

# **THE ENVIRONMENT AUDIT COMMITTEE**

## **Inquiry into the International Challenge of Climate Change: UK Leadership in the G8 and EU**

### **Memorandum by The Corner House, SinksWatch and Carbon Trade Watch**

1. The Corner House is a not-for-profit research and advocacy group, focusing on environment, development and human rights. It has pursued research into climate change policy, emissions trading, and carbon trading more generally since 1998, working closely with a range of specialist and advocacy organizations in Asia, Africa, Europe, North America, Latin America and the Pacific. It has published a number of research papers and contributed to numerous UN and unofficial forums on the issue. Throughout this time, it has closely monitored the development of the Kyoto Protocol and its market-based mechanisms, the European Union Emissions Trading Scheme (EUETS), the Chicago Climate Exchange, the UK Emissions Trading Scheme, and the voluntary carbon “offset” market. In the past, The Corner House has submitted evidence or memoranda on other issues to the Trade and Industry Select Committee, the International Development Committee and the Environmental Audit Committee, as well as various UK Government departments.<sup>1</sup> SinksWatch is an initiative of the World Rainforest Movement (WRM), hosted by the WRM's Northern Support Office and implemented by FERN, a European non-governmental organization focused on forest policy. The organization tracks and scrutinizes carbon sequestration projects related to the Kyoto Protocol, and highlights their threats to forests and other ecosystems, to forest peoples, and to the climate. SinksWatch's main focus is on tree plantation sinks projects, particularly in areas where land tenure and land use rights are in dispute. It advocates addressing the links between forests and climate change in a way that honours forests as a safeguard against the impacts of extreme weather events without justifying the continued, additional and permanent release of carbon from fossil fuel burning. Carbon Trade Watch, a project of the Transnational Institute, monitors the impact of pollution trading upon environmental, social and economic justice and seeks to challenge the assumption that a liberalised marketplace is the only arena in which environmental problems can be resolved. It also pools the work of others and acts as a meeting point for researchers, campaigners and communities opposing the negative impacts of pollution trading. The aim is to create space for bottom-up solutions and alternatives. In October 2004, all three groups were among the principal organizers of a major international conference on “Carbon Trading: Consequences and Strategies” held in Durban, South Africa.

2. The Corner House, SinksWatch and Carbon Trade Watch welcome the Environmental Audit Committee's present inquiry into the feasibility of emissions trading systems as a framework for negotiating a post-Kyoto agreement. They are

grateful for the opportunity to comment on the following issues in the Committee's remit:

- Whether an international emissions trading system (ETS) is feasible, given that targets and compliance penalties would need to be rigidly enforced and bearing in mind the political pressures to which an international ETS would be subject;
- What other alternatives to an international ETS exist; and whether an ETS would be more effective than such alternatives in maximising carbon reductions worldwide and in channelling investment in low-carbon technologies into less developed countries;
- What approach and specific objectives in relation to climate change the UK Government should adopt during its presidency of the G8 and EU in 2005; and
- What contribution individual departments can make (e.g., FCO, DEFRA, HMT, DfT, and DFID), and whether they are sufficiently "joined-up" in delivering a coherent UK agenda.

3. The principal conclusions of this Memorandum are as follows:

- International emissions trading systems (ETS) as currently conceived are not feasible.
- In particular, *mixed trading systems* which treat as exchangeable (a) credits allowing the emission of carbon dioxide from fossil fuel combustion and (b) credits for carbon sequestration, "avoided emissions", "emissions reductions" or baseline-and-credit projects generally, are not verifiably climatically effective or relevant and hence are a waste of time.
- *All* trading systems that involve the allocation by the state of large quantities of free emissions rights to business are prone to a fundamental contradiction, which, again, tends to render such systems climatically ineffective. They are also unlikely to be politically sustainable due both to their blatantly inegalitarian allocation of property rights and additional inegalitarian structural tendencies.
- *Mixed trading systems* involve an additional regressive global redistribution of land, water, air, forests and other goods which also renders them politically and environmentally unsustainable.
- *Contraction and Convergence*, which involves a nominal or theoretical egalitarian pre-distribution of private property rights in the earth's carbon-cycling capacity, overcomes some of the political difficulties associated with trading systems that rely on "grandfathering" of rights. In particular, in the long term, it is likely to have more appeal to both South and North than many of its competitors in international negotiations. Unlike other trading systems, such as those associated with the Kyoto Protocol and the EUETS, it also reflects in its structure the need for effective climate action over realistic time periods.
- Insofar as Contraction and Convergence allows *mixed* trading systems, however, it would be climatically ineffective and prone to set off conflicts over land, water, air and other goods in local areas. Insofar as it appends itself to current regimes of commodity trade and national sovereignty, moreover, problems of inequity in practice need to be considered.
- Numerous more effective, more efficient, and more egalitarian alternatives exist both to emissions trading systems and to the particular types of emissions

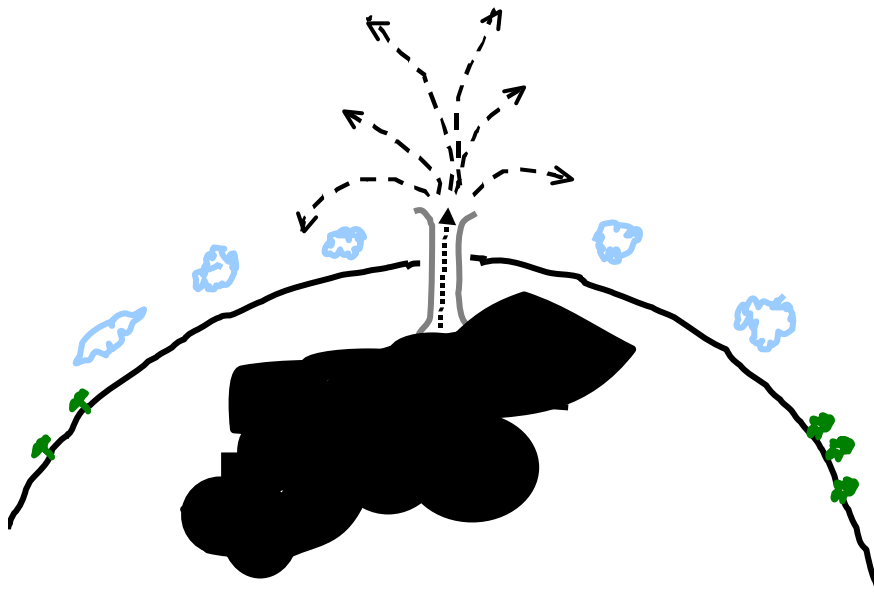
trading system currently enjoying a vogue. These include regulation, taxation, support for existing low-fossil-carbon economies, and various alternative schemes of creating and distributing property in the earth's carbon-cycling capacity that do not involve commerce and do not presuppose that the private sector already owns the world's carbon-cycling capacity.

- For these alternatives to be properly researched, explored and supported, and for the challenge of evolving new property regimes governing the earth's carbon-cycling capacity in a way which respects equality, political realism and the necessity of swift action to slow the transfer of fossil carbon to the surface, it is necessary for government to promote a public debate on the issue, halt the rush into ETS, and redirect research and development funds toward more realistic, non-market-based schemes.
- Even more important, the government must halt subsidies for continued exploration, extraction, exploitation and burning of fossil fuels, instead supporting and fostering communities' and local authorities' own attempts, many of them of long standing, to follow low-carbon ways of life; institute deeper cuts in carbon use; respect regional decisions to exclude mining or refining of fossil fuels, power production, and so forth; and support energy efficiency, renewables, non-fossil-fuelled technologies and responsible tree-planting without trading them for continued fossil fuel extraction
- Internationally, the UK can exercise leadership both in the G8 and the EU on all these scores. One simple, easy, concrete and relatively painless first step would be for the UK immediately to set out a policy of abjuring reliance on carbon credits of type (b) (see above) and on all mixed trading schemes.
- Joined-up policy by different government departments is needed, but joined up in the service of a different objective than at present. Currently, the policy of different government departments is joined up, to a greater or lesser degree, around the objective of maximizing the flow of fossil carbon from underground to above-ground biophysical systems, whether through subsidies for fossil fuels or, indirectly, through emissions trading. Government policy must be turned around so that the work of different departments is joined up around a different objective. The ending of subsidies for fossil fuel extraction and exploitation must go hand in hand with an abandonment of emissions trading, particularly mixed trading systems, and with new support for energy efficiency, renewables, and existing community-based sustainable energy systems.

## **BASIC CONCEPTS AND HISTORICAL BACKGROUND**

4. The nature of emissions trading is widely misunderstood, often even by traders themselves. Hence it is important to begin by briefly reviewing basic concepts.

5. The climate change crisis is an example of a familiar social problem -- the overflowing waste dump. For over 150 years, industrial societies have been transferring fossil carbon from underground deposits of coal, oil and gas, via the combustion chamber, to a more active and rapidly circulating carbon pool, or "dump", above ground (Fig. 1).



*Fig. 1. Transferring carbon from below- to aboveground.*

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6. This transfer is one-way. Once carbon is in the above-ground system, it will not return underground into fossil fuel or carbonate deposits for a very long (geological) time. Over time spans important to human beings, belowground and aboveground carbon belong essentially to different systems (although they are linked over geological time spans not only by formation of fossil carbon but also by such mechanisms as subduction and volcanoes).

7. The above-ground “dump” consists of many things: air, oceans, vegetation, soil, surface rock, each with different mechanisms and capacities for taking on fossil carbon (Table 1).

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TABLE 1

***ABOVE-GROUND CARBON POOLS*** (billion tonnes)

Atmosphere	720-760
Living land biomass	600-1,000
Dead land biomass	1,200
Fresh water	1-2
Oceans	38,400-40,000

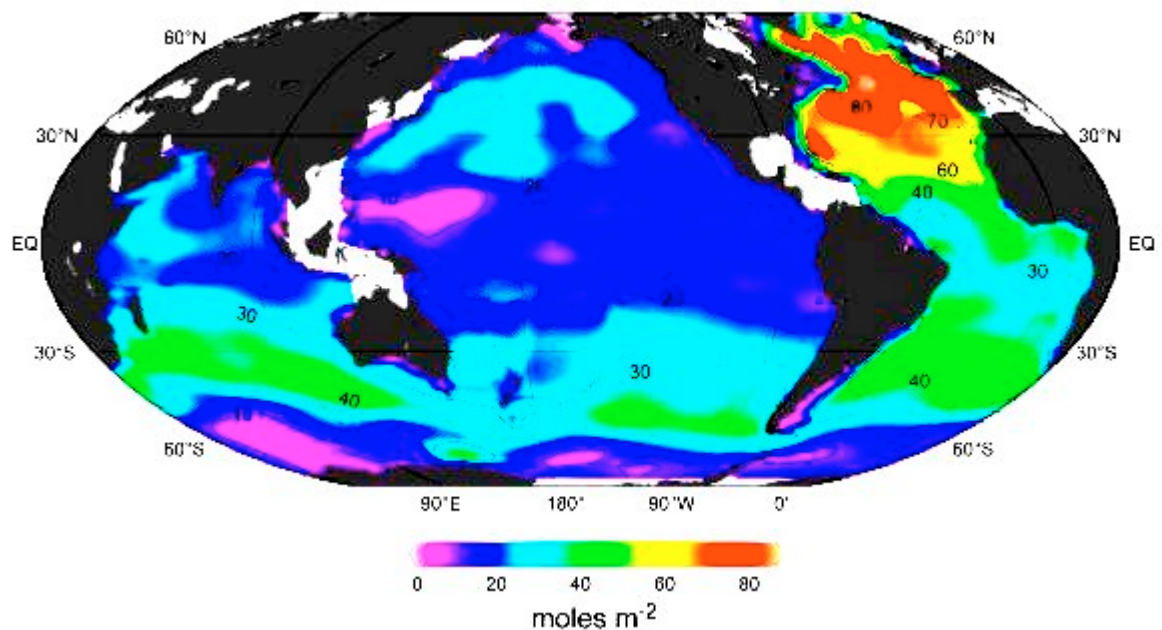


***BELOW-GROUND CARBON POOLS***

Fossil fuels	>4,130
<i>coal</i>	3,510
<i>oil</i>	230
<i>gas</i>	140
<i>other</i>	250
Rock	>75,000,000

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8. But the capacity of the above-ground “dump” as a whole to absorb carbon from underground is limited. For example, it would be biologically impossible for the earth’s trees, grass and other vegetation to absorb even a small fraction of the carbon in remaining fossil fuel deposits. Even the oceans, with their huge carbon-absorbing ability, can only take on so much new carbon, and are starting to show the strain (Fig. 2).



