being primed for expansion to other sectors. Under proposals dubbed REDD+ this could include soil carbon and agriculture, with the trade in REDD carbon credits eventually including biochar offsets and genetically modified crops and trees.

Ultimately, REDD has more to do with avoided responsibility than 'avoided deforestation'. The cost-benefit assumption that 'action to avoid deforestation would be relatively cheap', in the words of Sir Nicholas Stern, lies behind the drive to include REDD in a new agreement, irrespective of the social and environmental consequences.[40] For example, the co-organisers of the Copenhagen Business Summit on Climate Change suggested that avoided deforestation measures could account for up to half of the action needed to limit climate change by 2020.[41] This is a boon to power suppliers and heavy industry, which is keen to find a cheap source of offsets so that it can avoid taking action to reduce its own emissions. But these simplistic schemes to grow money on trees represent a significant setback for the complex work of protecting forests through defending the territorial and other rights of Indigenous Peoples and forest communities – who have currently and historically done the most to protect forest ecosystems.

37 WAHLI/Friends of the Earth Indonesia, Statement on REDD, December 2007, http://www.walhi.or.id/

38 Personal interview, January 2008.

39 John Vidal, 'UN's forest protection scheme at risk of organised crime, experts warn', *Guardian*, 5 October 2009.

40 Nicholas Stern et al., *Stern Review on the Economics of Climate Change,* HM Treasury, London, 2006, p.viii.

41 Oscar Reyes, 'Carbon trading and cash values on forests cannot curb carbon emissions', *Guardian*, 28 May, http://www.guardian.co.uk/environment/cif-green/2009/may/28/carbon-trading

How are CDM projects registered and credits generated?

The CDM is a project-based system. Projects can be considered separately or as aggregated projects.[42]

CDM projects must either use a previously approved **methodology** or propose a new one. There are currently (as of September 2009) 124 approved methodologies within the CDM, each of which has been approved separately by the **CDM Executive Board**.[43] These include a broad range of activities ranging from the capture of greenhouse gases, through to energy production and efficiency initiatives. With the exception of nuclear power, the CDM is officially technology-neutral. This has led to the inclusion of various new fossil fuel projects within the scheme – including huge, 'supercritical' coal-fired power stations (although 'carbon capture' is currently excluded).[44]

Each project wishing to be considered must first complete a **Project Design Document (PDD)** to show how it will produce emissions reductions that would not otherwise have happened (termed 'additionality'). It should also show that the project will not simply displace the pollution elsewhere ('leakage'). Both of these concepts require that a hypothetical 'baseline' be created – an account of the world without the project. As Lambert Schneider of Germany's Oko Institute puts it: 'If you are a good storyteller you get your project approved. If you are not a good storyteller you don't get your project through.'[45]

Since the PDD documentation is highly complex, this task tends to be carried out by specialist **'project design consultants'.** The largest of these companies is EcoSecurities, which had developed 309 of the CDM projects successfully registered by September 2009. The same company is also the largest single purchaser of CDM credits, since its interests lie mainly in trading the credits rather than in the projects themselves.

A project must then receive approval from the host country's **Designated National Authority (DNA),** which is usually the country's environment or energy ministry, before being submitted for validation.[46]

The validation process starts with the PDD being sent to a **Designated Operational Entity (DOE)** or **validator,** whose task it is to assess the project. At the start of this process, there is a 30-day period where the proposed project is open to public comment.

These comments should then inform the project validator's recommendations, but

42 An aggregated CDM project consists either of several (similar small-scale) projects that can be grouped together as one project, or of similar or varying projects that together form a programme.

43 http://cdmpipeline.org/cdm-methodologies. htm #3; accessed 13 September 2009.

44 Thus far 15 projects have sought validation under the heading 'New grid-connected fossil fuel fired power plants using a less GHG intensive technology' (ACM0013) since this methodology was approved in April 2007. http://cdmpipeline.org/publications/CDMpipeline.xls, September 2009

45 Lambert Schneider, presentation at conference on Review of the EU ETS, Brussels, 15 June 2007.

46 Several countries have implemented new national institutions to streamline the DNA approval process. One example is the Thai Greenhouse Gas Organisation established in 2007, to fast-track CDM projects after investors complained that the Office of Environmental Policy and Planning (the original DNA) was too slow, and could thus jeopardise Thailand's opportunity to ride on the CDM profit-making bandwagon.

are routinely sidetracked or left unanswered. This is not particularly surprising, since the validators are private companies which compete for the business of project developers – opening up the possibility of significant conflicts of interest.

In practice, a handful of companies and state bodies dominate the validation market – with the two largest companies, Det Norsk Veritas (DNV) and TÜV SÜD, accounting for over half of the projects submitted to date.[47] DNV was temporarily suspended between November 2008 and February 2009 for assigning staff with inadequate technical expertise to evaluate projects, for a lack of internal audits and a lack of documentation to back up its decisions.[48] In September 2009, the third largest validator, SGS UK, was also suspended by the United Nation due to similar allegations.[49]

Once the validator has assessed the project a request for registration is made. The PDD and validation report are submitted to the CDM Secretariat, an administrative body attached to the UNFCCC. They are then passed to the **UNFCCC registration and issuance** team, which reviews the project and can ask for revisions or reject it outright.

The project finally passes to the **CDM Executive Board**, which ultimately decides on whether the project will be approved. With 1,792 projects registered, but 2,605 still at a validation stage, it is clear that the present system is severely stretched. Project developers and traders talk of a 'bottleneck,' and are pressuring the UN to relax the rules.

To do so, however, misses the more fundamental reasons underlying the creation of a labyrinthine CDM bureaucracy. As Michael Wara and David Victor put it in their study of carbon offsets: 'Lacking any other source of information about individual projects and facing pressure from both developing and developed country governments, the CDM Executive Board is prone to approve projects.' They go on to explain: 'Asymmetries of information are rampant; the incentives mostly align in favor of approval.'[50]

Once a project is registered, a project must submit monitoring reports to the CDM secretariat. These are reviewed by the UNFCCC registration and issuance team, with the subsequent report sent to the CDM Executive Board for approval. Only after this process is completed can certified emission reductions (CERs) be issued – although, in practice, many will have been traded in advance on a futures market.

47 Det Norsk Veritas (31.4 per cent) and TÜV Süd (21.2 per cent), http://cdmpipeline.org/publications/CDMpipeline.xls, September 2009.

48 The toothlessness of this measure is expressed by DNV's own press release on its re-instatement – having served only three of the six months of its suspension: 'During the suspension period, validation and verification work relating to ongoing projects continued as usual. No projects could, however, be submitted to UNFCCC for registration or requested for issuance of certified emissions reductions. Due to the fact that the ongoing projects were progressing normally during the suspension period, only a limited number of projects experienced a delay in their validation and verification processes.' http://www.dnv.com/press_area/press_releases/2009/dnvscdmaccreditationreinstated.asp

49 Danny Fortson and Georgia Warrnen, 'Carbon trading market hits as UN suspends clean energy auditor', *The Sunday Times*, UK, 9 September 2009. http://business.timesonline.co.uk/tol/business/industry_sectors/natural_resources/article6832259.ece

50 Wara and Victor,*op. cit.*, *supra*, note 6, p.14.

Flooded – A. T. Biopower case study

Biomass in Thailand[51]

'Tell me which industry you can call clean; I have never seen one.'

Sunthorn Yensook, Nam Song resident

Biomass is often considered to be a renewable resource that uses waste products to generate electricity. For people who have depended on this 'waste' for either their local economy or livelihoods it is a different story. What is waste and who has the right to define it? Far too often the waste in question already has a purpose within a local economy. This case study from Thailand highlights an example of a 'waste' product, in this case rice husks, which is in fact a valuable part of an existing local economy. It shows that even small-scale biomass energy projects, which are allegedly among the better offset projects, also cause pollution and can in effect be detrimental to the lives and livelihoods of local residents.

A. T. Biopower and the CDM

In 2001, A.T. Biopower put forward a plan to build five rice husk-burning biomass power stations with the objective of bundling them together and acquiring CDM financing. The first station was built in Pichit near the fertile banks of the Nan River in north-central Thailand. The Pichit power station is a 22 megawatt capacity thermal power plant located next to the community of Sa Luang in Hor Krai sub-district in the province of Pichit, about 200 km north of Bangkok. The power station is located one kilometre from the Nan River and has a daily fuel requirement of 500 metric tonnes and a daily water requirement of approximately 2,200 cubic metres. It is fed in its entirety with rice husks. The power plant is surrounded by newly planted eucalyptus and pine trees.[52]

The power station is accredited as a biomass energy project of the CDM. The A.T. Biopower project was the first CDM project registered in Thailand, and among the first five for which baseline methodologies were approved by the CDM Executive Board.[53] It is one of 24 registered CDM projects in Thailand, with close to 100 more projects in the pipeline. The credits generated by the project are bought by Japan Mitsubishi UFJ Securities, a financial services group, and Chubu Electric, a Japanese power company which is registered in The Netherlands to minimise its corporate tax obligations. Chubu also owns a 34 per cent stake in A.T. Biopower.

What waste?

Rice husks are a by-product of rice-milling. They have been used for centuries to absorb animal droppings, mostly from chickens. The resultant product is used as an agricultural fertiliser as well as for brick manufacturing. The rice husk and manure mixture creates a healthy balance of carbon and nitrogen which releases minerals into the soil and

51 This case study research was conducted by Nantiya Tangwisutijit, Tamra Gilbertson and Ricardo Santos in November 2008.

52 http://www.atbiopower.co.th/power_plant/power_plant_e.htm

53 Anne Arquit Niederberger and Raymond Saner, 'Exploring the relationship between FDI flows and CDM potential', *Transnational Corporations*, April 2005.

builds soil content. Rice husks therefore play a vital role in local small-scale agriculture. Farmers in the region commented that they will have to replace this natural fertiliser with chemical fertilisers because demand from the power plant has driven up the price of rice husks, meaning they are no longer affordable.[54] Local chicken farms and brick factories have to go further away to source rice husks, destroying a once self-sufficient system in the region as well as causing local farmers to become dependent on fossil fuel-based fertilisers.

The A. T. Biopower project claims to be replacing power generation which would otherwise require oil, coal and natural gas. It also claims that the resulting ash by-product will be used for cement production, further reducing the environmental impact. No mention is made of existing uses for rice husks, which are presented merely as waste products. This fiction is elaborated on by the project validator, Det Norske Veritas (DNV), which claims that uncontrolled burning or dumping of rice husk, without utilising it for energy purposes, is the predominant current practice.[55] No supporting evidence is offered to back this up, and the wording is simply copied from a standardised text that DNV applies to all such projects in all countries.[56]

By assuming that the burning of rice husks is climate-neutral, talking up the 'sustainability' of the project and talking down the local environmental impacts, the project developers are able to maximise the number of free offset credits issued to A.T. Biopower. Over 100,000 CERs have been issued already, and by 2020 it is projected that over 1 million offset credits will have been generated by the project.[57] When sold on the market, these might plausibly fetch between US$ 10 and US$ 30 each, with each credit claimed to represent a metric tonne of carbon emissions.

Health and environmental risks talked down

Local residents near the Pichit plant have complained about respiratory problems and irritated skin. One local resident said, 'I feel itchy all of the time from the dust and I have to keep my doors and windows closed day and night.'[58]

Silica (SiO_2) is the main mineral component of rice husk ash (RHA) (85-90 per cent). It carries serious health risks, particularly to the respiratory system.[59] Silicosis is an irreversible lung disease which is normally found in workers at mining operations or rock quarries, but it can also be caused by inhaling

54 Personal interview with community member conducted by Nantiya Tangwisutijit and Tamra Gilbertson, 11 November 2008.

55 See 'A.T. Biopower Rice Husk Power Project in Pichit, Thailand', Validation Report, pp.10 and 27, http://cdm.unfccc.int/UserManagement/FileStorage/OUR7L1SX25WD2DXB1BHNCAGCR7PPW1

56 The 'baseline methodology' used by the project is ACM0006 (version 04) – 'Consolidated baseline methodology for grid-connected electricity generation from biomass residues'. UNFCCC CDM database. www.unfccc.int/

57 UNEP Risoe CDM/JI Pipeline Analysis and Database, http://cdmpipeline.org/

58 Personal interview with residents conducted by Nantiya Tangwisutijit and Tamra Gilbertson, 11 November 2008.

59 N. Yalçin and V. Sevinç, 'Studies on silica obtained from rice husk', Elsevier Science Ltd and Techna S.r.l. 2001. This RHA in turn contains around 85-90 per cent amorphous silica. References and further reading may be available for this article. To view references and further reading you must this article.See also www.ricehuskash.com.

RHA.[60] A few years ago certain villages in northern Thailand were dubbed 'villages of widows' because of the large number of pestle-and-mortar-making workers who died from silicosis. China reports 24,000 deaths per year due to silicosis.[61] Residents near the Pichit plant stated that 'they were offered as much ash as they wanted for free because the company does not want it'.

Increased nitrogen-based fertilisers also have adverse affects on humans and the environment. High levels of nitrates in groundwater pose significant risks to ecosystems, and can cause significant health problems in humans and fish.[62]

In addition, ammonia gas (NH_3) may be emitted following the application of inorganic fertilisers and cause emissions of the greenhouse gas nitrous oxide (N_2O). N_2O accounted for 8 per cent of greenhouse gas emissions in 2005, mostly from fertilisers. Since N_2O is held to be 296 times more potent than CO_2, it has a tremendous impact on the climate.[63] Finally, because nitrogen-based fertilisers are generally made from natural gas, their use entrenches fossil fuel dependence. Neither the emissions nor the impact of introducing a new fossil fuel dependence on local farmers are discussed in the offset project documentation.

Villagers complained of noise pollution when the power station was being built. In addition, the station was so loud in the first month of operation that residents living opposite it complained of having to shout to make themselves heard. Instead of slowing operations or modifying the engine, the company responded by offering the villagers ear plugs. Each time the villagers have complained about the station, the standard response has been to offer them gifts to stay quiet.

Local resistance in Nam Song

Nam Song is a river-dependent community in Phayuha Khiri district, in Nakhon Sawan province, Thailand. It is located on the fertile flood plain of the Chao Phraya River, just downstream from where two tributaries merge at Nakhon Sawan (Heavenly City) and 50 km from the A. T. Biopower plant in Pichit. The main source of livelihood is agriculture, which relies on seasonal flooding. When the water subsides in the dry season, the fertile banks are planted with cabbage, broccoli and other seasonal vegetables. When the water is high in the rainy season, it is used to flood rice paddies, while aquaculture facilities are constructed on the river's edge. Community forests are also an important resource, providing food, building materials, medicines and high ground for livestock during seasonal flooding.

Nam Song residents learned in 2001 of A. T. Biopower's plans to build a biomass power plant on a rice field nearby. The residents decided to visit a community that was already affected by another rice-husk burning power

60 Shuchun Liu et al., 'Silicosis Caused by Rice Husk Ashes', School of Public Health, Harbin Medical University, no. 38, 1996, pp. 257-62.

61 http://www.who.int/mediacentre/factsheets/fs238/en/

62 Lynda Knobeloch, Barbara Salna, Adam Hogan, Jeffrey Postle and Henry Anderson, 'Blue Babies and Nitrate-Contaminated Well Water', *Environmental Health Perspectives*, no. 108, 7 July 2000, http://www.ehponline.org/docs/2000/108p675-678knobeloch/abstract.html; see also Roots, Nitrogen Transformations, and Ecosystem Services, http://arjournals.annualreviews.org/doi/abs/10.1146/annurev.arplant.59.032607.092932

63 Nicholas Stern et al. *Stern Review on the Economics of Climate Change,* HM Treasury, London, 2006, p. viii.

plant in Wat Sing district, Chainat province, about 40 km southwest of Nakhon Sawan, which was owned by another company. One community leader reasoned: 'The developers only told us positive sides about the factory and we are uneducated so we needed to find out about the negative sides too.' Residents of Nam Song then travelled to Wat Singh, where the local community was living with the effects of the power plant. After having spoken to the residents in Wat Singh and witnessed the impacts on the residents, the Nam Song residents made a commitment to form their own opposition.

After months of information-gathering, the Nam Song community experienced a major setback when the local sub-district administration agreed to instal the power station in Nam Song. The Thai government requires developers to have a public hearing process with residents before proceeding. At the public meeting, the local government officials and the company consultants met with the community and asked them to sign their names on a piece of paper labelled 'consultant meeting'. The consultants and local government officials added names of villagers who were not in attendance. The company showed the list of names to the local authority, stating that 88 per cent of the 528 villagers who attended the meeting agreed to the power plant being built. In the meantime, A. T. Biopower placed a deposit on the plot of land they planned to develop.

This incident provoked the villagers to send a grievance letter to the local government. Initially, they were divided over whether the power plant should be built, which caused strife in daily life as well as among family members. Eventually, they resolved to end their divisions, with the whole community signing the letter stating their objections to the meeting and to the proposed power plant. The villagers then created the Nam Song Conservation Club to co-ordinate a full-scale campaign against the project.

The Nam Song Conservation Club began gathering research with the aid of other movements and organisations. The villagers sought to show that the rice field was on a flood plain and an inappropriate power station site, and that building it so close to where they lived constituted a threat to the health of the people and the river. The campaign grew to include meetings, door-to-door organising and several rallies of over 700 people outside the provincial government headquarters.

The developers used several tactics that are typical in such situations wherein corporations make systematic attempts to disrupt the local community resistance. Members of a community in the nearby Pichit province who also faced the possibility of a new biomass power plant were sent by the company to bribe the village leaders, offering them 'compensation' to stop protesting. All of the village leaders were threatened by developers and local government, and were told their lives could be in danger if they continued the campaign. Large bribes were offered, and the villagers were repeatedly lied to in an effort to destroy their unity.

Despite the project developers investing a lot of time and energy in their attempts to persuade the Nam Song community that the project was beneficial, the community remained unconvinced. 'We do not need factories or development, we live with nature and we like the way things are,' stated

Jongkol Kerdboonma, a member of the club. Another resident stated: 'We knew the plant was bad because it involved money.' Promises were made to the community to implement a development fund and a new health fund. But the promises were met with skepticism by local leaders. 'Which doctor will tell us that we are sick from the pollution if the doctor is hired by the company?' they asked.[64]

Interestingly, the Nam Song community was never offered any electricity from the power plant, not even at a subsidised rate. Each household pays 300 baht per month to the national grid.

The Nam Song Conservation Club states three main reasons for their opposition to the rice husk burning power plant:

- 'We have lived self-sufficiently on this river for generations, so why would we want to destroy the land with pollution that would be bad for the people and the environment?'
- 'We already knew they would dump the ash in our river, and that it would pollute the river and the fish.'
- 'Rice husks are not an agricultural waste product to begin with. We use them for the chicken pens, and after they have absorbed the chicken waste we use this as a fertiliser. If the power station was built here rice husks would be too expensive to use as a fertiliser, and we would have to switch to 100 per cent synthetic fertilisers.'

The women in the village played an essential role in fundraising, organising and maintaining trust within the community. They made handicrafts and sweets to fundraise for the campaign. They sold t-shirts and sweets at meetings, which provided an opportunity to talk with others about the struggle. They canvassed an area of 10 square km and gathered 4,000 signatures for just one of the rallies at the government headquarters.

The success of the women's work was such that they too were targeted and harassed by the project developers. The developers lied to the women, telling them that the men in the village were receiving bribes from the company. The women were then further questioned about why they would want to keep supporting the men if they themselves were not receiving money as well. The women's awareness that this tactic was being used in an attempt to derail their organising confirmed to them the importance of their work for the continuing struggle.

An open and democratic organising process helped the community maintain its stamina. One resident stated: 'We made all of our decisions together at meetings, which prevented internal conflicts from arising.' The residents acknowledged that there were disagreements and tensions during the difficult phases of the struggle. 'We would scrutinise each other, even watch each other and everyone was very tense.' However, the community continued to organise, reach out for support, and demonstrate. They received solidarity and support from other commu-

64 The A. T. Biopower website claims that the company will establish '(1) Environmental Impact Protection Guarantee Fund which will pay compensation for the damages the power plant has caused to the environment of the community such as excessively over-standard smog emitted from the plant's smokestack; (2) Community Development and Environment Fund which will support and develop the education, heath care, occupation for a better standard of living of people in community', http://www.atbiopower.co.th/power_plant/power_plant_e

nity movements, NGOs and the Assembly of the Poor, a large umbrella grassroots movement involving tens of thousands of Thai villagers who are affected by unjust policies and development. The Nam Song residents said they 'learned a lot from each others' struggles' and maintained their unity so that no one accepted the bribes or backed down from the threats.

After six years of struggle, and with the help of several outside solidarity organisations, they were able to approach the National Human Rights Commission (NHRC) to request an official investigation. In 2007, the NHRC recommended that the power plant should not be built on the grounds that it was inappropriate to build on the flood plain, and that it would violate human rights by polluting the river and damaging the villagers' livelihoods.

This intervention would not have happened without the villagers' long struggle, as Nam Song resident Soontan Yentosuk, concluded: 'We cannot rely on any laws to protect us, which are no better than a piece of paper, so we had better protect ourselves.'

Blown away – Wind energy projects in Satara, Maharashtra[65]

It is often argued that renewable energy projects within the CDM are inherently 'good' projects designed to reduce emissions and promote local sustainability. Yet renewable energy ventures are not fundamentally different in nature from other CDM projects. They often contribute to land grabs and exacerbate local conflicts and pollution, while continuing to benefit the dirty industries that buy pollution credits from them.

The following case studies conducted in the Satara and Supa districts of Maharashra on the Sahyadri Valleys, Western Ghat, India serve as a warning of how not to proceed with renewable energy. There are many ways to build truly sustainable, small-scale, renewable energy. However, if projects are embedded within an institutionalised development framework they tend to inhibit rather than advance a future of truly 'sustainable' renewable energy.

CDM finance for the wind

Since 2007, CDM wind power projects in India have more than tripled, with over 80 projects registered to date. In fact, wind is the largest single CDM project type in India, with over 300 project applications in the pipeline as of September 2009.[66]

Projects vying for CDM status are obliged to prove that they provide social, economic, environmental and technological wellbeing for local communities, yet the projects described below grossly violate these criteria. In addition, there are severe environmental impacts created by the infrastructure needed for the wind energy generators (WEGs), as well as from the sheer concentration of wind turbines in a small area. Size, scale and decision-making power are matters that have not been addressed.

65 This case study research was conducted by Nishant Nandi and Soumitra Ghosh of the National Forum of Forest People and Forest Workers, India, and Tamra Gilbertson from CTW/TNI. Sections of it were published in *Mausam*, no. 1, July-August 2008.

66 UNEP Risoe CDM/JI Pipeline Analysis and Database, http://cdmpipeline.org/, based on data from February 2007 and September 2009.

Wind power has been developed rapidly over the last 10 years in the state of Maharashtra, India. In 1996, the Maharashtra Energy Development Agency (MEDA) initiated a demonstration wind power project with Suzlon Energy Ltd. which acquired huge tracts of land in the Satara region with the purpose of building up wind power infrastructure and selling the power plants along with the land to other companies at a minimum price of Rs 50 million (around €765,000) each. Today the Satara region has more than 1,000 WEGs owned by MEDA, Suzlon, Bajaj Auto, Tata Motors and others on an area of about 40 km squared.

Cheap land and infrastructure coupled with bulk subsidies at source made the energy financing easy, but the possibility of earning extra revenue through selling carbon credits benefited the projects further. Most of the projects approved for entry into the CDM already existed prior to entering the scheme, managing to pass through the Executive Board despite providing little evidence that they would not have been built anyway.[67]

MEDA is a state-run organisation that develops energy projects throughout Maharashtra. It started a 'demonstration windmill project' at Chalkewadi village, located 60 km from Satara, in 1996, initially leasing 100 acres of land from villagers for a five-year term, and later purchasing the land at 6,000 rupees (Rs 6,000) per acre (around €88). The apparent success of the project attracted private companies like Suzlon Energy Ltd, which were already one of the leading suppliers and manufacturers of wind turbines and related equipment. This project gave way to Suzlon setting up additional wind energy generators in neighbouring villages at the cost of Rs 40-60,000 per acre (€550-900), within a 20 km radius. Within only a few years, a once-forested plateau has been transformed into a barren land packed with electricity lines, roads, power stations, plastic garbage and over 1,000 WEGs.

Other investors, mainly from the automobile and energy industries, began moving into the region, purchasing the WEGs set up by Suzlon.[68] The lure of cheap infrastructure and bulk subsidies at source drew the companies to Satara, while the possibility of earning additional revenue through the sales of carbon credits acted as another strong incentive. Many companies applied for CDM registration, mainly with aggregated wind energy projects, but no new WEGs or infrastructure were set up for the CDM projects – which raises the question of 'additionality' (whether it could ever be verified that the WEGs would have been developed even if carbon financing had not been forthcoming).