*Fig. 2. Between the start of the industrial revolution in 1800 and 1994, the ocean has removed 118 billion metric tonnes of human-produced carbon, or 48 percent of the CO<sub>2</sub> released to the atmosphere from burning fossil fuels and cement manufacturing. If the ocean part of the above-ground carbon “dump” were not there, the CO<sub>2</sub> level in the atmosphere would be about 55 parts per million greater than currently observed. The oceans are already 1/3 “full” of carbon dioxide, altering shell calcification rates, with especially high concentrations in the North Atlantic.<sup>2</sup>*

9. The result of this limited capacity of the earth's above-ground carbon "dump" is that some, perhaps half, of the fossil carbon continually being added to the overloaded above-ground active pool of carbon is building up in the atmosphere. The current rate of increase is around six extra billion tonnes of carbon dioxide every year.

10. This overflow cannot go on indefinitely. If all the remaining fossil carbon were taken out of the ground and injected into the above-ground carbon pool, the earth would probably become uninhabitable.<sup>3</sup> Some scientists fear that transferring even a small fraction of remaining fossil fuels to the above-ground carbon pool (as little as several hundred additional billion tonnes) could trigger a runaway process of warming pushed on by catastrophic releases of (e.g.) sea-floor methane hydrates or Amazon basin biotic carbon. The result could be warming of a magnitude and speed more disastrous than even the worst scenarios envisaged by the Intergovernmental Panel on Climate Change.

11. To restate the issue in political terms, industrialized societies alone currently use far more of the absorptive capacity of the biosphere and atmosphere to stow their carbon emissions in than is globally "available" (assuming a common interest in avoiding worldwide catastrophe). Were the global North's use of aboveground carbon "dump" space to be held constant, no space would be left for others to use, even for activities which do not involve transfer of carbon from fossil stocks (such as breathing). In brief, rich and poor are heading toward a conflict over who gets to use a limited "dump" space which is already dangerously overflowing. The upshot is that political pressures can only grow not only to stop hydrocarbon development, but also to find ways of using the earth's above-ground carbon-cycling capacity more equitably.

12. The realistic solution to the problem of the overflowing dumps is to slow or halt the production of the substance that winds up in the dump. Reducing the dangers of nuclear waste, DDT, or polyvinyl chloride leaking out of overflowing or irremediably faulty disposal grounds ultimately requires a halt to production. Similarly, the only realistic approach to the dangers of climate change is to stop production of coal, oil and gas as soon as possible, leaving the great bulk of fossil fuels safely underground.

13. There is nothing novel or controversial about this conclusion. Even the former Saudi Arabian oil minister, Sheikh Zaki Yamani, has famously pointed out that "the Stone Age did not end for lack of stone, and the Oil Age will end long before the world runs out of oil." Most fossil fuels are going to have to be left in the ground, just as most of the world's stone is never going to be transformed into arrowheads or Stonehenges.

14. Although this is hardly to be considered a tragedy, given the alternative, many private corporations reluctant to take up new technologies or product lines which would shift their current core markets, together with colleagues in various technocracies, particularly in the United States, have sought, fruitlessly, a way out of this predicament. Instead of facing the need to reduce the flow of carbon from below-to above-ground, they instead hope either to find new dumps to stow it in, or to be able to exclude others from using existing dumps, or both.

15. The result is that instead of restricting and equalizing the use of the above-ground carbon dump, a relatively small group of actors, particularly in the North, and particularly in the United States, have been working, since the 1990s, to turn it into a privately-owned asset. Bit by bit, starting with voluntary carbon markets and the Kyoto Protocol<sup>4</sup> (together with its offshoots such as the European Union Emissions Trading Scheme), international climate agreements have become a charter for the commodification and trading of the carbon-absorbing capacity of the world's air, oceans, soil and vegetation in a way that benefits neither the climate nor the great majority of the world's population.

16. The public justification for this innovation is that it translates the political and environmental reality of climate change crisis into the orthodox economic terms of competition and scarcity. Carbon dump space, like oil before it, it is said, can and must become an economically scarce resource. Then, it is claimed, "the market" can help solve the climate problem.

17. However, this translation is not being made, and it is not clear that it can be made. Moreover, even if it were made, it is not clear that the result would serve climatic or societal ends. In this case, what is lost in translation is more significant than what is translated. The crisis will not be addressed by ensuring that that carbon dump space, like oil before it, becomes part of an economic system that makes it difficult to constrain a fairly small global elite from using too much of it -- or for the elite to stop itself.

## **TWO TYPES OF TRADING IN CARBON**

18. Under the Kyoto Protocol, the EUETS, the UKETS, and various private sector schemes, attempts are currently being made to commodify, and trade in, two different kinds of carbon dump. One is the world's existing carbon-absorbing capacity in air, oceans, vegetation, soil, surface rock and so on. The other consists of speculative "new" carbon dumps to be opened up above ground or in the future. The first kind of carbon dump is real. The second kind of dump is largely fictitious, as is the commodity that would be made from it.

19. The attempt to commodify either type of carbon dump is problematic along many different axes. To a certain extent, the problems with commodifying both types of dump are similar. Nevertheless, just as the two types of dump must be meticulously distinguished, even if both are commonly, if carelessly, referred to under the rubric of "emissions trading", so, too, the characteristic problems associated with attempts to trade in the two dump types must be carefully set apart from each other.

## **THE KYOTO PROTOCOL AS CASE STUDY**

20. One good place to start is with the Kyoto Protocol, which currently represents the main thrust of commodification and trading of the world's carbon-cycling capacity.

21. The Protocol has two parts, corresponding to the two types of carbon dump mentioned above.



### *Trading existing dumps*

22. Under the first part, the United Nations would distribute billions of dollars' worth of rights to (over)use existing carbon dumps to 38 industrialized nations who already use them the most, permitting them to sell portions of what they do not use. The Protocol is intended to bind these countries to reducing their emissions by an average of about five per cent below 1990 levels by 2008-2012 (that is, to use only around 95 per cent of the dump space they had used in 1990), although due to various loopholes these reductions will not be achieved even if the Protocol is implemented as planned.

23. The governments of most of the 38 nations (although not that of the US, which of course has not ratified the Protocol), in turn, are quietly distributing large quantities of their entitlements to dump space *gratis* to hundreds of private companies in heavy industrial sectors such as power generation, steel, cement, chemicals and pulp and paper. These firms, again, can sell them on to other polluters in the first stage of activity of what some believe may become the largest market ever created.

24. In the UK, assets in carbon dumps currently worth up to €3.7 billion yearly are to be handed out beginning in 2005 under the European Union Emissions Trading Scheme (EUETS) free of charge to approximately 1,000 industrial installations responsible for around 46 per cent of UK emissions (Table 2). On a rough reckoning, these rights entitle UK industry alone to transferrable, monetizable access to approximately five per cent of available world carbon dumps.

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**TABLE 2****Privatization of Global Carbon Dumps by the UK***Draft National Allocation under the EU Emissions Trading Scheme*

<b>INDUSTRIAL SECTOR (UK only)</b>	<b>ANNUAL GIFT OF EMISSIONS RIGHTS (mtCO<sub>2</sub>)</b>	<b>PERCENTAGE OF AVAILABLE WORLD ABOVE-GROUND CARBON DUMP*</b>	<b>PROJ. ANNUAL VALUE 2005-7<sup>†</sup></b>
Power generators	143.7	2.9%	€718m - 2.155b
Iron & steel	21.2	0.3%	€106-318m
Refineries	19.1	0.4%	€95-286m
Offshore oil & gas	19.1	0.4%	€95-286m
Chemicals	11.1	0.2%	€55-166m
Cement	10.1	0.2%	€50-151m
Pulp & paper	4.3	0.1%	€21-64m
Food & drink	3.9	0.1%	€19-58m
Other industries	12.9	0.3%	€64-193m
<b>TOTAL</b>	<b>245.4</b>	<b>5.0%</b>	<b>€1.227 – 3.681b<sup>‡</sup></b>

\*Based on the assumption that anthropogenic CO<sub>2</sub> emissions from fossil fuel combustion and flaring must be reduced by 80% from current levels of 24,533 million metric tonnes/year to achieve eventual stabilization of CO<sub>2</sub> levels.

<sup>†</sup>Based on the assumption of a “market price” for EU emissions allowances of between €5-15/tCO<sub>2</sub> (see *Environmental Finance*, April 2004).

<sup>‡</sup>Columns may not add up due to rounding.

Source: EU Emissions Trading Scheme,  
UK National Allocation Plan 2005-2007,  
DEFRA, London, 2004.

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25. Several points are worth making about this statistic.
- (a) UK population amounts to less than one per cent of the world total, not five per cent.
  - (b) The dump space being distributed by the UK government does not fall, geographically or otherwise, under UK legal jurisdiction, but is a capacity inherently spread around the world.
  - (c) No allocations are being made to individuals or cooperative groups, but only to corporate bodies.
  - (d) Under Kyoto, no entitlements are as yet to be given to Southern countries, but also no restrictions placed on Southern dump use.
  - (e) While the aggregate amount of property rights in the world's carbon dump being distributed to industry is to be progressively reduced in the future, the pace and magnitude of this reduction is unclear, while the benefits industry gains from its initial holdings will be lasting.

26. Such schemes, in awarding the largest historical users of carbon dumps the most formal future rights in them, constitute, ultimately, one of the largest, if not the largest, projects for creation and regressive distribution of property rights in human history, bearing comparison with the enclosure movement in Europe and elsewhere.

27. The political problems of emissions rights trading such as that mandated by the Kyoto Protocol do not, however, end merely with unfair allocation of rights in a common heritage. The trade also perpetuates and aggravates environmental injustice in other ways. For example, the six greenhouse gases to be traded all have toxic co-pollutant side effects,<sup>5</sup> so when polluting industries are disproportionately located, as they are, in low-income areas and communities of colour, it is the underprivileged who suffer most. In the case of a Los Angeles sulphur dioxide trading scheme known as RECLAIM, localised pollution of the Latino communities around factories involved in the scheme continued unabated in spite of reductions elsewhere.<sup>6</sup> In the UK, as Friends of the Earth recently showed, similar patterns of environmental injustice are evident in the siting of polluting industries in England and Wales. The poorest families are twice as likely to have a polluting factory close by than those with average household incomes. Over ninety percent of London's most polluting factories are located in communities of below-average income.<sup>7</sup>

28. It is likely that this phenomenon will be replicated in global greenhouse gas trading. Reductions which might otherwise have been mandated across the board will not need to be made at source, allowing factories and power plants, a disproportionate number of which are already sited in vulnerable communities, to continue polluting locally. This is bound to hit the poorest hardest, entrenching "pollution ghettos",<sup>8</sup> as polluting industries continue to buy credits instead of making reductions locally. This is in addition, of course, to the severe impacts suffered by communities from the Niger Delta to Durban to the Ecuadorian Amazon due to exploration, extraction, transport and refining of fossil fuels -- all of which is sanctioned by trading in credits from so-called "emissions reduction" projects. Such impacts are invisible to trading schemes, highlighting the dangers of this narrow approach to climate change.

29. The considerable economic and political consequences of emissions trading thus stand in sharp contrast to their marginal climatic effects, which, in the case of the

EUETS, are limited at the very most to the minimal reductions mandated under Kyoto.