The private companies operating on the site sell electricity to Maharashtra State Electricity Board (MSEB) at Rs 3.16 per unit while they consume electricity provided by MSEB at a concessional rate of Rs 1.20 per unit.[69] In 2006, Suzlon was investigated by the Indian tax authorities and found to have made false depreciation claims on wind farm equipment to evade taxes, totalling between Rs 700-1,000 crore (around US$ 200 million).

In the case of Satara, second only to Tamil Nadu in terms of installed capacity, it is es-

67 *Mausam*, vol.1, no. 1, July-August 2008.

68 The companies include Bajaj Auto, Tata, Encron, Star, GIO, Sarita Chemicals, WESTAJ RRB, Energy Micon and MTL.

69 The companies include Ellora Time Ltd., Bharat Forge, Star Gutaka, Sarita Chemical, Westaj RRB, Energy Micon, MTL.

timated that the region could produce up to 3,650 megawatts in 28 feasible sites.[70] The plant load factor (PLF) for wind turbines, or what the turbines actually produce, in India averages 20 per cent, which is low compared to global averages. But what is worse, Maharashtra's average has decreased over the years from 19 per cent in 2002-3 to a low of 11.7 per cent in 2007-8.[71]

An investigation of wind energy development in Satara by the Indian magazine *Down to Earth* found that

> ...companies have merrily installed plants, not to generate power, but to gain from tax and depreciation benefits. The business seems a closed loop – the turbine-maker makes deals with investor companies to set up plants. Nobody quite knows the cost of a windmill. The turbine-maker gains and the investor profits. Indeed, nobody seems really interested in selling power, increasing efficiency and cutting costs.[72]

This suggests that the subsidies attached to building wind farms and greenwashing the effects of owning them are more sought after by the companies than the energy produced by them.

The combination of incentives described above makes wind turbine projects in Maharashtra an extremely attractive economic proposition, which do not require carbon credits to become viable. Both the Indian government and the Maharashtra government have been providing subsidies and cheap infrastructure to dirty industries interested in promoting a 'green' image through ownership of windmills.

Perhaps more unsettling than the lack of 'additionality', or the unsavoury carbon accounting that accompanies it, is that the Satara wind energy projects are tarnished by their unethical and often illegal dealings. Most notably, local villagers were seldom paid a fair price for the land acquired, and more often than not the land was obtained through evidently fraudulent means.

Tata Group and the CDM

Tata Motors, part of the Tata Group, is the largest automobile manufacturer in India with revenues reaching US$ 7.2 billion in 2007.[73] It is perhaps most famous for its release of the Nano in 2008, the cheapest compact car in the world. Yet Tata Motors also has an atrocious record of human rights violations, most notably through land grabs.[74] Tata Group has 16 registered CDM projects, including three wind power projects. These wind projects aim to generate 836,000 tonnes of CO_2 credits by 2012.

Sahajanpur Village

Sahajanpur is located 8 km from Supa on a windy plateau. The village population is about 200 families (around 1,100 people). A landless, scheduled-caste community in Sa-

70 *Ibid.*
71 *Ibid.*
72 *Ibid.*

73 www.tata.com
74 The CPI (M)-led state government of West Bengal created a Special Economic Zone (SEZ) for Tata Motors' Nano project near Singur, which led to forced evictions of 12,000 families and resistance by the landless. After ongoing social upheaval including the rape and burning of a 16-year old landless girl who had protested in 2006, the Tata Nano factory was moved to Gujarat in 2008. http://news.webindia123.com/news/ar_showdetails.asp?id=712070812&cat=&n_date=20071207

hajanpur were surviving until recently on patches of 78 acres of government land that was also eventually obtained for wind farms.

Before setting up its wind turbines on these lands in 2001, Tata made several promises to the villagers – such as jobs, local tax payments, schools, a health clinic, and toilets in every house. The PDD states that the villagers willingly gave their lands to the project developers and that Tata Motors Ltd promised jobs to the residents.

In fact, the people initially resisted the acquisition of their lands. According to an engineer who earlier worked for Ispat, India, Tata officials picked up a few villagers in their company vehicles and brought them to a meeting in Satara. The engineer claims the Tata officials mentioned the CDM and the environment to the group, but that no one understood what they were talking about. The engineer also stated that there was a banner on the back wall that read 'Stakeholders' Meeting.'

According to local residents the wind power company hired a few other deed-holding villagers to prepare documentation for land acquisition from fellow villagers. The locals were paid Rs 20,000 per acre (€250), far below the then existing market rate. The company managed to acquire close to 900 acres of local land from about 80 per cent of the residents. Before this, villagers stated they were harvesting two good crops per year without the use of chemical fertilisers.

Residents tell of how the village leaders were 'hired' by the company to trick them into selling their lands. One resident, 65 years old, claims he was paid Rs 20,000 per acre (€250) for his three acres of land and when he complained about the price the company officials replied that they were overpaying because people in Satara were only being paid Rs 8,000 per acre.

Promising the sky

Tata promised employment in order to lure the villagers into selling their lands at below market rates, but save for a handful of security guards, no one in Sahajanpur has been employed. Without jobs or land, the prospects for the residents are dim.

The company also promised a new road, vehicles, ponds, and electricity in the temple, but the residents have received none of these benefits. Further, the *sarpanch* (head of the village council) of Sahajanpur, who was briefly employed by the company, stated that the company had not paid the Rs 56,000 tax that it owes to the Gram Panchayat (local government body). The community has considered taking the company to court.

The company did not provide even basic information about its aims. Residents were unaware of the concept of CDM and there is no evidence of their participation in the project, contrary to what was stated in the PDD. Many residents say that they were deceived into selling their lands. Now without lands or jobs and no alternative source of livelihood, many people in the region are forced to migrate in search of work.

The company has reaped significant profits from the scheme. Tata Motors sold on a proportion of these credits to EcoSecurities, the largest carbon broker in the world, which then sold half of these voluntary credits on the Chicago Climate Exchange (CCX) in September 2007 for an average price of US$

22.11 per unit, fetching over US$ 3.5 million through this one sale alone.[75]

The Tata case is only one of many in the area, however – with the village of Kadve Khurd, around 70 km from Satara, facing similar problems.

Kadve Khurd Village

Bharat Forge Ltd., owned by the Kalyani Group, is a supplier of engine and chassis components. To meet electricity demand at its plant at Pune, Bharat Forge initially planned to build a 4.2 megawatt wind energy power project near the village of Kadve Khurd. The project was registered in the CDM in 2003 for the period of 2001–2008 with a total estimated 'emissions reduction' of 60,315 tonnes of CO_2 e. The project was renewed for a six-year cycle in May 2009 to run until 2015.

The villagers of Kadve Khurd knew nothing about the wind project before Bharat Forge Ltd began erecting turbines on their lands. Local residents launched strong resistance to protect their lands, which were being forcibly acquired. A total of 30 wind turbines stand in and around the village of Kadve Khurd today, and the community is forcibly kept off the lands.

The project occupies 299 acres, largely *devottar* or temple properties and privately held farmland. The deal for these lands was struck with a village headman whose family has been traditionally holding the land on behalf of the villagers. The villagers had old colonial-era documents dating back to the 19th century but no 'official' and 'new' title to the land. Accordingly, the company did not compensate them. The local administration refused to hear the villagers' case, and in vain they sought justice from the Collector's Court in Pune. The Collector refused to stop construction of the wind turbines and annulled a motion to that effect that had been passed by a lower court. The company, with support from the police, responded by falsly accusing several of the agitating villagers of robbery and equipment theft.

In the village, people view the wind turbines as harmful junk that provides no local benefits. It supplies neither electricity nor employment, and destroyed the only common pasture of the village. In addition, the company wielded a ban on cattle grazing in the project area.

Villagers at Kadve Khurd have never heard of the Clean Development Mechanism or carbon credits.

The story of Shivram Ahare[76]

The company offered Shivram Ahare, a resident of Kadve Khurd, Rs 50,000 for his land. He refused and produced an old map which proved his rights to the land in addition to a *Sanad* (grant deed) from the period of British colonialism, a receipt for payment of agricultural tax, and the original village land documents. When all attempts at coaxing and bribery failed, the company threatened to kill Shivram, who then fled the village for two months.

75 http://www.tatamotors.com/cop/page5a.php, Ron Mahabir, 'Tata Motors Cashes in CERs on Chicago Climate Exchange (CCX)' *Asia Cleantech*, 26 September 2007, http://asiacleantech.wordpress.com/2007/09/26/tata-motors-cashes-in-cers-on-chicago-climate-exchange-ccx/

76 Interview with Nishant Mate and Tamra Gilbertson, 14 November 2006.

Shivram Ahare filed his first legal case in 2001 in Tahsil (Block) Court, which declared Shivram's documents outdated – but a higher, Sub-Divisional Court later ruled that construction on his land should stop. This was subsequently overruled on appeal – a decision which the villagers allege was subject to bribery. Shivram Ahare was then given 15 days to appeal against this last judgement to the High Court, but by that time all village records had been burnt by the company's agents.

Shivram Ahare explains the situation in his own words:

> We showed our documents to the company for our rights to the land and the company then showed us the 'deed of sale' to the land. This document was signed by someone in Pune and it is a faulty document because no one in the village ever agreed to this or signed such a thing. All of us [from the village] tried to stop the construction and the company went to the police station in Tanali. The police would not accept their complaint so they went to the Umbras police station and filed charges against us for property damage of 50,000 rupees and other materials and for stealing windmill materials.
>
> The police came at 2 am to take 15-20 of us to the police station. Most were held for three hours but they kept me for a day. The lawyer from the company went to talk to me at the police station but I refused to cooperate and the police got angry. They were going to beat me but I threatened the police and they let me go. The police said that they forgave me and let me free.
>
> Later other police officers were sent by the company to the village to threaten my life so I fled the village for two months. The company then stopped work for 14 days and hired a lawyer and made new papers. The lawyer stated that in 1981 there was a new land accord that we didn't know about. I went to the company with the documents and the company offered me 50,000 rupees for the land, but I got really suspicious and thought there was something bigger happening and then the company took me to court. I went to the lawyer and sent a notice to the company. They called me *Satura* and offered me 35 lakh rupees just to keep quiet, just to keep quiet! I refused and went to court but the company would not go to court and we are still waiting for the court decision.

Crushed – Wilmar Group case study[77]

Indonesia emits more human-originated greenhouse gases than any other country in the world except for the US and China. But most of its emissions, unlike those of the US and China, come from deforestation and the burning of peatlands cleared for the booming palm oil industry. Almost half of Indonesia's 22.5 million hectares of peatlands have already been logged and drained for palm oil.[78]

Palm oil is used for food, cosmetics and fuel, and demand for it is predicted to double by

77 Research conducted by Wiwied Widya Astuti and Mr. Kaka from Jikalahari, Sumatra, Indonesia, and Tamra Gilbertson and Oscar Reyes from CTW/TNI.

78 A. Hooijer, M. Silvius, HJM Wosten, 'Peat –CO_2, Assessment of CO_2 emissions from drained peatlands in SE Asia', Delft Hydraulics Report Q3943, 2006.

2030 and triple by 2050.[79] International players include giant corporations like Cargill, ADM-Kuok-Wilmar and Synergy Drive, which is the biggest palm oil trader in the world, exporting to Northern giants such as Cadbury's, Nestlé and Tesco.

The province of Riau covers 9 million hectares, about the size of Portugal, with 4 million hectares of peatlands storing 14.6 gigatonnes of carbon.[80] Burning all of these peatlands would release the equivalent of one year's global carbon dioxide emissions, or five years' worth of emissions from all fossil fuel power plants.[81] Riau holds a quarter of Indonesia's palm oil plantations, one-third of the concessions being sited on peat. Riau was once mostly dense forest, but half of the remaining area could soon be converted to palm plantation if government plans are realised in the next decade.[82] According to the World Bank, between 60 per cent of lowland rainforest of Kalimantan and Sumatra was destroyed between 1985 and 1997, the expansion of palm oil plantations being the main culprit.[83] Between 1995 and 2005, the amount of Indonesian land being used to grow oil palm increased by some 8.6 million acres (3.5 million hectares), more than doubling the total plantation area, according to a report by Credit Suisse, an investor in expansion.