30. Politically and economically, then, the commodification and trade of existing carbon dumps is obviously a questionable procedure. All the more remarkable, then that the process within the UK of the allocation of an entirely new set of property rights, and its significance, as well as the EUETS Linking Directive, have none of them been a matter for noticeable public scrutiny or debate. The National Allocation Plan, for example appears to have been, rather, more a matter of quiet negotiation between business and government, and between government departments such as DTI and DEFRA.

31. Perhaps as a result, with the exception of power generators, the UK government has ended up giving rights to most industrial sectors to emit yearly at least as much carbon dioxide as they annually emitted *de facto* between 1998 and 2003.

32. This matter should be of pressing concern to Parliament. Not only is equity at stake, but also the ability of a market constituted and regulated in this way to meet its objective of contributing to efficient action on climate change. Business' success to date in negotiating the gift of such large amounts of rights in the world's carbon-absorbing capacity entails that there is as yet insufficient scarcity in the market for it to work in the direction of helping to stabilize climate; indeed, many businesses are still sceptical about whether the EUETS will result in any reduction in emissions at all (Fig. 3).

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### Fig. 3

#### *EC fails emissions scheme, says E&Y director*

The European Commission's failure to challenge eight EU national allocation plans undermines Europe's ability to meet its carbon dioxide emissions reduction targets agreed under the Kyoto Protocol, according to Ernst & Young's director of emissions trading Tony Ward.

Without creating scarcity of supply by challenging national allocation plans, the commission runs the risk of undermining the value of carbon credits and of providing insufficient financial incentive for companies to cut emissions, says Ward. The price of carbon credits has dropped

"significantly" upon the announcement, according to market monitor Point Carbon.

An Ernst & Young Survey conducted in June found only 40% of respondents believe the scheme will result in a reduction in emissions.

"There is a danger this becomes a self-fulfilling prophecy," says Ward. "If . . . people are not preparing [for the ETS], it gives further oxygen to the idea that people don't need to change their behaviour."

(*Energy Risk*, 8 July 2004.)

33. This raises questions about whether a system in which it is always rational for business to seek the largest possible amount of property rights, in which business has the political means of doing so, and in which business is proceeding to do so (see the upward revision of emissions allocations under the National Allocation Plan revealed on 26 October 2004) is compatible with a market intended to meet environmental goals. Less scarcity means weak or nonexistent system-wide incentives for necessary systematic change toward low-fossil carbon technologies.<sup>9</sup> Moreover, allocation of large amounts of emissions rights by the state to vested interests entrenches their claims to continued and future overuse of the earth's carbon-cycling capacity.

34. This is likely either to make the evolution of effective future emissions caps more difficult or to increase pressures to reduce emissions in sectors which have not been awarded so many rights in the dumps (for example, domestic households and the transport sector) in order to ensure that national Kyoto targets, for example, are met. The effect is to secure the assets of large industry at the expense of other sectors, including that of the state.

35. Of course, if the government does resist business pressure and does progressively cut the amount of property rights granted to the private sector, increasing their scarcity -- which is how the system was designed to work -- those rights will be worth even more in monetary terms to business, raising even more acute questions about equity.

36. Alternative property regimes -- for example, standard regulation, in which the state tacitly cedes rights to the private sector but stipulates that they will not be tradeable; taxation, in which the state notionally leases property to the private sector; and auctioning, in which governments temporarily assume possession of emissions rights before selling them to the highest bidders -- have not been major components of EU nations' climate policies (see Appendix 1).

37. Moreover, while the government has been pursuing questionable emissions trading schemes which award space in carbon dumps far in excess of what exists or what is in its gift to bestow, it has failed to make adequate progress either in reducing subsidies for the transfer of fossil carbon to the surface or in supporting existing initiatives toward a no-fossil carbon economy.

### *Creating and trading new dumps*

38. The second part of the Kyoto Protocol attempts to open up, create property rights in, and market two *new*, speculative, cheaper types of carbon dump. The aim is to help industrialized countries avoid restrictions on, or democratization of, their use of existing dumps. As carbon allowances awarded to Northern industry become scarcer and more expensive over time, those sectors most in need of them will be able to buy an alternative, cut-rate supply from a new production line. In May 2004, prices for EU emission allowances were around US\$9.60-10.80 per tonne of CO<sub>2</sub> equivalent, while those of new dump space being developed under the Clean Development Mechanism of the Kyoto Protocol were \$3.50-5.50 per tonne. Among those active in trying to create this market in new dumps (which is also being constructed independently of the Kyoto Protocol by some private firms), are oil companies, heavy industries, national

research establishments, universities, think tanks, carbon brokers, consultancies, forestry industries, United Nations agencies, the World Bank, marketing firms and international business lobby groups.

### *New Dumps in the Biosphere*

39. The first type of new carbon dump is to be carved out of land, forests, soils, water, even parts of the oceans. Fast-growing eucalyptus monocultures, for example, may be established or financed on cheap land in the South and the carbon they “sequester” then sold. Many such “carbon sink” projects have already been set up in countries from Brazil (Fig. 4) and Uganda to India and the UK.

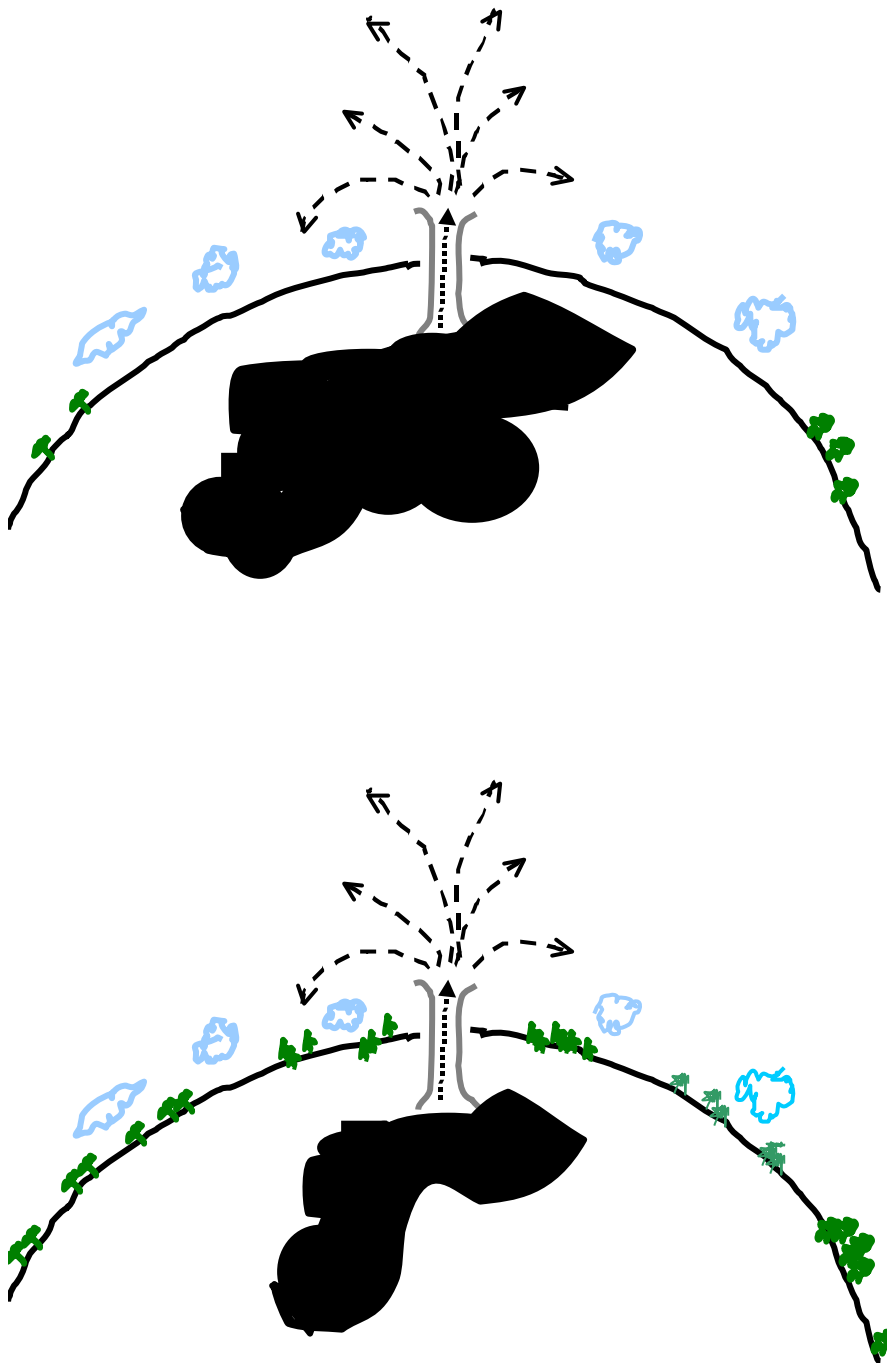


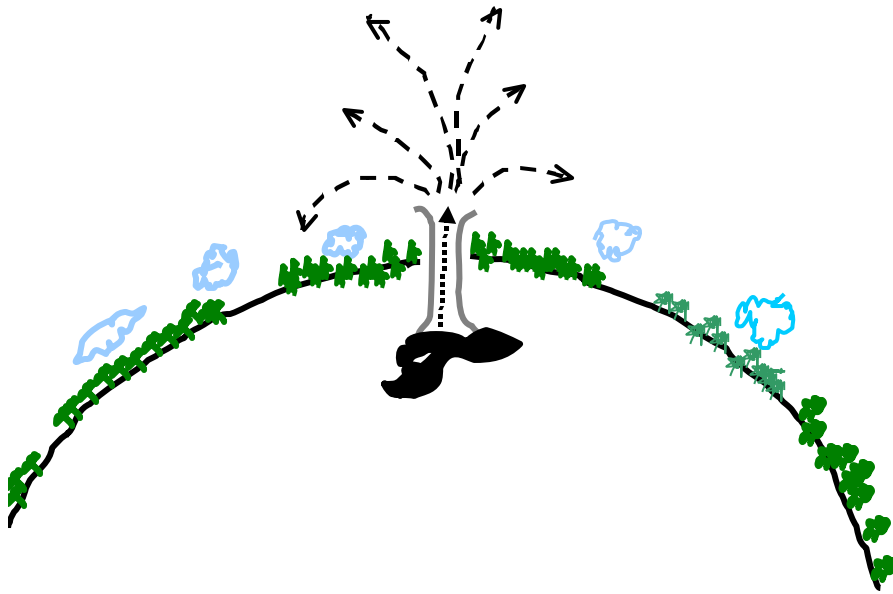
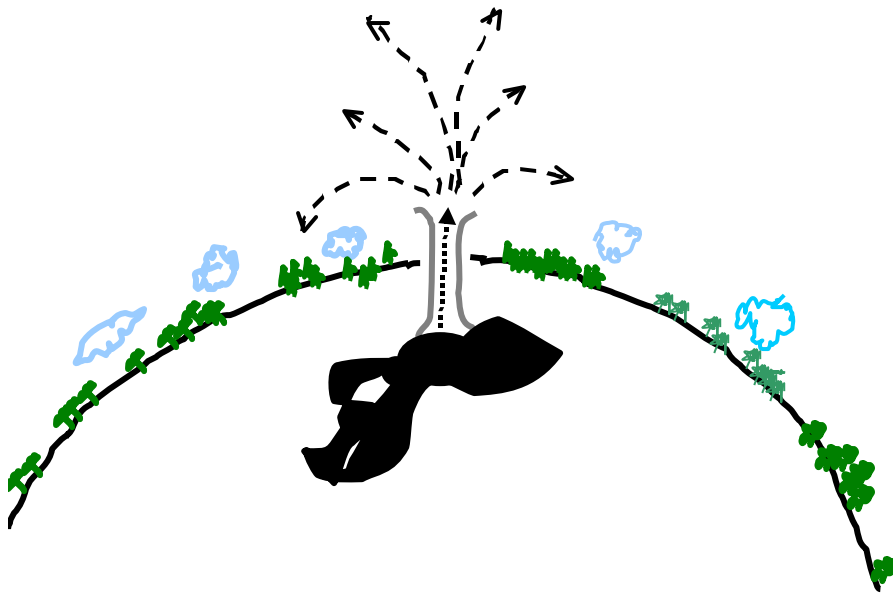
**Fig. 4.** *Plantar, a firm planting eucalyptus monoculture in Minas Gerais for use in producing charcoal for pig iron manufacture (used partly in the production of cars), claims it should be able to sell “carbon credits” to other industries because its plantations absorb CO<sub>2</sub> from the atmosphere. Without these credits, it says, it would switch to coal, a less “climate-friendly” fuel. Plantar’s claim, supported by the World Bank, is contested by local farmers, fisherfolk, indigenous people, rural trade unions and NGOs who have long seen Plantar as causing social and environmental problems.*

40. The idea is that these trees are “new” and thus make up for the fossil carbon which continues to be pumped out of the ground (Fig. 5).