Palm oil production has ironically sparked more fires in Riau in the course of meeting the global demand for what is being pushed as a solution to climate change, and big commodity traders have already made plans to expand biodiesel infrastructure still further in Indonesia. However, using agrofuels to substitute for even a mere 10 per cent of the worldwide demand for diesel fuel in the transport sector would require more than three-quarters of total current global soya, palm and rapeseed oil production.[84]

Back doors and secret passageways

Murini Samsam, located near Pelintung, Riau, is a subsidiary of Wilmar International Ltd, Asia's largest agribusiness group, which has a long record of human rights abuses and

79 FAO, 2006. See also 'World palm oil production', OECD Statistics, 2007. The OECD predicts a doubling of production on 2000 levels by 2015.

80 S. Ritung Wahyunto and H. Subagio, '*Peta Luas Sebaran Lahan Gambut dan Kandungan Karbon di Palau Sumatera*' (Maps of Area of Peatland Distribution and Carbon Content in Sumatera, 1990-2002), Wetlands International, Indonesia Programme & Wildlife Habitat Canada, 2003.

81 Greenpeace, 'How the Palm Oil Industry is Cooking the Planet', Amsterdam, November 2007.

82 M. Colchester et al., 'Promised land: Palm oil and land acquisition in Indonesia: Implications for local communities and Indigenous People'., Hrsg. Forest People Programme, Perkumpulan Sawit Watch, HuMA and the World Agroforestry Center,2006. Provincial governments are even more ambitious in terms of oil palm expansion, planning for an additional 20 million hectares. Nearly 80 per cent of the expansion is planned for Sumatra and Kalimantan, with most of the remainder, some 3 million hectares, in Papua, Indonesia's largest remaining region of intact rainforests. Nearly 40 per cent of the expansion in Sumatra – some 3 million hectares – is earmarked for the province of Riau.

83 D. Holmes, 'Deforestation in Indonesia: A View of the Situation in 1999', World Bank, Jakarta. Draft Report, 3 July 2000.

84 Greenpeace, *op. cit., supra*, note 82. Ten per cent of global mineral diesel used in 2005 = 60.1 million tonnes. Given that the energy content of 1 tonne of diesel is equivalent to 1.1 tonnes of vegetable oil, 66.1 million tonnes of vegetable oil would be needed to replace 60.1 million tonnes of mineral diesel. Therefore, 66.1 million tonnes of vegetable oil would be the equivalent of 76 per cent of global production of soya, palm and rapeseed oil production in 2005/6.

other social and environmental scandals.[85] Although palm oil is not specified as a renewable energy or resource within the CDM guidelines, the factories that crush the seeds to make oil can register for CDM financing under 'biomass' or 'cogeneration' methodologies. At the time of writing there are 47 registered CDM palm oil projects, with a further 55 at the validation stage and three under review.[86] Most of these projects are in Malaysia and Indonesia. As with all CDM projects, the manner in which the palm oil is grown, sourced and used as a final end product – and the related greenhouse gas emissions – is not taken into account. Crushing facilities have applied for emissions reduction credits mostly by using two methodologies. After the seeds are crushed, the fruit is converted into a viscous run-off and either dumped or held in wastewater facilities. In these cases, the factories claim to capture methane in wastewater holding ponds by covering the area with plastic and catching the gas. Another approach companies use to claim emissions reductions is through installing steam turbines in the production process and cogeneration methodology.

Murini Samsam operates a palm kernel crushing facility with the purpose of producing crude palm oil for export. The company entered the CDM market by means of a biomass energy project, which intends to generate power for the factory from palm oil solid waste.

The project was registered to start generating carbon credits in January 2006 for a 10-year period, with over 500,000 CO_2 e reductions expected by 2016.[87] Murini Samsam would therefore expect to fetch around US$ 8 million for installing a 9.7 megawatt boiler and condensing steam turbine, which uses palm kernel shells and palm kernel fibre left over from the crushing process.[88]

The PDD uses a lot of language to present a green face for the project. 'The construction of a new boiler and condensing steam turbine running on biomass for the production of electricity for the processes of MSS has [made] a significant contribution to the sustainable development of the company.'[89]

85 In the summer of 2007, the Wilmar Group formed a US$ 4.3 billion merger with Archer Daniel Midland Asia Pacific (ADM) and its subsidiaries to become Asia's leading agribusiness group and the largest palm oil biodiesel manufacturer in the world. See Press Release, 'Wilmar secures all approvals for US$4.3 Billion Merger and Acquisitions', Wilmar Group, Singapore, 22 June 2007. The company has a chequered history, however, which includes alleged human rights abuses, dodgy land acquisition deals and biodiversity scandals. In September 2009, the International Finance Corporation (IFC), the private finance arm of the World Bank Group, was forced to admit that it violated its own standards by investing in the Wilmar Group and froze new investments in oil palm projects. The IFC announced on 28 August 2009 that it was currently suspending all investments into large-scale palm oil operations. This follows a formal complaint to the IFC lodged by a number of environmental NGOs in August 2007, which stated that the Wilmar Group were illegally using fire to clear primary forests and high conservation value areas, in addition to seizing Indigenous Peoples' land without free, prior, and informed consent. Perkumpulan Sawit Watch, Lembaga Gemawan, Kontak Rakyat Borneo (Indonesia), The Forest Peoples Programme (UK), Friends of the Earth (Netherlands), with 18 other concerned NGOs and local organisations. See Forest Peoples Programme, http://www.forestpeoples.org/documents/ifi_igo/ifc_wilmar_update.shtml. See also World Bank Correspondence, http://www.ifc.org/ifcext/agribusiness.nsf/AttachmentsByTitle/Colchester_et_al_August_28_2009.pdf/$FILE/Colchester_et_al_August_28_2009.pdf

86 UNEP Risoe CDM/JI Pipeline Analysis and Database, http://cdmpipeline.org/ September 2009.

87 As of September 2009, the project was still subject to a delay in issuing the first credits.

88 Project Design Document, Small-scale CDM Project: MSS Biomass 9.7 MWe Condensing Steam Turbine, Version 1.2; 25 April 2006

89 *Ibid.*

But nowhere does the company address the greater environmental or social impacts of the palm oil plantations.

A win-lose scenario

The Murini Samsam factory is located about 4 km from Balai Raja, a wildlife conservation area widely known as a reserve protecting the few remaining elephants in the region. Local residents state that when the palm oil industry expanded there were increased incidences of conflicts in the region because the local people and animals were increasingly crowded out. It is estimated that 90 per cent of the original forest inside Balai Raja has been destroyed as a direct result of palm oil expansion.[90] Local communities plant palm oil because their lands have been taken through government concessions given to the companies; yet it is they who are blamed for illegal logging and palm oil expansion. The real drivers of deforestation are rewarded with land concessions and big money.

In Riau, 70 per cent of the land belongs to the plantation industry and 23 per cent is allocated as protected forest. Communities are squeezed between the palm oil industry and government-led land conservation efforts. According to a local researcher, communities often choose to struggle against the government since otherwise 'they will have a war with the companies, the companies will attack the communities, and there will be many human rights violations. The villagers use the wildlife conservation area to survive and as a result get into conflict with the government instead.'[91]

90 Interview with members of Jakalihari with Tamra Gilbertson and Oscar Reyes, December 2007.

91 Filmed interview with researcher from Kabit Riau, with Tamra Gilbertson, December 2007.

Palm oil plantations create major social problems, such as poor working conditions on the plantations and in the factories as well as land rights conflicts with the resident population.[92] Workers at the Murini Samsam factory stated that they work seven hours a day, six days a week and a half-day on the seventh. Some workers do double shifts. Workers are paid 800,000–1,000,000 Rupiahs (US$ 80–100) per month. They stated that they have had many conflicts with the company but were not organised enough and were forced to stop. They also reported frequent accidents such as burns. In one case a worker lost his arm.[93]

Agrofuels in the CDM

Biodiesel is listed as a sub-type category under biomass methodology within the CDM framework but to date no projects have been registered. At the time of writing, three projects have been withdrawn and four are at the validation stage.[94]

Another home for agrofuel projects is the transport sector. There is currently one project that receives CDM funding by powering public transport with used vegetable oil and several more projects are at validation stages.[95] As with all methodologies in the CDM, when one delinquent project methodology is set in motion it paves the way for others to follow. In mid-October 2009 new biodiesel methodology (ACM0017) passed through the CDM executive board. This dangerous inclusion

92 M. Colchester et al., *op. cit.*, *supra*, note 83.

93 Personal interviews with workers at the Murini Samsam factory, Dec. 2007.

94 UNEP Risoe CDM/JI Pipeline Analysis and Database, http://cdmpipeline.org/

95 *Ibid.*

paves the way for agrofuels from seeds to qualify for CDM credits. Eligible fuels, the technical document states, are 'waste oil/fat and vegetable oil that is produced with oil seed from plants that are cultivated on dedicated plantations established on lands that are degraded or degrading at the start of the project activity'.[96] How degraded lands are defined remains open to debate.

It is unknown if the palm oil factories that currently receive CDM financing specifically produce agrofuels to be burned in the North because public records of the palm oil supply do not differentiate specific uses – whether the oil is used for food, cosmetics, or fuel.

What is clear, however, is that the CDM is designed to look only at a snapshot within a moving picture and assesses reductions based on this dissected reality. The marginal 'emissions savings' generated by such projects obscure the far larger destructive picture.

Burned – Plantar SA case study[97]

Introduction

Plantar SA is a pig-iron and plantation company whose CDM project in the state of Minas Gerais, Brazil, was one of the first to be supported by the World Bank Prototype Carbon Fund (PCF), which anticipated the purchase of over 1.5 million CERs (around US$ 25 million, assuming credits are sold at US$ 15) in 'emissions reductions' by 2012.[98]

Plantar and the World Bank promoted the project as a model operation that would plant trees, enhance workers' safety and foster environmental education projects for children. As documented in *Carbon Trading: a critical conversation on climate change, privatisation and power*, however, the company's activities in the area of the project have 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* savannah biome, threatened the health of local people, and exploited labour under appalling conditions.[99] The proposed carbon-saving project helps sustain the environmentally-damaging model of monoculture plantations and iron production that is responsible for this, while doing nothing to improve the climate.

The original project proposal, submitted as a forestry offset, was rejected by the CDM Executive Board. At first, Plantar claimed that there would be an 'accelerated reduction in the plantation forestry base in the state of Minas Gerais'. It presented its plantations as forests but admitted that once it had cut down the trees and burnt them to make pig iron it would not replant them unless carbon finance was forthcoming. When

96 http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html

97 Research was conducted by Marcelo Calazans of FASE, Brazil, and Tamra Gilbertson of CTW/TNI.

98 World Bank, 'Brazil: Plantar Sequestration and Biomass Use', http://wbcarbonfinance.org/Router.cfm?Page=PCF&FID=9707&ItemID=9707&ft=Projects&ProjID=9600. This was part of a larger scheme to generate carbon credits equivalent to 13 million tonnes of carbon emissions reductions, many of which would be sold on the 'voluntary' carbon market.

99 Larry Lohmann, 'Carbon Trading, a critical conversation on climate change, privatisation and power' (*Development Dialogue*, no 48). Dag Hammerskold Foundation. Uppsala, 2006.

reminded that CDM rules do not allow credit to be provided for 'avoided deforestation', the company rewrote its design documents to emphasise other justifications. The second attempt claimed that Plantar was preventing an otherwise necessary switch in the fuels for its pig iron operations from eucalyptus charcoal to more carbon-intensive coal or coke.

In other words, the company claimed that carbon credits for its 23,100 hectare project were the only thing that could 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, and provides management services for more than 590,000 hectares of plantations for itself and other companies in Brazil.

The repeated rejection of this project should have led to it being scrapped, as some 143 local groups and individuals argued 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.'

But that was not the end of the matter, and the project was instead repackaged and resubmitted to the CDM in its component parts, which included a project to reduce methane in the tree-burning process, a revised reforestation project and a further project linked to the reforestation project, which claims to introduce a new iron ore reduction system in pig-iron processing.

In 2007, Plantar first managed to gain access to the CDM for its methane reduction project, which it expects to generate 112,689 CERs over a seven-year time span from 2004 to 2011. This involves nothing more complex than regulating the temperature of its ovens, and ensuring that they are adequately ventilated – a process that is dressed up in technical jargon with reference to a study conducted at a local university.[100]

At the time of writing, the resubmitted reforestation project is still in the CDM pipeline at validation stage. It now promises 'dedicated plantations' grown for the production of charcoal that is referred to, euphemistically, as 'renewable biomass'.[101] The company claims that the original rejection was not due to flaws in the project itself, but was rejected because CDM regulations on land use, land-use change and forestry were not finalised at the time it was originally submitted. On this basis, it attempts to backdate the claim for carbon credits to 2000 – although the fact that the activities described in the project have already been underway for nine years is *prima facie* evidence that there is nothing 'additional' about it.