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**Fig. 5**



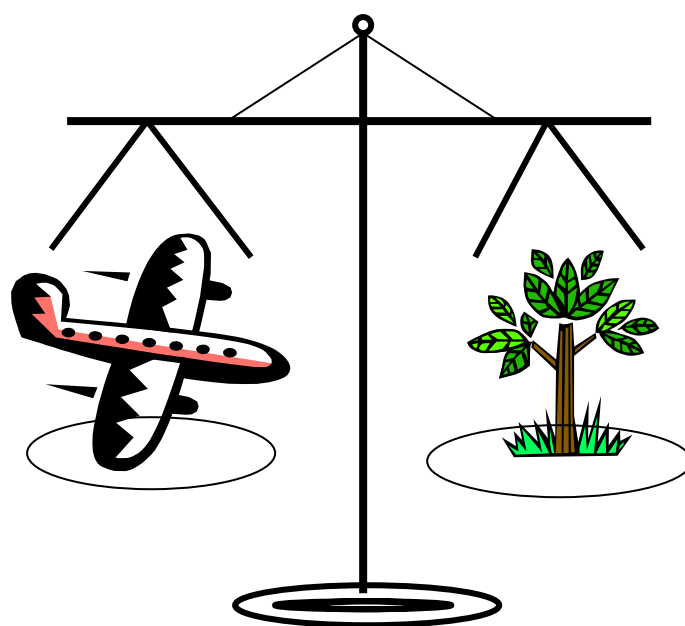


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41. Along the lines of the Kyoto Protocol, several private firms are now also selling their own “carbon credits” from trees. They claim that by planting trees for customers, they can make (for example) their air travel “carbon neutral” (Fig. 6).

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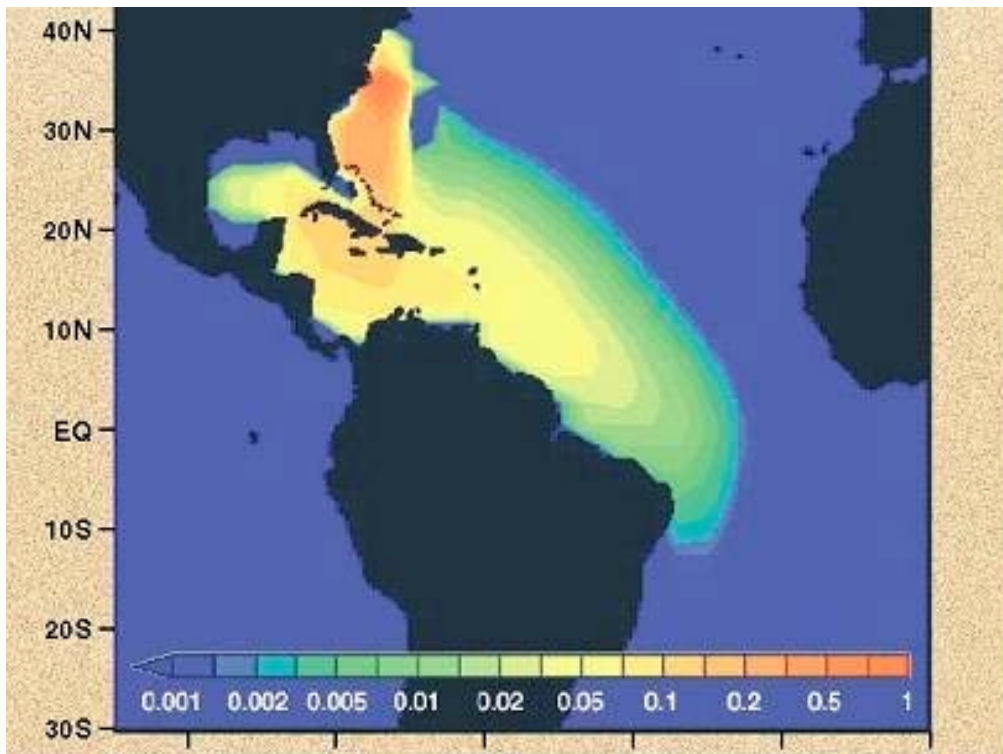


*Fig. 6. Not only the Kyoto Protocol, but also many private European firms claim falsely that they can make the burning of fossil fuels “carbon neutral”. Several of them plant trees in Southern countries to “absorb” rich Northerners’ carbon dioxide emissions. This misleading symbol is used by one British marketing company on its website.*

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42. The UN, business and various research establishments around the world are also exploring other types of “new” carbon dump. One proposal, for example, is to pump carbon dioxide into old oil wells or deep layers of the ocean (Fig. 7).

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*Fig. 7. An early US Department of Energy proposal for a new carbon dump involved pumping liquid carbon dioxide into deep ocean layers. Projections showed, however, that the CO<sub>2</sub> would quickly migrate toward the Caribbean and Brazil. The US's old nuclear weapons laboratories are busy with a number of such ingenious schemes.*

43. The problems with this project of constructing new carbon dumps in the biosphere are manifold. First, in addition to licensing continued overuse and unequal use of the existing carbon dump, the attempt to build new biospheric dumps inevitably means taking over or using people's land, water, forests, air and communities. The result is, inevitably, local resistance.

44. In Minas Gerais, Brazil, for example, through a project promoted by the World Bank's Prototype Carbon Fund, a corporation called Plantar S.A. is claiming that it deserves carbon credits for not switching its pig iron operations from eucalyptus fuel to coal or coke, and for 23,100 hectares of its eucalyptus plantations. "We were surprised and bewildered by the news," a group of over 50 trade unions, churches, local deputies, academics, human and land rights organizations and others protested in March 2003:

"Corporations like Plantar S.A. installed themselves in our states in the 1960s and 1970s during the military dictatorship, taking advantage of attractive tax incentives. Local communities were never consulted . . . Indigenous peoples . . . Afro-Brazilian communities and tens of thousands of [other] peasants . . . lost their lands . . . , increasing unemployment. . . the new Plantar nursery . . . , about which no local inhabitant was consulted. . . , diverted an existing road that has always been utilized by local communities, and extended the travelling distance for local inhabitants by

more than five kilometers. . . . Most lands owned by these corporations are *devolutas*, . . . without land titles, . . . [and] belong to the state. According to Brazilian law, corporations cannot acquire this type of land, only peasants. Even so, with often fraudulent registrations in the registry offices and “hiring” contracts with the state, the corporations succeeded in acquiring hundreds of thousands of hectares of *devolutas* lands. . . . the occupation of [savannah] *cerrado* areas . . . made more difficult the subsistence of these people, which was based on the immense biodiversity of the *cerrado*. The short-cycle eucalyptus monoculture does not allow any other plant or any animal or bird to live within it, and therefore does not possess any biodiversity . . . . food products factories closed . . . The pig iron companies still use around 15-20 per cent native *cerrado* vegetation. . . . Plantar does not do anything for its former workers, many of whom are injured or suffering from health problems; many have already died as a result of the very bad working conditions associated with charcoal production and eucalyptus cultivation. Eucalyptus plantations result in less jobs if compared with any other agricultural activity.”

Locals note further that Plantar’s intimidation tactics, which make many local residents afraid to let interviewers cite their names, are nowhere acknowledged in project documents. Having been thwarted by the Prototype Carbon Fund, the local movement is now appealing directly to European investors not to put money into the carbon project. One local man interviewed by Carbon Trade Watch, who asked for anonymity out of fears for his own safety, notes that his municipality “suffered a great loss with the sale of the land to Plantar”:

“Plantar has planted all over, even until the Seu Zé do Bonitim river spring. Thirty-five thousand hectares of land . . . they sprayed pesticides with a plane. There used to be deer and other animals in the area. The native fauna lived together with the cattle. But since they applied the pesticide, every one of them got killed. . . . The eucalyptus planted over here is meant for charcoal. It is a disaster for us. They say it provides jobs, but the maximum is six hundred work places in a plantation of thirty five thousand hectares. And, whenever everything has been planted, one has to wait for six years. So, what work does it generate? . . . We used to produce coffee -- the Vera coffee -- and pasta and cotton. Several different little factories in their suitable regions. Nowadays, there is only the eucalyptus. It has destroyed everything else. . . . Why do they come to plant in the land suited for agriculture instead of most suitable areas? Because it takes ten to twenty years and over here only seven. All the best pieces of land went to the eucalyptus plantations, pushing the small producers away and destroying the municipalities. . . . These companies don’t want unions. They immediately co-opt the union leaders and they begin to make part of their inner circle of managers and directors. . . . The eucalyptus gives the water back to the earth after some years. But when it is time to give it back, they plant a new one that will absorb the water returned by the old one. This new plantation will develop really quickly, because, besides the rainwater, it will receive the water from the old eucalyptus. . . . they are using the carbon credits to plant these eucalyptus that will grow very quickly.”

45. A similar pattern of problems has already emerged in carbon dump projects in the US, Ecuador, Tanzania, Uganda and many other countries.

46. But resistance comes not only from poorer communities who battle the awarding of carbon finance to predatory local plantation, energy, or agribusiness firms. It can also be expected from richer communities, such as New Zealand forest owners, who are similarly concerned that their property is being taken away from them (Fig. 8).

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## Fig. 8

### **Forest owners:**

#### ***Nationalisation of Kyoto credits is theft***

A group representing the owners of forests planted after 1989, the only forests eligible to earn lucrative carbon credits under the Kyoto protocol, says the government is stealing \$2.6 billion from them by fiat.

Government's," spokesman Roger Dickie said.

*(Business Today, 30 December 2003.)*

Under the terms of the Kyoto protocol, forests planted after 1989 generate carbon credits which can be sold or traded to help other nations avoid fines for having failed to meet targets in efforts to reduce greenhouse gas emissions.

The credits are traded government to government, and each government has the right to disburse the earnings as they seem fit.

In New Zealand, the government plans to hold the earnings for its own programmes.

The newly formed Kyoto Forest Owners Association says the decision "is possibly the largest private property theft in New Zealand's history."

"After all, we grew them (the carbon sinks) in our trees -- they are ours to do with what we like -- they are not the

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47. A second difficulty with the attempt to build new carbon dumps in the biosphere is that they can't be verified to be working. For one thing, scientists are radically uncertain about the fate of carbon dumped in the biosphere (Table 3).