100 http://cdm.unfccc.int/Projects/DB/DNV-CUK1175235824.92/view

101 'PDD: Reforestation as Renewable Source of Wood Supplies for Industrial Use in Brazil', 4 March 2008, http://www.netinform.net/KE/files/pdf/PDD_AR_Plantar.pdf

The methodology of the second project, 'Use of Charcoal from Planted Renewable Biomass in the Iron Ore Reduction Process through the Establishment of a New Iron Ore Reduction System', was accepted by the UN Methodology Panel in mid-July 2009. Plantar argues that a new CDM methodology should be created relating to what it describes as an innovative method for reducing CO_2 emissions from blast furnaces. In fact, the project is wracked with discrepancies. For example, the Project Design Document admits that multiple sources will be used for the supposedly 'sustainable' charcoal, but no environmental assessment has been made of the plantations that would be used in addition to those of Plantar itself.[102]

Plantar anticipates that the reforestation project would reduce over 3 million tonnes of CO_2 over its 30-year time span, which could fetch the company around US$ 45 million from its buyer, the Netherlands CDM Facility, a Dutch government scheme managed by the World Bank. The iron ore reduction project aims to generate 2,133,551 CERs (around US$ 30 million) over a seven-year time frame.

Planting trees with sole objective of burning trees

Plantar promotes its charcoal operations as 'carbon-neutral'.[103] Yet this entire concept is flawed, based as it is on the idea that putting carbon dioxide into the atmosphere from fossil fuel combustion can be neutralised quickly and safely, and also glossing over the broader social and environmental impacts of monoculture plantations.

Plantar does not plant native species in sustainable forests. The company plants one species of non-native tree in an industrial plantation model for the sole purpose of burning them, thus releasing CO_2 and other pollutants.

The trees are burned in small ovens to make charcoal that is then used for the company's pig iron operations, yet a considerable amount of destruction was required to clear a path for this industry. Forests and pastures were destroyed to make way for the eucalyptus plantations, in the process releasing CO_2 locked in by the soil. Iron ore mining is then a requirement to produce the inputs for the pig iron operations, and at the other end of the process lie further pollutants from the iron factories. More broadly, still, the project contributes emissions from burning trees, as well as feeding a production chain that encompasses iron ore mining, iron smelting, shipping and so on.

Plantar claims that its industrial eucalyptus plantations absorb carbon, but the trees have a seven-year life cycle and there is no evidence to suggest that such a short, rapid-growth life cycle could contribute to 'neutralising' carbon in the first place. In fact, research shows that plantations do not even begin to balance the CO_2 lost from vegetation clearance and soil disruption until after

102 The PDD reads: 'Within the Plantar Projects an additional area of approximately the same size of the one within the proposed A/R activity is planted in response to the CDM, in order to ensure the supply of renewable charcoal for the integrated project's iron production'. https://cdm.unfccc.int/UserManagement/FileStorage/FJZUI99VFCYK55BIM0FQ9X51SOB6S3,

103 http://www.plantar.com.br/portal/page?_pageid=73,91138&_dad=portal&_schema=PORTAL

ten years of growth.[104] It stands to reason, then, that the plantations release more CO_2 than they could possibly absorb. Other research shows that only intact old-growth forests can lock in CO_2 while planted 'forests' must stand for decades to generate the same effects.[105]

Handing out repression as usual

The claims that Plantar makes about its social programmes are equally flawed, and serve as little more than an attempt to obscure the destructive role of large-scale industrial plantations, which have caused significant upheavals and exacerbated conflicts over land distribution.

The award-winning film *The Carbon Connection* documented how a local community was exploited by Plantar for the 12,540 hectares needed for its World Bank Prototype Carbon Fund project.[106] At the time of filming, members of the community came together to speak out against the company and the impacts the plantations were having on their lives. Four years on, all participants have either had their lives threatened or have seen the company offer jobs to family members to keep them quiet. Today they are under such severe pressure that any communication is dangerous.[107]

Certain communities came together to organise against Plantar's atrocious practices but were silenced by a consistent pattern of manipulation and intimidation by the company. Usually it starts out by offering a family member a job to create tension and division. If this does not work it takes more drastic measures, including phone calls which threaten that 'accidents' could occur, more pointed threats on people's lives, or even death threats aimed at other family members.[108]

The Aracruz connection

Recent developments suggest that worse may be yet to come. Plantar SA has now formed a joint project with Erling Lorentzen, founder of the pulp mill giant Aracruz Celulose, with the intention of further investments in the pig-iron industry supported by carbon credits.

Aracruz Celulose is listed on the Chicago Climate Exchange (CCX) as a forest product company selling voluntary offsets credits. Aracruz joined the Chicago Climate Exchange (CCX) in 2005 and began to sell credits from a voluntary offset project which assumed emission reductions of 1 per cent in 2003, 2 per cent in 2004, 3 per cent in 2005 and 4 per cent in 2006, compared to a baseline established by the company. Aracruz itself estimated that these offsets may generated revenues of up to US$ 2.5 million.[109]

Under Lorentzen's guidance, Aracruz grew to become one of the most controversial pulp companies in the world. Its plantations – many of which are planted on land belonging to the Tupinikim and Guarani In-

104 CarboEurope, research from 2002, http://www.carboeurope.org/

105 Fred Pearce, 'Tree farms won't halt climate change', *New Scientist*, 28 October 2002.

106 The Carbon Connection Documentary, free stream at www.carbontradewatch.org, 2007.

107 Personal interview with residents conducted by Tamra Gilbertson, Minas Gerais, 2005.

108 Personal interview with residents conducted by Tamra Gilbertson, Minas Gerais, 2006.

109 Estimates based on Aracruz Celulose 2007 Annual Report selling at US$ 15 per tCO2e.

digenous Peoples, and traditional African-Brazilian Quilombola communities, have led to the eviction of thousands of families, as well as seriously restricting access to water, food and land. The company has been responsible for destroying thousands of hectares of the unique Mata Atlântica forest, while its activities have also been documented as diverting rivers, and drying up streams and watercourses.[110]

In 2008, Aracruz Celulose was hit by a major scandal involving undisclosed currency derivative contracts, causing the value of the company to plummet and resulting in a lawsuit from shareholders claiming a violation of US federal securities law. In the fallout from these losses, the Lorentzen family sold its 28 per cent stake in the company to Votorantim Celulose, in a deal bankrolled to the tune of US$ 1 billion by the Brazilian National Development Bank (BNDES).

With this apparent Brazilian government bailout of Aracruz, Lorentzen is leaving the pulp and paper industry and moving to new pastures. The Plantar family and Lorentzen have struck a deal to develop more lands in Minas Gerais. Lorentzen stated in an enthusiastic interview about venturing into 'green' charcoal: 'I have bought areas in Minas Gerais with the plan to produce charcoal for the pig-iron industry. The lands are in the west of Minas, near Diamantina.'[111]

Climate, fire and resistance

There is a glimmer of hope in the north of Espírito Santo where Quilombola communities have set fire to eucalyptus plantations as an act of resistance and a final desperate attempt to reclaim lands from Aracruz Celulose and Plantar SA. In the region, Plantar is in charge of ground operations including, planting, fertilising and all field maintenance, while Aracruz manages felling operations and land claims.

A cloud of smoke covered a solid area of eucalyptus trees in the extreme north of Espírito Santo from 11-13 March 2009. In the world of industrial tree plantations, the Quilombolas of the Sapê do Norte are viewed as criminals, responsible for imbalance of the forest and of the climate. However, this is not where the story begins.

The Sapê do Norte are a group of Quilombos, forest communities which are descendants of slaves who revolted against the Portuguese, in the region of São Mateus and Conceição da Barra. Today there are 39 rural communities, of which 25 hold certificates to their lands through the official Citizenship in Territories Programme 2008 and/or the Palmares Cultural Foundation. The regional development model, started up in the 1970s by the dictatorship of the time, is based on large-scale, quick-growing eucalyptus monoculture, causing serious environmental, cultural, economic and social problems. Changes were abrupt, starting with the destruction of the native Atlantic Forest, followed by the disappearance of rivers and streams, the expulsion of families, their houses and lands and a massive migration to the urban peripheries.

110 For more on Aracruse Celulose, see http://www.wrm.org.uy/bulletin/106/Brasil.html and http://www.foei.org/en/publications/pdfs/briefing-paper-for-the-peoples-tribunal-on-human

111 Vera Saavedra Durão, 'Lorentzen mantem empreendedorismo que criou a Aracruz', *Valor,* 16 March 2009.

In the 1970s, there were 12,000 rural Quilombolas inhabiting the region. Today, the Quilombola Commission of Sapê do Norte calculates that there are only 1,200 families still residing in the region (around 6,000 people). In the region of Sao Mateus there are more than 50,000 hectares of eucalyptus planted and in Conception do Barra over 70 per cent of the municipal territory is covered by cane and eucalyptus plantations.[112] Local communities say that 10 former streams, lakes and rivers no longer exist and that fauna and flora which guaranteed the food security of the people for more than two centuries have been wiped out. According to the Environmental, Cultural, Social, and Economic Rights Violation Report, land, water, work and food are the principal rights being violated by the expansion of eucalyptus monoculture.[113]

In 2006, the Department of Social Development produced a nutritional survey of Quilombola communities throughout Brazil. Food and nutritional insecurity was reported to be so grave that the proportion of malnourished Quilombola children aged 0 to 5 years was 76.1 per cent higher than that of the Brazilian population as a whole and 44.6 per cent higher than that of the general rural population.[114] These statistics were found consistent with the Quilombola communities in Espírito Santo. Another indicator that illustrates the social vulnerability of the Quilombolas is the Human Development Index (HDI). The HDI for the 39 Quilombola communities in the Sapê do Norte region shows that they are disadvantaged compared to the rest of the state of ES in the areas of education, life-span and reproduction.[115]

The Quilombola leadership are meanwhile being criminalised, as shown in an increase in the number of legal charges brought against them and Quilombola associations. Some 82 Quilombolas have been prosecuted since 2003, mostly near Conception do Barra, for gaining access to eucalyptus and to the little native forest that still remains. The communities have rights to demand access to their land and water resources, which in many cases are essential to cultural traditions, based on Convention 169 of the ILO and the Brazilian Constitution.[116]

A semi-arid tropical 'rainforest'

In 2008, more than seven months passed without rain. Local residents blame eucalyptus monoculture, which they say has radically altered local climate. Plantar manages the plantation in the region and performs the 'dirty work' for Aracruz Cellulose, applying weedkillers, fungicides and insecticides managing all general field maintenance and planting. With the dry period prolonged and compounded by the financial crisis, in late 2008 Plantar suspended replanting and sacked more than 500 subcontracted workers. The climate crisis deeply affects the

112 'Relatório de Violações de Direitos Econômicos, Sociais, Culturais, Ambientais', report from FASE/Rede Deserto Verde, 2003.

113 Report DESCA/2003.

114 'Diagnóstico da Segurança Alimentar Quilombola do Sapê do Norte/ES', report from FASE/Comissão Quilombola/Fórum Nacional de Segurança alimentar e nutricional, 2008.

115 'Saúde das populações quilombolas no ES: Vulnerabilidade e direitos humanos', *Psicologia Social*, ABRAPSO, 2008.

116 Artigo 68 and decrees 4886, 4887 of 2003, The Specific Education Convention 169 of the OIT and Brazilian Constitution.

subsistence agriculture of the Quilombolas but also has an effect on local jobs and business productivity.

Aided by the private security forces of Aracruz Cellulose, the corporations sought to stop the gathering of *facho* (branches and sections of the trees left over in the fields after industrial felling) by the communities. The *facho* is burned by the Quilombolas to make charcoal, which is an alternative source of income and creates a shadow economy for the survival of around 1,000 Quilombolas in Sapê do Norte. This brutal act of repression pushed Quilombolas over the edge. Without forest, work, land, water or charcoal, the communities began setting fire to the eucalyptus surrounding them. Over 100,000 hectares in the region were consumed by fire. Private police brigades were sent to quell the resistance. Ironically, the company has massive investments in private police forces, so may have made money out of the event. As the region heats up and becomes semi-arid, Aracruz has also invested in genetically modified fire-resistant eucalyptus trees better adapted to long periods of drought.

The Quilombolas of Sapê do Norte are gravely affected by desertification in the extreme north of Espírito Santo and fight for their territory by reconverting monoculture into diverse Atlantic Forest and agro-ecological zones as an important instrument of productive resistance. For example, agro-ecology, mobilises women, young people and the elderly in beneficial activities seldom valued or even mentioned in the United Nation's COPs nor in the big forums and official events that regulate the climate regime. While Quilombola communities build climate justice with their own hands, official climate change policy instruments award carbon credits to firms such as Plantar and Aracruz Cellulose, whose activities worsen climate change, depleting water resources, contaminating rivers, laying off workers, increasing air pollution and threatening local communities. Plantar SA continues to devastate communities and the environment while taking moral cover behind the skirts of the World Bank and the UNFCCC.

Conclusion

Carbon offset projects tend to follow prepackaged designs that do not deal with the real complexities and intricacies of communities and livelihoods. They use up enormous resources in terms of land, water and the time and energy of the residents.

All of the communities in the case studies above suffered from bribes, threats and even jail time, as so often happens in the course of infrastructure projects conducted in the name of 'development'. In many of the cases, however, a strong and concerted campaign of local organising was able to resist the advances of the company – benefiting too from solidarity with other local organisations.

The stories told by consultants may be convincing to outsiders, but are not convincing narratives for many local residents. The CDM only looks at one cog and misses the other moving parts. By perpetuating a system that promotes a structure that ignores local needs, the CDM obstructs the vital social change that is so fundamental to the future of the planet.

The legacy of such development projects is that they pit communities against each other and encourage divisions within single communities as well. When encountering local protest, the common response of the developers and companies has been to resort to a range of bullying tactics – including threats, lies and bribery. For example, what was deemed a human rights violation in Nam Song was ignored in Pichit only 50 km away.

The experience of the communities highlighted in the case studies however, shows that local resistance can be effective when there is a strong basis for unity. An open decision-making process and the central involvement of women in the campaigns were important contributing factors.

5 » Ways forward

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

Steve Rayner and Gwyn Prins[1]

Carbon trading has failed to tackle climate change and will continue to do so. The problems identified in this booklet do not simply relate to the specifics of how the rules of the system were designed, or to teething problems in its implementation, but are fundamental to the whole scheme itself.

Can carbon trading be fixed?

One of the most common responses – at least in Northern countries – to the clear evidence that carbon trading is not working is to suggest fixes that would 'improve' the workings of the system: changing rules on the 'banking' of permits; introducing price floors and ceilings to control volatility; expanding global carbon markets to 'increase liquidity'; and so on.

What these proposals have in common is an implicit assumption that carbon trading fails because the rules have been designed inadequately or have been badly applied. Although instances of such failings certainly exist, they bring us no closer to understanding why the system has misfired so spectacularly. Why have many corporations and states pushed for the inclusion of large volumes of offsets in carbon trade markets, for example? We have argued that this push has to do with a complex interaction of state and corporate power, where those with the loudest voices in the process push for offsetting as a means to escape their responsibility to change industrial practices and the means of power production domestically. In chapter 3, we saw how public decision-making on carbon trading is driven by 'competitiveness' rather than environmental concerns. In chapter 4, we further saw how offsetting is embedded in a development paradigm that disregards existing sustainable practices and community needs. Powerful economic and elite interests are at stake here, which are unlikely to be shifted by academic exercises in how to 'perfect' carbon markets, as though they existed in a power vacuum.

Ultimately, carbon trading is a means to preempt and delay the structural changes neces-

1 Steve Rayner and Gwyn Prins, 'Time to Ditch Kyoto', *Nature*, no. 449, 29 October 2007, pp. 973-75.

sary to address climate change. Instead of re-examining the fundamentals of an economic and political system that has led to climate change, carbon trading adjusts the problem of climate change to fit these structures. This wholesale re-definition can be found at every stage of the process – from cap-setting to trading, offsetting and speculation.[2]

Carbon trading first requires that action on climate change is translated into measurable units which represent 'emissions reductions'. This is the basis of government's setting a 'cap' on emissions, which is intended to specify a gradual path towards reduction. But cap-setting imagines far greater certainty than climate science, with its plethora of 'ill-understood feed-back effects', is able to deliver.[3] It translates a series of complex and overlapping developments across a broad sweep of economic sectors – from power generation to manufacturing and agriculture – to a single, linear path to which a number is accorded by policymakers for the purposes of comparison. And it deflects questions about the underlying economic model, which is premised upon the cheap exploitation of fossil fuels to bankroll continued GDP growth.

While the Kyoto Protocol, and the carbon trading schemes that have followed it, claim to offer financial incentives that would gradually de-carbonise industrialised societies and prevent massive fossil fuel dependence in less industrialised ones, the reality to date has been the opposite. 'In the real world, indicators are moving stubbornly in the wrong direction,' concludes Professor Gwyn Prins of the London School of Economics. 'The world has been *re-carbonising*, not de-carbonising. The evidence is that the Kyoto Protocol and its underlying approach have had and are having no meaningful effect whatsoever.'[4]

The trade in pollution permits compounds this problem. It aims to find the cheapest solutions for polluting industries, on the assumption that it does not matter where and how 'reductions' are made. The uncertainties in the long-term climatic effects of adopting different industrial and agricultural processes are overlooked in order to ensure that a single commodity can be constructed and exchanged, and the significant risks of 'locking in' unsustainable practices brushed aside.

Trading also displaces measures to tackle climate change from one place to another through the practice of offsetting. Despite the well-documented problems with offsetting, most of the proposals on the table in UN climate negotiations actually advocate its expansion. 'Sectoral crediting', the inclusion of new sectors in the Clean Development Mechanism (CDM), or the generation of carbon credits associated with Nationally Appropriate Mitigation Actions (NAMAs) would primarily serve to increase the vol-

2 Larry Lohmann, 'When Markets are Poison: Learning about climate policy from the financial crisis', *The Corner House Briefing*, no. 40, September 2009, http://www.thecornerhouse.org.uk/pdf/briefing/40poisonmarkets.pdf

3 Gwyn Prins et al., *How to Get Climate Policy Back on Course*, LSE/University of Oxford, 2009, pp.5-6, http://www.lse.ac.uk/collections/mackinderProgramme/pdf/ClimatePolBackonCoursePRODUCTIONFINAL060709.pdf

4 *Ibid.;* LSE, 'Research institutes publish plan to rescue climate policy from imminent failure', 7 July 2009, http://www2.lse.ac.uk/ERD/pressAndInformationOffice/newsAndEvents/archives/2009/07/climate%20poliyc.aspx

ume of carbon trading. Such proposals are not being driven by considerations of environmental integrity, but by financial interests. In carbon markets, accumulation is achieved partly by increasing the geographical scope and the number of industrial sectors and gases covered.

For the financial sector, too, the main interest in new global climate legislation also lies in scaling up carbon markets. Samuel DiPiazza, chief executive of PricewaterhouseCoopers and Chair of the World Business Council on Sustainable Development, noted in private at the World Business Summit on Climate Change in May 2009, 'I have yet to find someone who says the CDM is really working well,' yet went on to prioritise 'finding a way to create offsets'. As Tracy Wolstencroft, managing director of Goldman Sachs, told another panel at the meeting, carbon trading now encompasses 'some of the largest emerging markets in the world'.[5]

The drive to expand carbon markets is being accompanied by the development of more complex carbon products deploying a variety of derivative and hedge fund techniques.[6] These are structures similar to those that contributed to the financial crisis. Like many derivatives, the new carbon commodities are difficult or impossible to value accurately and may well lead to a new 'bubble' whose bursting would have disastrous results.[7] Even without the complexities introduced by derivatives, securitisation and the like, carbon traders do not know what they are selling; paper 'reductions' may bear little specifiable relation to the changes in industrial practice or energy production required for meaningful climate action. With rampant financial innovation added to the mix, speculation increasingly becomes an end in itself.

The whole approach distracts from effective solutions – trapping us within a framework that sees the climate problem in primarily financial terms.

Different paths

'What's your alternative?' is a question that's often asked. The question is strange in that it positions carbon trading as the standard against which other approaches should be judged. Yet in the long history of environmental protection, markets in pollution permits are a relatively new, little-tried idea which, as we saw in chapter 2, redefine the problem to fit the assumptions of neoliberal economics that are now largely discredited.

In seeking ways forward, we need to look again at the nature of the question being addressed. Carbon markets foster a trade in claimed 'emissions reductions' (many of which exist only on paper) that are cheap according to current economic assumptions. Reducing emissions in the short term by a small amount can be done without starting any of the structural changes needed in the long term.[8] Tackling climate change, by contrast, requires first and foremost a rapid phasing out of fossil fuel use.

5 Oscar Reyes, 'The Climate Business', *New Internationalist*, forthcoming December 2009.

6 Forest and European Union Resources Network, "Beginners´ Guide to Carbon Trading," forthcoming.

7 Michelle Chan, *Subprime carbon? Re-thinking the world's largest new derivatives market*, Friends of the Earth US, Washington D.C., 2009.

8 Arlen Dilsizian, 'The politics of climate change: an interview with Larry Lohmann', *Re-Public*, 26 September 2008, http://www.re-public.gr/en/?p=419

No single alternative will suffice. Current practices in a whole host of sectors, from manufacturing to industrial agriculture, need to be reviewed and reassessed There is no evidence that a complex social and economic problem of this scale can be effectively tackled by indirect economic 'incentives' of the sort offered by carbon trading.[9]

This is not simply a question of money. The knowledge systems that are currently being applied to address climate change tend to reproduce the ingrained privilege of the wealthy minority that caused climate change. Recognising and learning from existing climate solutions, by contrast, requires drawing on a multitude of locally adapted technologies and practices that do not neatly fit with the grand schemes promoted by current economic elites. As the A. T. Biopower case, among many others, has illustrated, carbon trading cannot value such practices and actively selects against them. With powerful economic interests pushing for new 'standardised multi-project baselines' to increase the volume of such projects while doing away with any check on specific local conditions, this problem could soon get even worse.[10]

9 Prins et al., *op. cit.*, *supra*, note 3; see also www.oilwatch.org

10 Council of the European Union, 'EU position for the Copenhagen Climate Conference (7-18 December 2009) – Draft Council conclusions', Brussels, 19 October 2009, p.20; International Emissions Trading Association (IETA), 'Position Paper on the Clean Development Mechanism under a Post-2012 Framework
', IETA, London, June 2009, pp.4-5, www.ieta.org/ieta/www/pages/getfile.php?docID=3298. The idea is to use common assumptions calculated in the absence of any assessment of the local situation as a starting 'baseline' for multiple CDM projects – obviating the need to assess local conditions. IETA is also seeking 'positive lists' of project types which would be pre-approved for CDM eligibility.

In planning a transition away from fossil fuels, and the unsustainable industrial and agricultural practices that they enable, a broad range of approaches hold far more promise than carbon markets. A non-exhaustive list of such proposals includes measures to:

- shift subsidies away from fossil fuels to help keep them in the ground
- re-assess energy demand and efficiency
- advance the public debate on climate change and ecological debt
- expand useful forms of conventional regulation
- institute carefully-directed programmes of public investment
- undertake legal action against climate offenders
- secure land tenure for Indigenous Peoples' and forest-dependent communities
- promote sustainable local farming and people's food sovereignty
- build alliances between communities and movements based on local needs and desires
- organise and support local action
- explore taxation as a supplementary measure

Shifting subsidies from fossil fuels to help keep them in the ground

With UN climate negotiations wrapped up in acronym-filled debates about tradable emissions reductions, discussions of direct measures to keep fossil fuels in the ground are rarely heard. Yet any strategy to tackle climate change needs to plan for a rapid transition away from how energy is produced and used. There is no precedent for achieving such a change through a carbon market – and while subsidy shifts, regulation, direct public

investment and taxation will not, in and of themselves, stimulate the necessary changes to solve the problem, they can help reverse the current commitment to fossil fuels.