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**TABLE 3**

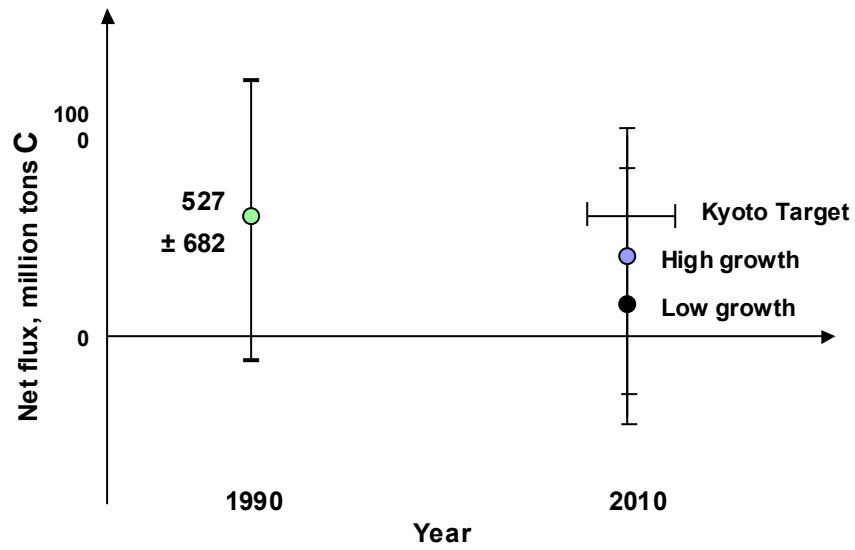
### Uncertainty Revealed Year by Year

- **1998:** German ACGC cautions against counting growth of forests as “emissions reductions”.
- **1998 -:** Technocrats and NGOs propose “discounting” or “insuring” carbon credits derived from biospheric dumps.
- **1999-2002:** IIASA says Kyoto Protocol “completely unverifiable” due to accounting uncertainties. Proposes quantification and pricing of uncertainties.
- **2000:** VERTIC says forestry and land use “must not be used to meet emissions reductions commitments” since changes to carbon stocks will “rarely be verifiable”.
- **2000:** IPCC land use panel assumes without evidence that emissions and “removals by sinks” can be aggregated quantitatively.
- **2001:** R. A. Houghton suggests carbon errors “as large as 500 per cent in the forest inventories of northern mid-latitudes”.
- **2001:** Royal Society cites “urgent need” to reduce uncertainties *before* land carbon sinks are used.
- **2001:** World methane sources found to be uncertain by “20 to 150 per cent”.
- **2003:** UN, consultancy and NGO discounting and insuring proposals continue to leave uncertainty unquantified or to ignore it.

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48. For example, according to the International Institute for Applied Systems Analysis, the margin of uncertainty in the current carbon balance in Russia is so large that it will be impossible to determine, if biotic carbon is made part of the equation, whether the country has achieved its Kyoto targets or not (Fig. 9). In short, the IIASA says, the Kyoto Protocol is “completely unverifiable”.<sup>10</sup>

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Source: IISA

**Fig. 9.** According to the International Institute for Applied Systems Analysis, mean net Russian carbon balance in 1990 can be pinned down only to the range of -155 to +1209 million tonnes per year. This swamps probable changes in total Russian carbon flux balance between 1990 and 2010, which are expected to be only 142 to 371 million tonnes, making the figures useless for verifying compliance with the Kyoto Protocol.

49. In fact, however, scientists cannot even know in advance all the factors related to biotic carbon that will affect climate, and all the nonlinear or noncontinuous ways they may interact, making the problem even worse than mere uncertainty (Table 4). The paths above-ground carbon takes are not only much less stable but also, more importantly, much less predictable, than the paths taken by fossil carbon left under the ground.

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**TABLE 4**

**Ignorance Revealed Year by Year**

- **1990s-2003**: “Missing terrestrial sink” of  $110 \pm 80 \text{ GtC}$ , or  $>3 \text{ GtC/yr}$  (= half of annual fossil fuel emissions), remains unfound.
- **1990s**: Scientists warn that ocean warming could result in sudden catastrophic releases of methane from methane hydrates on sea floor
- **1998**: German ACGC warns that “complex nonlinear dynamics” of terrestrial ecosystems sets them apart from “energy-related processes”.
- **2000**: Review article in *Science* warns that unanticipated “feedback effects between carbon and other biogeochemical and climatological processes will lead to weakened sink strength in the foreseeable future”.
- **2001**: UK Met Office calculates tree-planting in boreal regions would heat planet rather than cool it due to albedo effects.
- **2001**: Met Office reveals lengthening of dry seasons could abruptly result in catastrophic releases of carbon through fires in Amazon, pushing temperatures up  $6-8^\circ \text{ C}$ . in 100 years.
- **2003**: UN, consultancies and NGOs continue to speak as if “discounting” and “insurance” can cover the possibility of unanticipated findings.
- **2003**: CDM Methodological Panel rejects methodology for Planar project which was based on assumption of stable exchange rates between US\$ and Brazilian Real.

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50. No matter how much additional biospheric carbon could be cultivated, moreover, it could never be of an order of magnitude remotely comparable to what would be required to “fix” the emissions from remaining unmined fossil fuels (Table 1). As Cambridge University forest historian Oliver Rackham quips, to tell people to plant trees to help the climate is “like telling them to drink more water to keep down rising sea-levels.”

51. In short, a verifiable climatic equivalence between fossil carbon and biotic carbon cannot be established, rendering the claims of the Kyoto Protocol and the voluntary carbon “offset” market nonsense. Planting trees cannot be proved to make fossil fuel burning “carbon-neutral”.

52. For this reason alone, it is a matter of some urgency that the UK make clear as soon as possible that it will, at the very least, not accept carbon credits from “sink” projects in its national climate plan.

*New Dumps in the Future*

53. A second, more complex type of new carbon dump, is, in a sense, to be carved out of the future. Fossil-fuel users buy permission to go on dumping by investing in activities which, while contributing still more carbon flows into the dumps, are

claimed to produce smaller flows than would “otherwise” be the case. Alternative futures which would use even less carbon are dismissed by contracted experts as impossible. Thus an electricity utility in the North can gain extra permits to burn fossil fuel in its own country by investing in a gas-fired power plant in a Southern country, if the plant can be demonstrated to have been designed to release less carbon dioxide than a coal-burning plant which might have been built in its absence. It does not matter that energy efficiency measures or solar power -- or not building a plant at all -- would be less carbon-intensive than the gas-fired plant. As long as the company’s consultants can rhetorically eliminate these possible other “futures” in favor of the single counterfactual scenario represented by the coal-fired plant, it can be licensed to continue transfer of carbon to the atmosphere above its own power stations. As with emissions trading proper, this type of carbon trading is compatible with -- it may even encourage -- the removal of remaining fossil carbon to above-ground systems, with all the consequences for human survival that entails. Today, large hydroelectric dams, efficiency programmes, forestry firms, biomass energy projects and even fossil-fuelled power plants are all seeking to create and market dumping rights on the ground that they emit less carbon than baseline “alternatives” identified by experts. The claim that alternative low-carbon futures do not exist becomes a way of dumping carbon in those futures which could otherwise be left in the ground.

54. The fact that firms seeking carbon finance have the power to hire experts to “decertify” any low-carbon futures which do not involve the firms themselves is also leading to local resistance. The Minas Gerais protesters put it like this:

“The argument that producing pig iron from charcoal is less bad than producing it from coal is a sinister strategy . . . What about the emissions that still happen in the pig iron industry? What we really need are investments in clean energies that contribute to the cultural, social and economic well-being of local populations. . . . We can never accept the argument that one activity is less worse than another one to justify the serious negative impacts that Plantar and its activities have caused. . . . [W]e want to prevent these impacts and construct a society with an economic policy that includes every man and woman, preserving and recovering our environment. That is essential for survival.”

55. What the Minas Gerais groups point to is also a devastating technical flaw in the project to find and sell new carbon dumps in the future. In truth, no single story-line can be proved to be “what would have happened” in the absence of a supposedly carbon-saving project. The future is a matter for open political *decision*, not economic/technical *prediction* by vested interests.

56. This is why, even among corporations and their contracted experts, there are so many disputes about “what would have happened otherwise” -- disputes that are leading to estimates of “carbon saved” that differ by orders of magnitude, pushing the whole market in “new carbon dumps” toward incoherence.

57. Members of the House of Commons Public Accounts Committee, for example, recently lambasted the government’s early experimental emissions trading scheme for propagating “bullshit” by claiming emissions reductions that were not real, following a National Audit Office investigation.<sup>11</sup> A PriceWaterhouseCoopers specialist has



meanwhile openly confessed that the claim that a project would not have happened without carbon finance “cannot really be checked by a validator” (Table 5).<sup>12</sup>

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**TABLE 5**

### **Indeterminacy Revealed Year by Year**

- **1999:** Michael Grubb concedes “impossibility” of measuring or defining climatic difference between with- and without-project scenarios but then reinterprets this indeterminacy as “uncertainty” or “difficulty”.
  - **2000:** Yamin and Haites admit there is no “correct” account of “what would have happened without a project” but propose settlement by committee.
  - **2002-3:** Project certifiers express concern that UN rulebook’s inability to screen out “business as usual” CDM projects put them in a difficult position.
  - **2002-3:** Developers, brokers and government ministers counterattack, scorning the idea that carbon projects must be better for the climate than what would have happened without investment in them, and reinterpreting the Marrakech agreement accordingly.
  - **June 2003:** PCF forced to concede that this is a misinterpretation of Marrakech.
  - **May 2003:** CDM Methodological Panel rejects methodology used to claim that Brazilian “avoided fuel switch” project is not “business as usual”.
  - **June 2003:** CDM forced to reject all 12 mitigation projects proposed to it to date on the ground that they could not be proved to be activities which “would not have happened anyway”.
  - **2003:** Project proponents begin to admit that some projects rejected by CDM are going forward anyway, meaning that they are indeed “business as usual”.
  - **June 2003:** NGOs with a stake in CDM begin arguing that such projects are not necessarily “business as usual”: e.g., that they were not BaU at the time of application but later became so, or that initial CDM interest enabled them to find other finance.
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58. The practical effect of this impossibility is that attempts to settle disputes about “what would have happened otherwise” are inevitably driving dump “validation” procedures toward greater and greater convolutedness and difficulty. This frustrates traders, brokers and other businesses. What they want is, instead, easier, more uniform procedures which lower their “transaction costs”. Caught in the middle, international bureaucracies and consultants responsible for formulating and approving validation procedures do not know where to turn. The respected business publication *ENDS Report* puts its finger on the root of the problem in a July 2004 editorial: “In all the excitement over the imminent arrival of a fully-fledged carbon market, we may be losing sight of one fundamental question -- what, exactly, are we trading in?”<sup>13</sup>

59. To sum up, space in two types of speculative new carbon dump is being bought and sold alongside space in existing carbon dumps on the tacit assumption that

A world containing closed fossil fuel mines

*is climatically equivalent to*

A world containing open mines + more trees, no-till agriculture, iron-fertilized oceans, etc.

*is climatically equivalent to*

A world containing open mines + an indefinite number of foreclosed futures.

Attempts to create the new dumps, however, are running up against both popular resistance and the awkward fact that they are more likely to have a negative than a positive effect on climate.

60. This negative effect is due, among other things, to particularly ill-advised current attempts to mix, in a single trading system, (a) credits allowing the emission of carbon dioxide from fossil fuel combustion and (b) credits for carbon sequestration, “avoided emissions”, “emissions reductions” or baseline-and-credit projects generally. The claim that (a) and (b) are equivalent in terms of their effect on climatic is permanently unverifiable at best and, more often, blatantly false. Since even if the claim of (a)-(b) equivalence were true, the most that could be said of mixed trading systems is that they would be theoretically climate-neutral (their efficacy entirely dependent on the stringency of the cap under which they were set up), it follows that, since (a) and (b) are not verifiably climatically equivalent, mixed trading systems are bound to exert a negative effect on the climate. It must be emphasized that this is regardless of the intentions of the actors or the enforcement regime applied.

61. The fact that (a) and (b) are known by market actors not to be verifiably equivalent in terms of climate will make further hash of the system, since it will destroy the trust in the inherent robustness of the commodity to be traded which is necessary for any market, as well as provide incentives for deliberate attempts at cheating and gaming. All this will, in the nature of the case, again remain beyond the reach of any system of adjudication or enforcement. It is likely even to result in the collapse of the market. In any case, the outcome will be many wasted years of effort.

## **THE INTERNATIONAL CONTEXT OF TRADE RULES**

62. If international emissions trading remains a principal component of government climate change policy, the rules governing it will have to cohabit peacefully with other rules governing international trade and investment. While the exact nature of the relationship between the recently reinvigorated Kyoto Protocol and the World Trade Organisation (WTO) is still under negotiation, many experts agree that some points of conflict will need to be addressed, and in a way which detracts from effective climate policy.<sup>14</sup>

63. These probable points of conflict involve issues such as subsidies for renewable energy technologies and tax credits, discrimination of products based on process and production methods, labelling standards, certain environmental and social provisions in the Clean Development Mechanism and Joint Implementation mechanism of the Kyoto Protocol, the nature of certain types of rules which may be imposed on emissions markets to fortify accounting standards and prevent fraud, carbon taxes and cross-border adjustments. In all these areas and more, there are concerns that WTO rules will restrict countries from adopting ambitious climate policies.