Subsidies are especially important. Around US$ 300 billion per year, or 0.7 per cent of global GDP, is currently spent on energy subsidies, with the lion's share of this used to artificially lower or reduce the real price of fossil fuels like oil, coal and gas or electricity generated from such fossil fuels.[11] Yet these subsidies would have a more positive impact if they were diversified across community-led initiatives. As currently distributed, fossil fuel subsidies rarely flow to those most in need of energy – including the 1.6 billion people globally who lack access to electricity.[12]

A significant proportion of energy subsidies goes into funding infrastructure projects to ensure that fossil fuels keep flowing – such as the €8 billion that the European Investment Bank (EIB) and the European Bank for Reconstruction and Development (EBRD) are projected to pour into the Nabucco pipeline. Spending an equivalent sum on building efficiency initiatives in the Central and Eastern European states that would be supplied by the Nabucco pipeline could result in energy savings of over three times the amount of gas that is projected to be transported by the project.[13]

11 UNEP Report, 'Reforming Energy Subsidies: Opportunities to Contribute to the Climate Change Agenda', August 2008.

12 Kevin Watkins et al., *Human Development Report 2007/8: Fighting Climate Change – human solidarity in a divided world*, United Nations Development Programme/Palgrave, Basingstoke, 2007, p.43, http://hdr.undp.org/en/media/HDR_20072008_EN_Complete.pdf

13 CEE Bankwatch, 'Real energy security from energy efficiency not Nabucco says Bankwatch', 13 July 2009, http://bankwatch.org/project.shtml?apc=147578-----1&x=2190273&d=r

Shifting funds away from military expenditure

Military budgets are another critical area. The US, for example, which spends more on defence than all other nations combined, budgeted US$ 494.3 billion for defence in 2009, not including money spent on wars in Iraq and Afghanistan.[14] According to Stiglitz and Bilmes a conservative estimate of the cost to the US alone for the Iraq war is upwards of US$ 3 trillion.[15] Even if one ignores the handouts of hundreds of billions of dollars recently given to large private banks, there is clearly no lack of money that could be spent on tackling climate change.

Yet instead of moving money into climate change mitigation, government agencies are currently using the threat of climate change to bolster support for military budgets in an attempt to close off borders and finance wars, thus stimulating xenophobia towards climate refugees and adding to the anti-immigrant backlash in both the US and Fortress Europe. In 2003 the Pentagon-sponsored report, 'An Abrupt Climate Change Scenario', warned of the need to strengthen US defences against 'unwanted starving immigrants' from the Caribbean, Mexico and South America.[16]

The Pentagon-sponsored report also recommended that the Department of Defense

14 Center for Defense Information, http://www.cdi.org/research/index.cfm. Figures based on requested defence budget or projections, not actual spending.

15 Joseph Stiglitz and Linda Bilmes, *The Three Trillion Dollar War*, Allen Lane, London, 2008.

16 Peter Schwartz and Doug Randall, 'An Abrupt Climate Change Scenario and its Implications for United States National Security'. Washington, DC: Environmental Media Services, 2003. http://www.ems.org/climate/pentagon_climate_change.html#report.

(DOD) 'explore geo-engineering options that control the climate'.[17] According to researcher Betsy Hartmann, 'a far better approach would be for the military to clean up its own act. The DOD is the largest single consumer of fuel in the US, and the present war in Iraq is not only wasting lives, but millions of gallons of oil daily.'[18]

Re-assessing energy demand

Overuse of fossil fuels is closely connected with centralised, deterministic energy demand forecasts, which both consistently overestimate energy needs and, acting as self-fulfilling prophecies, tend to bring about an inflated demand. A comparative historical study led by Professor Paul Craig of the University of California found that most forecasts had overestimated US energy demand by 100 per cent.[19] Forecasts in other countries, as well as international forecasts, tend to follow the same pattern, while also underestimating the potential of efficiency savings to obviate new fossil fuel infrastructure.

The result is large, centralised energy-generating plants supported by a fossil fuel infrastructure designed for a fictional demand that is in fact far in excess of actual needs.[20] Once built, of course, such infrastructure tends to encourage further increases in industrial, commercial or export demand, while taking resources away from the development of less centralised energy. It also often fails to meet more basic needs or to encourage the development of energy sources more efficiently attuned to basic local needs. Electricity-deprived households existing in the shadow of large generating plants are a common sight in many Southern countries, many of which also boast a fossil fuel extraction infrastructure that ill-serves the needs of local people. For example, Nigeria, the world's eighth largest oil exporter, imports 76 per cent of its petroleum and 34 per cent of its kerosene, as a cost of US$ 3.6 billion. Yet in the oil-rich Niger delta region, firewood is the primary energy source for 73 per cent of the people.[21] The same principles follow for industrial renewable energy as pointed out in chapter 4 in the cases of A. T. Biopower and the wind farms in Maharashtra.

Bottom-up assessments of energy demand tend to contrast sharply with the mechanical (and usually inaccurate) projections commonly used to justify fossil fuel subsidies and investments. Such assessments suggest the merits of focusing on smaller, decentralised energy provision, rather than foreign-backed projects to foster energy exports and economic accumulation in metropolitan centres.[22]

17 Schwartz and Randall, *supra*, note 18.

18 Betsy Hartmann, 'War Talk and Climate Change', *Truthout*, November 2007. http://www.truthout.org/article/betsy-hartmann-war-talk-and-climate-change

19 Paul P. Craig, Ashok Gadgil, and Jonathan G. Koomey 'What can history teach us? A retrospective examination of long-term energy forecasts for the United States,' *Annual Review of Energy and the Environment 2002*, vol. 27, pp.83-118, http://www.lbl.gov/Science-Articles/Archive/assets/images/2002/Dec-17-2002/FinalEnergyForecasts.pdf

20 See, e.g., Chuenchom Sangarasri Greacen and Chris Greacen, 'Thailand's Electricity Reforms: Privatization of Benefits and Socialization of Costs and Risks', *Pacific Affairs* 77(3) (2004): 517-42 and Chris Graecen, 'Small is Pitiful: Micro-Hydroelectricity and the Politics of Rural Electricity Provision in Thailand'. Berkeley: Energy and Resources Group, University of California, Berkeley, 2004.

21 Greg Muttitt, 'The price of democracy', Oilwatch Resistance Bulletin, 63, 2006. Based on data from the UNDP Human Development Report 2005/2006.

22 Hendro Sangkoyo, Presentation to Durban Group for Climate Justice, Belem, Brazil, 25 January 2009.

Forest payments versus territorial rights

Another much-needed shift is to curb the subsidies and incentives for deforestation provided by national governments, export credit agencies, the World Bank and others. These include a range of lavish subsidies to pulp mills, industrial monoculture operations, funding for genetically modified (GM) tree research, mining in forested areas, commercial logging and other agencies of displacement and ecological degradation.[23] Agrofuel incentives, most notably the EU Renewable Energy Directive, which demands that 10 per cent of transport fuels come from biological sources by 2020, are exacerbating the problem.

As we showed in chapter 4, new REDD schemes look set to continue this pattern of misdirected funding and incentives – stimulating land grabs and presenting new economic opportunities for the large plantation, pulp and paper and construction companies whose activities are driving deforestation. Defending the rights of Indigenous Peoples' and forest communities is an important contribution towards measures to ensure community-based and traditional forest management, protection of forests and territorial rights.[24]

Regulation

Before the advent of pollution trading, environmental policy was largely a question of regulation. Advocates of market-based approaches often call these 'command-and-control' approaches, calling to mind Communist-style bureaucracies stomping on innovation and freedom. In fact, 'regulation' encompasses a whole range of instruments, from efficiency standards for electrical appliances and buildings to feed-in tariffs for renewables. Carbon markets themselves achieve 100 per cent of their environmental goals through government regulation in the form of cap-setting, and none through their trading elements. The claim that emissions trading is less bureaucratic, less centralised, less coercive and more supportive of innovation than other forms of regulation does not stand up to scrutiny.[25]

Nor does it follow that carbon markets are more effective at reducing pollution. In the EU, for example, the Large Combustion Plant Directive (LCPD) sets non-tradable 'emissions rate limits' on sulphur dioxide, oxides of nitrogen (NOx) and dust particles from large plants – including coal-fired power stations. It came into force in January 2008, giving plants the option to either 'opt in' and meet these limits, or 'opt out' and reduce their outputs in the subsequent period, and close entirely by 2015. This measure alone could achieve more to reduce pollution than emissions trading – were it not for the fact that the drop in emissions resulting from closing old coal plants could provide leeway for other sectors to continue polluting up to the level of the 'cap.'[26]

23 See, for example, www.wrm.org.uy and www.redd-monitor.org

24 Ricardo Carerre, *Community Forests: equity, use and conservation*, World Rainforest Movement, Montevideo, 2004.

25 David Driesen, 'Does Emissions Trading Encourage Innovation?' *Environmental Law Institute*, no. 33, 2003, pp.10094-10108, www.hm-treasury.gov.uk/d/Driesen2.pdf

26 European Union, 'Directive 2001/80/ec of the European Parliament and of the Council on the limitation of emissions of certain pollutants into the air from large combustion plants', Brussels, 23 October 2001, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2001:309:0001:0021:EN:PDF

One of the most serious shortcomings of carbon trading is its tendency to undermine existing legislation. The intersection between the Integrated Pollution Prevention and Control (IPPC) Directive, the main EU legislation to control air pollution, and the EU ETS is a case in point. The IPPC sets energy efficiency requirements and gas concentration limits on a range of installations, some of which were also covered by the EU ETS. To make the two systems compatible, the terms of the IPPC were relaxed. As the European Environment Agency explains: '[O]perators of large sources might be obliged to reduce their emissions (in order to comply with the IPPC Directive) when it could be more economically efficient to increase emissions further and buy additional allowances instead.' The result of this conflict was that the IPPC Directive was amended to exclude 'CO_2 emission limits for installations which are covered by the EU ETS'.[27]

Carbon offsets, too, have had the perverse effect of discouraging industrial regulation: climate-friendly legislation would preclude certain activities from being counted as 'additional', cutting off a potential revenue stream.

Legal action

Litigation can provide another important arena for action that does not require a trading floor.[28]

The environmental justice implications of human rights legislation are being examined, too, in various legislatures. In 2005, over 63 Inuit people launched one of the world's first legal actions on climate change, on behalf of all Inuit, contending that greenhouse gas emissions from the United States violated their human rights.[29] The action was rejected by the Inter-American Commission on Human Rights but gained worldwide attention.

In May 2009, a groundbreaking case against Royal Dutch/Shell was brought to court on charges of complicity in the 1995 execution of Ken Saro-Wiwa and eight other Ogoni environmental activists. The world's boardrooms watched the case, which was seen as a test of whether transnational companies owned or operating in the USA could be held responsible for human rights abuses committed abroad. An out-of-court settlement in June 2009 saw the company pay US$ 15.5 million in damages, but it may yet set a precedent for similar challenges.[30] In Australia, meanwhile, groups including Rising Tide and Queensland Conservation initiated a legal challenge to a proposed coal mine expansion in 2006. The country's Land and Resources Tribunal ruled against the groups, but international attention was gained for the struggle against the Xstrata Coal Queensland mine.[31] A further major case – this time involving the failure of oil giant Texaco Chevron to clean up millions of dollars' worth of toxic waste, is currently underway in Ecuador.[32]

27 European Environment Agency, *Application of the Emissions Trading Directive by EU Member States – reporting year 2007*, EEA, Copenhagen, 2008, p.27.

28 See http://www.risingtide.org.au/

29 Stephen Leahy, 'Inuit to Charge U.S. for Climate Change', Inter Press Services, 12 February 2005, http://ipsnews.net/africa/interna.asp?idnews=27451

30 Press Release, 'Settlement reached in human rights case against Royal Dutch/Shell', Center for Constitutional Rights, 8 June 2009; John Vidal, 'Shell settlement with Ogoni people stops short of full justice', *The Guardian,* 10 June 2009, http://www.guardian.co.uk/environment/cif-green/2009/jun/09/saro-wiwa-shell

31 See http://www.risingtide.org.au/

32 See http://chevrontoxico.com/

Public investment

Large-scale investment in a cleaner energy infrastructure capable of breaking industrialised societies' fossil-fuel dependence is also crucial, and, as explained above, will not be forthcoming from carbon markets. Such investment should proceed with considerable caution, however, if it is to avoid throwing money at damaging projects.