64. The solution proposed by industry lobby groups and think-tanks is to encourage WTO compliance across the board. Many corporations and lobby groups in particular, as is well-known, want unrestricted free trade in greenhouse gases rather than government regulation and taxation discipline.<sup>15</sup> While WTO compliance may ensure stability in the burgeoning emissions markets and boost investor confidence, it is likely to restrict severely government climate policy choices and the ability of governments to regulate emissions markets to meet climate policy goals.

65. It is important to consider, too, the impact of numerous International Investment Agreements (IIAs) on emissions trading. These agreements often go beyond existing WTO norms to include investor protections and rights, investor-state dispute mechanisms and compensation requirements, mutual recognition agreements, and broad guarantees of government non-discrimination and non-intervention in certain sectors. There are currently over 2100 Bilateral Investment Treaties (BITs) now in force worldwide, of which approximately 80 per cent have been negotiated since 1990.<sup>16</sup> Global trends in investment and trade liberalisation suggest that more and more ambitious measures will be pursued by Member States both within the WTO system (such as through negotiations of investment and services liberalisation), bilaterally (through more BITs) and multilaterally (as part of negotiations between the EU and other trading blocs) which will have a significant impact on the ability of governments to regulate emissions markets.

66. Under the Kyoto Protocol, Contraction and Convergence or other market-based schemes, rules aimed at improving integrity and preventing fraud will continuously be threatened by the emergence of new and more ambitious liberalisation initiatives. Wary of sparking high-profile disputes between trade and environmental interests, governments have so far opted for a “complementary” approach to such issues, whereby Kyoto rules are being refined according to WTO requirements.<sup>17</sup> This “chill effect” will have enormous impact on the development and pace of rule-making in the climate sphere, likely forcing lawmakers to take the path of least resistance and adopt policies in line with existing economic commitments.

67. While emissions trading proponents have reflexively assumed that market-based systems will be easier and cheaper than government regulation, this is unlikely to be the case if required safeguards are in place.<sup>18</sup> In order for emissions trading systems to work well and fairly, they would need to be small; highly regulated; tightly defined; contain no toxic co-pollutants; have rigorous independent monitoring and verification; contain strong penalty provisions; and provide for vibrant community consultation, participation and assessment. However, these are not features of any emissions trading scheme currently implemented, under development, or being proposed.

68. The end result of applying these fundamental safeguards to emissions trading schemes would be to create a system more complex than the regulations that industry has been complaining about in the first place. Even during its formative stages, the UK National Allocation Plan for the EUETS alone is widely regarded as the most complex piece of environmental legislation ever seen in the country. Mixed trading schemes, moreover, as is clear from the sections above, are immeasurably more complex even than such relatively “pure” emissions trading frameworks. These considerations also argue for effective climate policy de-emphasising unwieldy market-based solutions to environmental problems and instead reasserting government’s right and responsibility to enforce mandatory policies upon polluting industries.

69. In considering the fate of the new carbon commodity in the current world trade regime, particularly the hybrid pseudo-commodity postulated under mixed trading systems, it is important, too, to recall the failure of traditional commodity export dependence to lift countries out of poverty, given phenomena such as overproduction, declining terms of trade, failure to diversify production base, and so on. Even under nominally equity-oriented trading schemes such as Contraction and Convergence, International Monetary Fund and World Bank prescriptions would include strategies for selling off emissions rights to raise revenue under which control over the sale of surpluses would be in the hands of international financial institutions who have enormous power to enforce “budget discipline” and “spending priorities” in many Southern countries.

70. Even if emissions rights were notionally allocated per capita, as under Contraction and Convergence, the countervailing and antidemocratic nature of the institutions administering the new market -- notably national governments and international trade regimes -- needs to be considered. Under Contraction and Convergence, too, there remains the likelihood that polluting industries in the North would migrate to the South where they could find more “allowances” to use. This is not a difficulty with the philosophical principles of Contraction and Convergence, but it is a problem with the market system to which it is currently wedded.

### **CASE STUDY: THE KYOTO PROTOCOL’S CLEAN DEVELOPMENT MECHANISM**

71. The Kyoto Protocol’s Clean Development Mechanism (CDM) is perhaps the leading attempt to create new, cheaper carbon dumps in the South as part of a mixed worldwide carbon trading scheme. It is premised on the idea that to the degree that it makes possible projects “reducing emissions” in the South, the North will be licensed to continue producing and burning fossil fuels on the ground that to do so will then be “climate-neutral”.<sup>19</sup>

72. As might be predicted from the section on new carbon dumps above, however, the CDM community has been riven by disputes about whether CDM projects actually *are* reducing emissions “that would have happened otherwise” -- i.e., without the projects. In June 2003, the CDM board was forced to reject all 12 mitigation projects proposed to it to date on the ground that they could not be proved to be activities

which “would not have happened anyway”. In November 2003, its methodological panel expressed concern about the verifiability of carbon credits from projects which merely continue current practice. More recently, DuPont has created an uproar by claiming that its rival Ineos Fluor’s methodology for hydrofluorocarbon abatement projects, approved by the CDM Executive Board in 2003, overstates the reduction in emissions by a factor of three due to false projections about “what would have happened otherwise”.<sup>20</sup>

73. In the nature of the case, indeed, it has proved impossible to demonstrate that many CDM projects are not in fact *increasing* emissions beyond “what would have happened otherwise”.

74. First, if a country introduces governmental programmes supporting renewables or other climate-friendly projects, then it is correspondingly harder to prove that individual CDM projects in that country are “additional”. There are thus perverse incentives for choosing the short-term benefit of CDM revenues over the long term benefits of good environmental policy. There is evidence, for example, that Mexico City has held back several “climate-friendly policies” in order not to jeopardise CDM investment. On a global level, this is clearly an inferior outcome.

75. Second, some proposed CDM projects are claiming carbon credits simply for obeying the environmental laws of the host country on the ground that, without the projects, it can be predicted that the law would be violated. This, of course, gives both the host country and the project proponent incentives for ensuring that environmental laws, including those governing emissions, are normally not enforced. The climatic “balance sheet” for such projects would thus, logically speaking, have to be debited for the climatic effects of the damage done to the rule of law in the host country. This type of proposed CDM accounting, of course, also raises questions about the vaunted commitment of the international community involved in CDM projects, including the World Bank, to “good governance” and the rule of law.

76. Third, CDM projects, by cheaply licensing the continuing extraction and burning of fossil fuels in the North, arguably have the global effect of reducing incentives for necessary technological change in industrialized countries. This, too, is a perverse outcome (although one which is, again, impossible to quantify).

77. The probable counterproductivity of many CDM projects is not an accident, but an inevitable consequence of a set of national and international market-based policies that, with one hand, encourage continued transfer of fossil carbon to the atmosphere and, with the other, try to “compensate” for that transfer in convoluted and impossible ways. The CDM remains a small, contributing component of a set of policies and structures whose overall thrust is precisely the opposite of what is needed to address the climate crisis, which is a halt to transfers of fossil carbon from underground. Its market approach of providing least-cost services to fossil-fuel-intensive industry cannot address the problems of climate protection stemming from that industry’s activities, because these two goals are intrinsically contradictory.

78. The CDM, like emissions trading and carbon trading generally, clings to the margins of a fossil-dominated structure of energy finance. In 2000, the World Resources Institute warned that existing financing by export credit agencies (ECAs)

was undermining ongoing efforts to address climate change and noted that “the failure to place ECAs within a wider development and environmental context is generating a policy perversity”. The same could be said of the carbon market as a whole. To engage in loose talk about hypothetical “emissions reductions” resulting from specific abatement projects in the absence of a framework for holding fossil fuels in the ground is -- as do institutions such as the World Bank’s Prototype Carbon Fund and firms such as Climate Change Capital -- is, so to speak, to live in analytical sin.

79. The World Bank, for example, currently lends more in one year to extractive industries projects than the entire amount of funding that will be made available through its Prototype Carbon Fund, BioCarbon Fund, and Community Carbon Fund. Even in the most romantic original projections of what the CDM could achieve (projections which, as the above argument demonstrates, were never going to be sustained), non-sinks CDM projects were expected to lead to (unverifiable) “reductions” of only 50-375 million tonnes of carbon per year. At the same time, annual emissions from fossil fuel projects supported by multilateral development banks and export credit agencies exceed this amount many times over. For example, in an average year of financing between 1992 and 1998, the World Bank supported fossil fuel projects with lifetime emissions of 1457 million tonnes of carbon; this is at least four and as much as 29 times the amount of alleged “emissions reductions” achieved by the CDM under its own rosier scenarios. In an average year of financing between 1991 and 1996, the European Bank for Reconstruction and Development (EBRD) supported fossil fuel projects with lifetime emissions of 296 million tonnes of carbon; this is three-fourths and as much as six times the supposed emission reduction value of the CDM per year. If only 20 percent of the financing by the World Bank Group, the EBRD, OPIC and the US Ex-Im Bank had been diverted away from fossil fuels and into investments in energy efficiency and renewable energy, the emissions avoided each year would have equalled more than one-and-a-half times the amount of carbon averted under a best case scenario for the CDM.<sup>21</sup> For the World Bank alone to divert its extractive industries financing to renewables, as the Bank’s own recent Extractive Industries Review recommended, would be massively more significant than any effort to salvage the CDM.<sup>22</sup>

80. The Bank, however, is only one example. Globally, North-South flows of investment and governmental support through ECAs and international financial institutions favour fossil fuels, financing and entrenching them in developing country energy systems to a degree that makes the new financial flows achieved by the emerging carbon market largely irrelevant. A real solution to climate change must address this reality, not create a carbon market alongside it. Point Carbon, a noted carbon market analyst, has estimated that the value of trading in the global carbon market could reach US\$10 billion a year by 2008. Yet annual subsidies to fossil fuels in the decade up to 2002 were US\$200 billion. If the value of new investment for greenhouse gas reducing projects mobilised by the global carbon market continues to be 0.5 per cent of annual fossil fuel subsidies then it will exist merely to enrich traders and consultants.

81. The policy implications for government departments such as ECGD and DfID (which is responsible for relations with the international financial institutions) are obvious. It will be necessary for these departments both to halt finance underwriting

the flow of fossil carbon to the surface and to refrain from supporting the quixotic attempt to open up new dumps in the biosphere and the future to put this fossil carbon in.

82. Empirical evidence, unsurprisingly, already abounds that the CDM cannot both lower costs of Northern compliance with Kyoto targets and “facilitate sustainable development”, particularly renewables, in host countries. The cheapest reduction options are mostly those that have fewer sustainable development co-benefits, while projects which do most to promote sustainable development are commonly those that deliver higher-priced credits. To answer the question “Is the carbon market working?”, it is only necessary to ask which of these mandates is being prioritised by investors and credit buyers.

83. The overriding priority for industrialised country investors is reducing the costs of complying with their Kyoto targets. They are searching for projects that deliver large volumes of cheap credits such as projects that capture or destroy non-CO<sub>2</sub> gases with high global warming potentials from existing facilities, like methane and HFC-23. While these projects do carry environmental benefits on the occasions when it can be argued that they are “additional”, they do not deliver other sustainable development benefits, and do not help to effect broader change in critical climate-related sectors such as energy or transport. A recent overview of the CDM by the OECD summarised the emerging trend by noting that

“a large and rapidly growing portion of the CDM project portfolio has few direct environmental, economic or social effects other than greenhouse gas mitigation, and produces few outputs other than emissions credits. These project types generally involve an incremental investment to an already-existing system in order to reduce emissions of a waste stream of GHG (e.g. F-gases or CH<sub>4</sub>) without increasing other outputs of the system.”