Today, private research on energy alternatives is skewed towards solutions that perpetuate climate change. One example is the blossoming global agrofuels trade, which has largely been driven by agribusiness interests (although the transport lobby is working hard, too, in order to get the emissions problem 'off its books'). Agrofuels exacerbate land conflict, driving up food prices, and increasing emissions through encouraging deforestation.[33]

Public research commitments made by governments are also weak and problematic. In the EU, for example, public and private expenditure on energy-related research and development is currently about half the level of the early 1980s, with the largest part 'spent on nuclear and fossil fuel-based technologies'.[34]

'Carbon capture and storage' (CCS) is one of the key technologies likely to benefit from such investments – with major industry lobbies, including the International Chamber of Commerce, claiming that it will require public subsidies in addition to carbon market incentives.[35] Yet in unguarded moments, even representatives of the power sector can be blunt about the shortcomings of CCS. 'One of the plants we are building is CCS ready, although to be quite frank no one really knows what that is at the moment,' stated Steve Lennon, managing director of South Africa's Eskom, at the World Business Summit on Climate Change. James Rogers, chief executive of US-based Duke Energy, added that CCS is at best 15 years off and is likely to prove unfeasibly expensive if it even works at all.[36] One of the few existing pilots, run by the Swedish company Vattenfall, burns 10 to 40 per cent more coal than existing coal-fired power stations, with significant implications for increased environmental damage and potent methane emissions from coal mines. And there remain other significant technical concerns about risks to the ecosystem and health, as well as unanswered questions about earthquakes, leakage of stored carbon back to the surface and possible infrastructure collapse.[37]

Given these failings, why has carbon capture emerged as the technology of choice

33 Tamra Gilbertson, Nina Holland, Stella Semino and Kevin Smith, 'Paving the way for agrofuels, EU policy, sustainability criteria and climate calculations', TNI Discussion Paper, September 2007, www.tni.org/pdf/Agrofuels.pdf

34 EU Commission (DG Environment), 'Towards a comprehensive climate change agreement in Copenhagen – Extensive background information and analysis, Part 2', Brussels, January 2009, pp.76-77.

35 International Chamber of Commerce, 'Challenges to the Implementation of New Technologies: the Case of Carbon Capture and Storage ', ICC, Paris, November 2007.

36 Oscar Reyes, 'Carbon trading and cash values on forests cannot curb carbon emissions', *The Guardian*, 28 May, http://www.guardian.co.uk/environment/cif-green/2009/may/28/carbon-trading

37 Shanta Barley, 'Bury the carbon, set off a quake?' New Scientist no. 2727, 23 September 2009; Greenpeace International, *False Hope: why carbon capture and storage won't save the climate*, May 2008, http://www.greenpeace.org/raw/content/international/press/reports/false-hope.pdf

for many in the energy sector? Part of the explanation lies in its providing a technological 'fix' that appears to allow for the continued burning of fossil fuels on a massive scale. Rather than changing the energy production model to prioritise renewable energy, CCS offers an easy-sounding 'end of pipe' solution aimed at cleaning up a mess rather than avoiding it in the first place.

It should be clear, then, that encouraging public incentives for new energy infrastructure cannot be a blank cheque. Public ownership means little without public control – and, under present 'governance' models, this is severely lacking. With state energy companies run as commercial enterprises, and private energy companies consolidating their market share in most industrialised nations, affording them considerable lobby influence over public investment decisions, little scope currently exists for a publicly-controlled genuine public influence in favour of a sustainable and just energy production model. For such reasons, any increase in public finances to change the energy system should be accompanied by democratisation of governance of the expenditure.

North-South financial transfers

Public investment in tackling climate change is not restricted by national borders, however. As we saw in chapter 2, the United Nations Convention on Climate Change referred to the 'common but differentiated responsibilities' that states have in tackling climate change – although the Kyoto framework turned this on its head.

The bottom line is that the Northern, industrialised countries have done most to contribute to the climate change problem, and are best placed to deal with the fallout from it. They have a wide-ranging 'debt'" which encompasses a financial responsibility for expropriating resources from the South (ranging from oil to biological resources to intellectual property), as well as a broader imperative to rapidly tackle their greenhouse gas emissions rather than outsource responsibility for them.

The CDM works directly contrary to this goal – insofar as investment in clean infrastructure is needed, it should be provided from public sources – with industrialised countries shouldering the burden of responsibility, since they predominantly caused the problem. Such funding is no guarantee of success, however, unless a decentralised structure is adopted which allows for meaningful citizens' participation and sensitivity to local contexts – allowing for the adaptation and improvement of locally-adapted industrial and agricultural techniques, and engaging in a bottom-up assessment of real energy needs.

Taxation

Taxation is another potential source of revenue for climate financing, although a number of critical reservations remain about how and when it should be implemented.

A variety of carbon tax schemes have been proposed. Far too often they are presented as a 'silver bullet' alternative to carbon trading. This is misleading, since no single price mechanism, or single mechanism of any kind, is capable of solving the problem of climate change. As a means for altering behaviour, carbon taxes have many of the

same problems as carbon trading. They rely on incremental cost changes to redirect investment, rather than tackling the way fossil fuels are 'locked in' to industrialised economies or addressing the fundamental power dynamics inherent in current production and trade patterns. Although advancing a 'polluter pays' approach, carbon taxes do little to address the root problems associated with the production of pollution itself.

One argument raised in favour of carbon taxes is that they might provide a revenue source for climate financing. Questions remain, however, as to whether creating an entity called 'carbon' in order to tax it – with the many contradictions and ambiguities that entails – is worth the effort. To begin with, proposals for new taxation may be less effective than measures to change the balance of existing taxation, which has seen a marked decrease in the levels of taxation paid by fossil-dependent corporations over the past decades.[38] Addressing other loopholes, most notably the aviation industry's continued avoidance of fuel duties on kerosene, could be a more effective means to raise revenues.

Various other means could be adopted to raise appropriate levels of taxation for the purposes of climate financing. With power companies now straddling the role of power producers and energy traders, taxes on currency and fuel commodity speculation could be an appropriate means – and potentially less 'regressive' than a number of the carbon tax proposals on the table.

Ultimately, though, the crucial issue that remains is how such revenues are distributed and controlled. At a global level, for example, the channelling of revenues through the World Bank or regional development banks – if past experience is taken as a guide – is that such funds would be channelled to unsustainable large-scale infrastructure projects.

Moving mountains

The examples of subsidy-shifting, regulation, taxation and legal action highlighted above can be useful tools for tackling climate change, if adopted cautiously and backed up by popular action. Ultimately, though, climate change remains a political question: action and organising are essential. Alternative futures cannot be designed in a boardroom or academic classroom and then placed into a rigid one-size-fits-all plan. The voices of those living alongside exploitative infrastructure projects – from plantations to factories – are among the most powerful when it comes to addressing the question, 'What is your alternative?'

In the South as well as the North, community-level or popular strategies have historically proven successful as a means to achieve social and environmental change. Often communities have taken action to protect environmental resources as strategies for survival. The legacy of this resistance holds lessons for all who aim to address climate change, and it is important that environmentalists and other activists who today promote 'climate justice' recognise this longer and broader history of community-based or popular struggles.

38 Howard Wachtel, 'The Vanishing Corporate Profits Tax', July 2004, http://www.tni.org/detail_page.phtml?page=archives_wachtel_vanishing

This broader context of struggle includes the activities of a range of groups, movements and networks:

- Actions by groups, especially IPs and forest-dwelling communities, to protect community forests and other local commons are a powerful force against climatically destabilising land clearance, commercial logging, industrial fish farming, tree plantations and industrial agriculture.
- Networks against trade liberalisation, privatisation and commodification help slow growth in unnecessary transport and protect local subsistence regimes against threats from fossil fuel-intensive sectors.
- Popular movements against fossil fuel extractions, including movements against oil wars, gas and oil pipelines, fossil fuel extraction, power plant pollution, liquefied natural gas (LNG) expansion, coal mining and mountain top removal, tar sands extraction and airport and highway expansion, all help curb extraction of fossil fuels.
- Popular movements in both North and South against fossil fuel pollution from electricity generating and other industrial installations contribute to building solidarity and stopping dangerous pollution that causes climate change.
- Initiatives to set up small, community-led renewable energy sources for local benefit, whether off-grid or on-grid, build resistance by providing more sustainable direct energy. Often they provide a cheap alternative to fossil fuel-oriented centralised generating systems particularly in many areas of the South.[39]

Insofar as these approaches defend local resilience, promote community solidarity and organisation, such strategies are crucial not only in slowing climate change but also in adapting to it.[40]

Numerous such initiatives, networks, organisations and popular movements exist today. Amongst many, Oilwatch is contesting the continued expansion of oilfields in the Niger Delta; the Alert Against the Green Desert Network is resisting eucalyptus plantation in Esprírito Santo, Brazil; the Durban Group for Climate Justice promotes continued research and solidarity work against carbon trading; La Via Campesina and its member organisations are fostering a 'food sovereignty' movement built around sustainable small-scale agriculture; Climate Justice Action is mobilising to contest 'false solutions', including carbon trading, promoted at UN climate negotiations; the Indigenous Environment Network has worked tirelessly to resist tar sands developments, and is actively opposing the adoption of REDD projects; Rising Tide North America is popularising the climate debate and taking direct action on coal mining involving mountain top removal; Gender cc is raising the profile of women climate justice's work in the climate debate. Many more struggles go without high-profile names, but continue to resist infrastructure projects

39 See www.oilwatch.org for more information on small-scale, renewable energy projects and how they can work.

40 See 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, www.thecornerhouse.org.uk; Neil Adger, 'Social Vulnerability to Climate Change and Extremes in Coastal Vietnam', *World Development*, vol. 27, no. 2, 1999, pp.249-69.

that are escalating climate change – from forest dwellers' movements in Brazil, to dispossessed populations struggling against hydroelectric dam projects from Panama to the Mekong delta, workers striking against the BP oil refinery in Grangemouth, Scotland, and communities resisting LNG expansion in Astoria (Oregon, US), Asturias (Spain) and Aliağa (Turkey). These groups often lack a voice in the international arena, but their approach already goes far beyond the default thinking of global elites.

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 organization, 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.[41]

Noam Chomsky, 2005

Until environmentalists abandon the credo that 'it's too late to stop carbon trading now', they will be forced to continue to run through a repertoire of schemes to fix the unfixable – for example, certifying 'best practice' carbon projects, or instituting new sectoral markets to streamline and simplify the trade. Frustrated complaints about officials' 'lack of political will' are often heard from more committed environmentalists who have become indoctrinated into this dynamic, yet the more they become enmeshed in roles as market verifiers, monitors and corporate consultants the less they are able to face the extent to which they have been swindled. The harder it becomes then to acknowledge that political alliances have been made in a way that has undermined local struggles and 'alternatives'.

41 Noam Chomsky interviewed by David Barsamian, *Imperial Ambitions. Conversations on the Post-9/11 World*, Metropolitan Books, New York, 2005, p.39.

To treat carbon trading as if it were an alternative on a par with the political and social actions mentioned above signals a loss of political and historical perspective. In this light, the question, 'What is your alternative to carbon trading?', needs to be turned on its head. Carbon trading itself is a novel elite 'alternative' for addressing climate change and undermines other, more fruitful mainstream strategies of movements and networks such as those mentioned above. Not only are these strategies more 'technically' realistic than carbon trading, they are more politically realistic – provided environmentalists and other activists fulfil their responsibility to help build alliances that can make them so.

There are no short cuts around the difficult work of political organising and alliance-building. There are no back roads or techno-fixes around the historical and international policies that have created climate change. No aspect of the debate on climate change can be disentangled from discussions about colonialism, racism, gender, women's rights, exploitation, land grabs, agriculture and the democratic control of technology. Carbon trading will never address these critical issues because the struggle against climate change has to be part of the larger fight for a more just, democratic and equal world.

Carbon trading lies at the centre of global climate policy and is projected to become one of the world's largest commodities markets, yet it has a disastrous track record since its adoption as part of the Kyoto Protocol. Carbon Trading: how it works and why it fails outlines the limitations of an approach to tackling climate change which redefines the problem to fit the assumptions of neoliberal economics. It demonstrates that the EU Emissions Trading Scheme, the world's largest carbon market, has consistently failed to ´cap´ emissions, while the UN's Clean Development Mechanism (CDM) routinely favours environmentally ineffective and socially unjust projects. This is illustrated with case studies of CDM projects in Brazil, Indonesia, India and Thailand.

UN climate talks in Copenhagen are discussing ways to expand the trading experiment, but the evidence suggests it should be abandoned. From subsidy shifting to regulation, there is a plethora of ways forward without carbon trading – but there are no short cuts around situated local knowledge and political organising if climate change is to be addressed in a just and fair manner.

Critical Currents is an
Occasional Paper Series
published by the
Dag Hammarskjöld Foundation.
It is also available online
at www.dhf.uu.se.

Printed copies may be obtained from
Dag Hammarskjöld Foundation,
Övre Slottsgatan 2
SE- 753 10 Uppsala, Sweden
email: secretariat@dhf.uu.se
phone: +46 (0)18-410 10 00