84. HFC-23 projects, for example, decompose HFC-23, which is emitted at existing HCFC-22 facilities. N<sub>2</sub>O projects decompose the N<sub>2</sub>O that is emitted in the production of adipic acid. Some projects involving landfill gas capture can at least point to the fact that they may use the captured methane to generate electricity and thus displace fossil-fuelled grid electricity, but the amounts are small and most projects in the CDM do not actually do this anyway. Overall, the non-CO<sub>2</sub> projects involve opportunistic end-of-pipe reductions in non-energy related sectors.

85. The scale of these projects is huge by comparison with those capable of delivering more structural environmental benefits. Of the 236 million credits being claimed by 106 projects at the time of writing, 40 million come from two HFC-23 projects, and another 70 million from one N<sub>2</sub>O project; nearly 50 percent of all credits from these 3 projects alone. If anything, this situation will become even more pronounced in the coming years. Firstly, a number of the projects included in the above total should be eliminated as non-additional, while the HFC-23 and N<sub>2</sub>O projects have approved methodologies and seem clearly additional. More large HFC-23 and N<sub>2</sub>O projects are under development. Two additional HFC-23 projects in India are awaiting successful registration of the first project in Gujarat, while a consortium of Japanese, Italian and Chinese partners are investigating a project spread across 12 HCFC-22 plants in China that would yield 60 million credits a year from 2008. Point Carbon has

estimated that projects involving N<sub>2</sub>O and PFC could yield up to 50 million credits a year.

86. The prospects for renewables are not nearly so bright, and are getting progressively dimmer. While renewables are currently the most common project type in the CDM, this is a misleading way of judging how effectively they are using carbon finance and how much of the investment generated by the CDM will flow to them. Given that the CDM involves industrialised countries buying carbon credits, it is more accurate to compare how many carbon credits are being generated by renewables projects, as this indicates how much of the amount that will be spent on carbon credits will flow to them. Currently, only 10 per cent of the total volume of carbon credits is being generated by renewables projects. While in some cases they attract incrementally higher prices -- The Netherlands, for example, offers more for renewables -- it is still clear that they will receive a small amount of the total spent on carbon credit purchases by industrialised countries. Furthermore, while renewables projects are numerous now, if additionality testing is credibly applied, their numbers will decline substantially.<sup>23</sup> Significantly, none of the nine remaining<sup>24</sup> renewables projects being developed under the Dutch CERUPT program have demonstrated that they “would not have happened otherwise”. Indeed, the first CERUPT project to seek approval -- the Suzlon wind farm in India -- was withdrawn in May 2004 because it was blatantly non-additional.<sup>25</sup> Yet these nine CERUPT projects account for about 25 per cent of all renewables projects, and are responsible for over 30 per cent of the carbon credits that renewables projects are claiming in total. Other high-volume renewables projects are also in trouble. The largest current renewables project -- the Darajat III geothermal project in Indonesia -- recently had its baseline methodology rejected due in part to its inability to demonstrate that it “would not have happened otherwise”. Darajat III accounts for nearly six million of the 25 million credits currently being claimed by all CDM renewables projects. The Zafarana wind farm in Egypt, which is generating over four million carbon credits, uses a soft-loan from the Japanese Bank for International Cooperation in clear breach of CDM rules against using ODA, and will likely be rejected on those grounds, and also because it is non-additional.

87. It is also clear that many Northern credit buyers are including renewable projects to “green” their portfolios, not because they are commercially attractive. The Finnish Government has recently put up four micro-hydro projects in Honduras for validation by the CDM, yet their credit generation is so small -- one project is claiming only 9,000 credits over 10 years -- that it is difficult to see how they will even cover transaction costs, suggesting that the motivation for their development is political. The World Bank itself has recently conceded the political nature of the current CDM portfolio, noting that the “current distribution of projects may not be representative of the mature CDM market”, and that the renewables projects in its own portfolio reflect its mandate to test all project types, not what would be expected under purely commercial conditions. In the future, the Bank suggests that participants will concentrate on proven project types with approved methodologies and a demonstrated ability to deliver credits, citing as an example the shift of Japanese investment towards landfill gas projects. The steady increase in non-CO<sub>2</sub> projects, such as landfill gas schemes, suggests this prediction is correct. Clearly, the priority of the carbon market will continue to be identifying low cost carbon credits. While renewable projects may continue to be used for political purposes, they will not be part of a



coordinated effort to use carbon finance to assist their development, and their continued use in the CDM will be beholden to political factors.

88. Recent calculations by the World Wide Fund for Nature (WWF) also show that the amount of financing that is expected to be mobilised by the CDM for renewables is a fraction not only of existing investment and Overseas Development Assistance (ODA) flows, but also of Global Environment Facility (GEF) financing. WWF estimates that the CDM will account for less than 0.5 per cent of the annual renewables market in Southern countries, if current trends continue. Even allowing for a huge theoretical increase in CDM renewables projects -- the opposite of what is expected -- it will not deliver a significantly larger volume of new investment. The Bank has consistently claimed that the carbon market and CDM is a way of boosting private sector capital flows to developing countries, yet the flows so far have been limited (Table 6).

Table 6

Funding source	Amount (USD/Year, rounded)
Renewables investment in developing countries, 2005-2010. Annual average <sup>26</sup>	3 000 000 000
ODA renewables, 1989-99. Annual average <sup>27</sup>	986 000 000
GEF including leveraged investment <sup>28</sup>	295 000 000
Renewables CDM including CERs and leveraged investment up to 2012 <sup>29</sup>	124 000 000
GEF renewable energy expenditure, 2002 <sup>30</sup>	59 000 000
CERs for renewable energy up to 2012 <sup>31</sup>	15 000 000

89. The World Bank itself has admitted that most developing countries can only deliver small projects. The high transaction costs and high risks involved in delivering carbon from these projects means that most of the smaller and poorer of the Bank's client countries will be unable to benefit from carbon finance as a catalyst for investment in clean technologies.

90. The current portfolio of CDM projects bears this out. At present, 107 projects in 28 countries are claiming around 352 million carbon credits through the CDM. Of these, 6 countries (India, South Korea, China, Indonesia, Brazil and Chile) account for 50 of the projects and 285 million of the credits been generated, about 80 per cent of the total. Strikingly, the 57 remaining projects in 23 countries will generate less credits over 21 years than the N<sub>2</sub>O project in South Korea will generate by 2012. In the coming years, growth in large volume CDM projects will likely happen in the same 6 countries, particularly India and China. China is currently developing a coal-bed methane project that will generate 29 million credits over its crediting lifetime.

91. The World Bank's response to the problem -- setting up a special purpose fund that pays higher than market prices for small projects in developing countries -- is ironically an implicit admission that the market will not work for developing

countries, and that a carbon market that revolves around private capital and low-cost carbon credits will bypass the smallest countries.

92. As a market mechanism providing cheap credits over a short time, CDM is indeed discovering some low-cost options for cutting greenhouse gas emissions. But, as a market mechanism, it cannot achieve the objectives of a development fund nor a renewables promotion mechanism. Attempts to enforce sustainable development criteria by host countries will actually make their CDM projects less economically attractive -- as this will drive up transaction costs -- and thus less likely to attract investment. Unsurprisingly, no host countries have yet introduced stringent criteria. Some environmental organisations have attempted to address the problem by developing renewable-focussed quality labels that substitute a political incentive for a commercial one, but they have been unsuccessful. Interestingly, an analysis of US led gasoline and acid rain trading programs makes a point about their failings which is directly applicable to the CDM:

“Because trading focuses solely on reducing a single pollutant by an exact date and a precise amount at least cost, techniques and practises that deliver multiple benefits -- e.g., new ways of energy conversion, as well as conservation, and renewable forms of energy -- are frozen out of the market”<sup>32</sup>.

93. This narrow focus on a tradable commodity means that a carbon market will actually frustrate environmentally superior outcomes by directing investment away from projects with the most overall benefits. By going after the cheapest reductions, the market all but ensures that investment will flow to the “lowest quality” reductions, those that involve the least investment, least genuine technology transfer, and least sustainable development co-benefits, as all this would raise prices. It must be noted in passing that the World Bank is currently trying to gain approval for a baseline methodology which would allow projects to get carbon credits for doing nothing other than continuing current practise, the antithesis of what the CDM and carbon market were meant to achieve.

94. Just as US sulphur dioxide emissions markets have been necessarily blind to “hot spots”, so the CDM market is necessarily blind to the fact that not all so-called “emissions reductions” locations are equal in environmental value and potential for driving long-term, system-wide structural innovation and change. An industrialised country that has to meet its target domestically has more incentive to implement more fundamental shifts in energy production and use, or changes in land use, than if it can meet half of its target through cheap carbon credits from CDM projects. The environmental and social value of a rigorous demand-side management program or additional renewables support mechanisms in a European country that creates local jobs and domestic investment clearly outweighs the environmental and social value of buying credits from the reduction of HFC-23 emissions out of pipes in India. Similarly, in Southern countries, a sustainable renewables project will have greater environmental value than a project that merely captures end-of-pipe emissions from an already operating chemical facility, even if they generate the same number of carbon credits and are identical in market terms. Yet the CDM is dominated by such projects, simply because they generate huge volumes of credits quickly and cheaply. The Gujarat HFC-23 project in India, for instance, will prevent the emission of only 289 tonnes of HFC-23 annually, yet, because HFC-23 is such a potent greenhouse

gas, it will yield 3.3 million carbon credits per year, more than all 48 CDM renewables projects are generating together. Renewables projects, by contrast, tend to be greenfield developments which are capital-intensive, provide low rates of return, and generate relatively small volumes of credits. Moreover, the prevalence of a commodity model for the purchase of the carbon credits -- in which credits are bought as they are delivered over the 10 or 21 year crediting period -- makes these revenues less useful for renewables, which incur the majority of costs upfront. The World Bank estimates that 95 per cent of all existing transactions involving CDM and Joint Implementation projects follow a commodity model.<sup>33</sup>

95. Early optimism about how the CDM could be used for renewables, which assumed that buyers would invest debt or equity in return for carbon credits, delivering extra revenues upfront where they were needed, has proved unjustified. Banks, already wary of renewables projects, do not see carbon credits as enhancing a project's appeal and will rarely lend against a carbon credit purchase agreement. Indeed, if a project's viability is dependent on carbon credits it may actually be judged even more risky.<sup>34</sup>

96. The fact that transaction costs are generally similar regardless of project size, moreover, militates against smaller renewables projects, which cannot afford to shoulder the burden of the necessary documentation, validation, ongoing monitoring and verification of emissions reductions. No market system which prioritises price per unit of carbon credits will benefit renewables, as the World Bank itself recognized early on when it calculated that carbon credits would only improve the project internal rate of return for renewables by about two per cent, while projects targetting methane were the real winners. Only months after the 2001 Marrakech Accords, Ecofys examined the opportunities for renewables and concluded: "Various studies indicate a limited role for renewable energy projects under the Kyoto Mechanisms". Moreover, "Kyoto Mechanisms dominated by least-cost approaches only would seriously limit the scope for renewable energy projects"<sup>35</sup>, although noting a range of other influencing variables.

97. At current low prices, the ability of the carbon market to assist high-quality projects such as renewables will remain limited. Indeed, its ability to mobilise new projects in almost any field beyond high-volume non-CO<sub>2</sub> projects is questionable. Cement company Holcim, currently developing a CDM project in Costa Rica, noted in relation to additionality testing that "The incentive provided by carbon credits, especially at their current price of \$3-5 offered by the Prototype Carbon Fund (PCF) and Senter, cannot possibly prove decisive in investment decisions". Ironically, the World Bank itself (together with responsible government departments such as DfID) is partly responsible for this low price. The Bank was already promising its investors carbon credits at less than US\$5 in 1999, two years before the US pulled out. This low price then influenced other carbon funds such as the Dutch procurement funds. As a recent paper on the PCF notes, "given its dominated [sic] role on the buyer side, . . . it will largely in practice set the standard for the carbon market".

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## Appendix 1

Property Creation, Certification, Appropriation, Transfer and Conf Restriction Schemes						
TYPE OF CONTROL REGIME	PRINCIPLE OF ALLOCATION					ACTUAL AL
	Initial creation, confirmation, allocation, appropriation, seizure, or transfer to:	Subsequent allocation, transfer to:	Nature of property right created, confirmed, transferred, etc.	Who supports it, why and how strongly	Who contests it, why and how strongly	Who supports it, why and how strongly
STANDARD REGULATION ('command and control')	Private sector	Private sector	Felt, <i>de facto</i> , informal, not directly monetizable, quasi-usufruct.	Private sector tolerates it as it affirms 'first possession'. Public, NGOs may see it only as a curb on pollution.	Economists see it as non-market, 'inefficient'. Private sector dislikes abatement decisions resting with the state.	Some NGOs, some politicians, some academics, Green Party.
TAX (whether 'pure' or 'contaminated' with project-based rights)	State	State, private sector	State effectively rents or leases property to private sector; property not exchangeable.	Some states (e.g. in Europe). Public (does not feel business's 'first possession' rights are being unfairly usurped).	Private sector (especially US), feels its 'first possession' rights are being handed over to the state to sell back to them.	Some environmental NGOs, some academics, Green Party.
AUCTIONED (whether 'pure' or 'contaminated' with project-based rights)	State	Private sector	Initial source of rent for state, then a monetizable asset exchangeable for land, etc. Formal.	Some states find it attractive (similar to 3G mobile phone spectrum auctions). Many economists.	Private sector sees as usurpation of first possession rights. 'Why should we buy what we already own?'.	Some academics, consultancies, think tanks, governments (UK). Some propose combination with grandfathering
GRANDFATHERED ('pure')	Private sector	Private sector	Monetizable asset usable for accumulation of land, etc. Formal.	Private sector (biggest polluters in particular). Some economists.	Potentially, public or politicians concerned about distribution of land, air. Some big polluters oppose all limitations.	US business and government. Many business groups and governments elsewhere.
PERMITS						

## NOTES

<sup>1</sup> See, for example, submissions to inquiries into the Ilisu Dam by the Select Committee on Trade and Industry and by the International Development Committee; the submission to the Environmental Audit Committee's 2003 inquiry into Export Credits Guarantee Department and Sustainable Development; "UK Export Credits Guarantee Department (ECGD) minimum conditions for reform : A memorandum from concerned non-governmental organisations and parliamentarians", July 2000; "Lessons of the Ilisu Dam UK Export Credit Policy, Corporate Governance and Future Investment in Turkey: Lessons from the Ilisu Hydroelectric Project. A Memorandum from Concerned Non-Governmental Organisations", January 2002; Hawley, S., *Turning a Blind Eye: Corruption and the UK's Export Credit Guarantee Department*, The Corner House, [www.thecornerhouse.org.uk](http://www.thecornerhouse.org.uk), July 2003

<sup>2</sup> Sabine, C. L. et al., "The Oceanic Sink for Anthropogenic CO<sub>2</sub>", *Science* 305, 16 July 2004, pp.367-71.

<sup>3</sup> Leggett, J., *The Carbon Wars*, London, 1999.

<sup>4</sup> Michael Zammit Cutajar, who as former Executive Secretary of the United Nations Framework Convention on Climate Change was a direct witness to this politics, recently put it like this: "The sensitivity of the [Kyoto] Protocol to the market was largely instigated by the negotiating positions of the USA. . . . For example, the European Union -- now fully committed to emission trading -- was insistent [at first] that trading should be supplementary to domestic action to limit emissions, the latter seen as essential to the development of technologies that would open the way to a low-carbon future. The EU also frowned upon recourse to "sinks" for the same reason and because of the uncertainties surrounding that option. Yet these were among the final make-or-break issues for the US negotiators and it is not an exaggeration to brand the mechanisms of the Kyoto Protocol as 'Made in the USA'."

<sup>5</sup> The six greenhouse gases focused upon in the international negotiations are; carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF<sub>6</sub>).

<sup>6</sup> "Pollution Trading and Environmental Injustice: Los Angeles' Failed Experiment in Air Quality Policy". Richard Toshiyuki Drury, Michael E. Belliveau, J. Scott Kuhn and Shipra Bansal (1999) Duke Environmental Law & Policy Forum.

<sup>7</sup> Friends of the Earth Report The Geographic Relation Between Household Income and Polluting Factories [http://www.foe.co.uk/resource/reports/income\\_pollution.html](http://www.foe.co.uk/resource/reports/income_pollution.html)

<sup>8</sup> Preventing Toxic Pollution: Toward a British Columbia Strategy. A Report to the B.C. Hazardous Waste Management Corporation by Calvin Sandborn, William J. Andrews and Brad Wylynko. 1991. West Coast Environmental Law Research Foundation Vancouver, Canada.

<sup>9</sup> Interestingly, Perversely, recent statistics from the US Environmental Protection Agency recently released showed that sulphur dioxide levels in the US have actually increased by four per cent as a result of trading. News 8 WMTV web article: <http://www.wmtv.com/Global/story.asp?S=2338956>

<sup>10</sup> See the large selection of papers at [www.iiasa.ac.at](http://www.iiasa.ac.at).

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<sup>15</sup> See for example extensive research into corporate lobby groups by Corporate Europe Observatory in a report entitled 'Greenhouse Market Mania', CEO, November 2000.

<sup>16</sup> UNCTAD, 'World Investment Report', UNCTAD, Geneva, 2003.

<sup>17</sup> IISD-UNEP, 'Environment and Trade: A Handbook', published by the International Institute for Sustainable Development and the UN Environment Program, 2000.

<sup>18</sup> This facile assumption has recently been called into question by a raft of economics literature, including Burtraw, D., Palmer, K. et al. (2002) 'The Effect on Asset Values of the Allocation of Carbon Dioxide Emission Allowances'. Washington: Resources for the Future; Hultman, N. and Kammen, M. (2002) 'Equitable Carbon Revenue Distribution under an International Emissions Trading Regime'. Amherst: Political Economy Research Institute; Jensen, J. and Rasmussen, T. (1998) 'Allocation of CO<sub>2</sub> Emissions Permits: A General Equilibrium Analysis of Policy Instruments'. Copenhagen: Ministry of Business and Industry; Lane, L. (2003) 'Allowance Allocation under a Carbon Cap-and-Trade Policy'. Washington: Climate Policy Center; Parry, I. (2003) 'Fiscal Interactions and the Case for Carbon Taxes over Grandfathered Carbon Permits'. Washington: Resources for the Future and 'Are Emissions Permits Regressive?' Washington: Resources for the Future (2003); Parry, I., Williams, R. et al. (1998) 'When Can Carbon Abatement Policies Increase Welfare? The Fundamental Role of Distorted Factor Markets'. Washington: Resources for the Future; Pezzey, J. (2002) 'Distributing the Value of a Country's Tradeable Emissions Permits', paper presented at University College London, March; (2003) 'Emissions Taxes and Tradeable Permits: A Comparison of Views on Long-Run Efficiency', *Environmental and Resource Economics* 26: 329-343; United States Congressional Budget Office (2000) *Who Gains and Who Pays under Carbon-Allowance Trading?* Washington: CBO; Barnes, P. and Breslow, M. (2000) 'Pie in the Sky: The Battle for Atmospheric Scarcity Rents' and Bernow, S., Kartha, S. et al. (2000) *Free-Riders and the Clean Development Mechanism*. Gland, Switzerland: World Wildlife Fund.

<sup>19</sup> The following sections rely heavily on an unpublished paper by Ben Pearson of CDM Watch, "Is the Carbon Market Working?". See [www.cdmwatch.org](http://www.cdmwatch.org) for extensive documentation.

<sup>20</sup> *ENDS Report*, July 2004, p.6.

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<sup>24</sup> There were 10 but Wayang Windu in Indonesia will not go ahead.

<sup>25</sup> To see submissions on Suzlon go to [www.cdmwatch.org](http://www.cdmwatch.org).

<sup>26</sup> Argiri M., IEA Senior Energy Analyst. Personal Communication. 2004

<sup>27</sup> G8 renewable energy task force. Annexes. July 2001

<sup>28</sup> GEF estimates that it levers other investment at a ratio of 1:4

<sup>29</sup> According to the World Bank, Certified Emissions Reductions (CERs) leverage other investment at a ratio of 1:6 to 1:8. Note that this figure assumes 100 per cent additionality because non-additional projects by definition do not lever new investment.

<sup>30</sup> OECD estimate, 2004.

<sup>31</sup> Derived from CDM Watch Quickstats. Assumes no further renewables projects but 100% acceptance of all existing listed proposals by the Executive Board for a total of 24,96,511 CERs by end 2012. Average CER value of USD\$5 tonne. CER revenues averaged over 8 crediting years (2005-2012) i.e. all projects are available to come on stream Jan 1 2005. See [www.cdmwatch.org](http://www.cdmwatch.org).

<sup>32</sup> Moore, C., "Air pollution trading -- marketing failure"; [www.acidrain.org/AN2-04.htm](http://www.acidrain.org/AN2-04.htm).

<sup>33</sup> World Bank, State and Trends of the Carbon Market 2004, [www.carbonfinance.org](http://www.carbonfinance.org).

<sup>34</sup> The Green IPP network has delivered a blunt assessment of the value of a carbon revenue stream in attracting financing:

"Banks . . . do not count the cashflow from the sale of emission reductions in evaluating few projects that are up for CDM evaluation. Most investors are also not counting the potential for revenue from the sale of carbon credits. Yet at the moment banks and equity investors are generally not willing to place value on a carbon credit purchase agreement." See [http://www.asem-greenippnetwork.net/dsp\\_page.cfm?view=page&select=142](http://www.asem-greenippnetwork.net/dsp_page.cfm?view=page&select=142).

<sup>35</sup> Ecofys, "Opportunities for Renewables under the Kyoto Mechanisms", February 2002.

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<sup>23</sup> Although this is also true of other project types, particularly large hydro and avoided fuel switching.

<sup>24</sup> There were 10 but Wayang Windu in Indonesia will not go ahead.

<sup>25</sup> To see submissions on Suzlon go to [www.cdmwatch.org](http://www.cdmwatch.org).

<sup>26</sup> Argiri M., IEA Senior Energy Analyst. Personal Communication. 2004

<sup>27</sup> G8 renewable energy task force. Annexes. July 2001

<sup>28</sup> GEF estimates that it levers other investment at a ratio of 1:4

<sup>29</sup> According to the World Bank, Certified Emissions Reductions (CERs) leverage other investment at a ratio of 1:6 to 1:8. Note that this figure assumes 100 per cent additionality because non-additional projects by definition do not lever new investment.

<sup>30</sup> OECD estimate, 2004.

<sup>31</sup> Derived from CDM Watch Quickstats. Assumes no further renewables projects but 100% acceptance of all existing listed proposals by the Executive Board for a total of 24,96,511 CERs by end 2012. Average CER value of USD\$5 tonne. CER revenues averaged over 8 crediting years (2005-2012) i.e. all projects are available to come on stream Jan 1 2005. See [www.cdmwatch.org](http://www.cdmwatch.org).

<sup>32</sup> Moore, C., "Air pollution trading -- marketing failure"; [www.acidrain.org/AN2-04.htm](http://www.acidrain.org/AN2-04.htm).

<sup>33</sup> World Bank, State and Trends of the Carbon Market 2004, [www.carbonfinance.org](http://www.carbonfinance.org).

<sup>34</sup> The Green IPP network has delivered a blunt assessment of the value of a carbon revenue stream in attracting financing:

"Banks . . . do not count the cashflow from the sale of emission reductions in evaluating few projects that are up for CDM evaluation. Most investors are also not counting the potential for revenue from the sale of carbon credits. Yet at the moment banks and equity investors are generally not willing to place value on a carbon credit purchase agreement." See [http://www.asem-greenippnetwork.net/dsp\\_page.cfm?view=page&select=142](http://www.asem-greenippnetwork.net/dsp_page.cfm?view=page&select=142).

<sup>35</sup> Ecofys, "Opportunities for Renewables under the Kyoto Mechanisms", February 2002.