Until now, agriculture has been largely excluded from global carbon markets, but this is set to change in December 2009 at the Copenhagen conference. Agribusiness companies are lobbying hard to make a range of farming activities eligible for future funding under the Clean Development Mechanism (CDM). As a result, billions of dollars will almost certainly be invested in agriculture, mainly livestock production and plantations. What makes this prospect so alarming is that this huge investment, carried out in the name of mitigating the climate crisis, will be channelled largely to big agribusiness. And it is precisely their approach to farming and food production that has created so many of the problems we face today.

* This is a version, shortened and edited by GRAIN, of part of "Agriculture and climate change: real problems, false solutions" – preliminary report by the Grupo de Reflexión Rural, Biofuelwatch, EcoNexus and NOAH–Friends of the Earth Denmark", http://www.econexus.info/pdf/agriculture-climate-change-june-2009.pdf

The agribusiness lobby arrives in Copenhagen

GRUPO DE REFLEXIÓN RURAL, BIOFUELWATCH, ECONEXUS, NOAH–FOE DENMARK*

In 2008 a record 4.9 billion tonnes of carbon dioxide equivalent (CO_2e) emission reductions were traded on global carbon markets. Overall, carbon trading increased by 83 per cent in just one year.[1] This trading, however, has not led to a reduction in emissions: since the Kyoto Protocol came into force in 2005, global CO_2 emissions have continued to rise.[2] The growing carbon markets have not even led to emission reductions in the so-called Annex 1 countries, that is, the industrialised nations that are committed to reducing their greenhouse gas emissions under the Kyoto Protocol. Instead, the world is now on course for the worst emissions scenario predicted by the Intergovernmental Panel on Climate Change (IPCC), or perhaps one that is even worse than that.[3] Peter Atherton of Citigroup, which is strongly involved in carbon trading, admitted in 2007 that, while the parties involved had found the activity highly profitable, the world's biggest carbon market had failed in its basic objective: "The European Emissions Trading Scheme has done nothing to curb emissions."[4]

Photo: Asian Peasant Coalition (APC)

Protesters outside UN climate talks, the Philippines, September 2009

1 "Carbon Market Up 83% In 2008, Value Hits $125 Billion", *Environmental Leader*, 14 January 2009, http://tinyurl.com/lodm9m

2 According to the Netherlands Environment Assessment Agency, global CO_2 emissions increased from 22.5bn tonnes in 1990 to 31.5bn tonnes in 2008. http://tinyurl.com/kmsh4r

3 "Key Messages from the Congress", International Scientific Congress – Climate Change: Global Risks, Challenges & Decisions, University of Copenhagen, 12 March 2009, http://tinyurl.com/acne8f

4 Citigroup Global Markets (2007), quoted in L. Lohmann, "Governance as Corruption", presentation, Athens, November 2008, http://tinyurl.com/lvlzso

Photo: Practical Action

A Maasai herdsman leads his animals to find water. The Maasai Mara region of Kenya has not had proper rains – which usually occur in April and October – for several years.

The Clean Development Mechanism (CDM) is an arrangement under the Kyoto Protocol that allows Annex 1 countries[5] to invest in projects that reduce emissions in developing countries as an alternative to more expensive reduction of emissions in their own countries. The CDM plays a crucial role within the carbon markets because CDM credits can be traded on other carbon markets, including the European Emissions Trading Scheme, which accounts for two thirds of all carbon trading. The only exception is CDM credits for "afforestation and reforestation", which cannot at present be traded under the European scheme. The CDM has come under sustained criticism: for funding projects that are not "additional" and would have gone ahead anyway; for "being routinely abused by chemical, wind, gas and hydro companies who are claiming emission-reduction credits for projects that should not qualify";[6] and for funding projects which actually increase greenhouse gas emissions, such as hydro dams.[7] Nonetheless, the great majority of proposals for a post-2012 climate change agreement involve a major expansion of the CDM and a further weakening of existing safeguards.

Before the Kyoto Protocol came into force, a decision was taken not to include soil "carbon sinks" under the CDM, largely because of the uncertainties involved in, for example, measuring carbon dioxide fluxes and nitrous oxide emissions linked to no-till monoculture. Only around 6 per cent of CDM credits have gone to agriculture, with almost all of the funded activities outside mainstream farming. Significant funding has been channelled to biomass energy projects in the farming sector: the big winners have been livestock manure management (including biogas from swine manure), heat generation from palm-oil effluents and the use of agricultural residues for biomass. In 2007, for example, 90 per cent of all approved CDM projects in Malaysia benefited palm oil companies; in Mexico half of all CDM projects are pig farms. This arrangement has meant, however, that big agribusiness firms like Monsanto have so far obtained very little funding through carbon markets and none through the CDM, despite a long-standing lobbying campaign for no-till GM monocultures to be classified as a way of sequestering carbon and reducing emissions. At the moment, there is no CDM methodology for calculating the possible reductions in greenhouse gases stemming from no-till farming as such. So far, only one large carbon trading scheme, the Chicago Climate Exchange, has included agriculture and specifically no-till farming. In Saskatchewan, a pilot project was set up in 2005 which allowed trading in credits from no-till farming, but this was later abandoned.

For similar reasons, CDM credits for soil carbon sequestration from cropland or forest management

5 Most Annex 1 countries (but not the USA) ratified the Protocol, thus committing themselves to reducing their emissions of six GHGs by at least 5% below 1990 levels over the period 2008–12.

6 J. Vidal, "Billions wasted on UN climate programme", Guardian, 26 May 2008.

7 J. Langman, "Generating Conflict", Newsweek International, 13 September 2008.

8 See James Jacob, "The Kyoto Protocol and the Indian natural rubber sector", paper available at http://tinyurl.com/nxbqtm

9 Bronwyn Herbert, "Opposition supports biochar research", The 7.30 Report, Australian Broadcasting Corporation, 26 January 2009, http://tinyurl.com/mu5yf6

10 UNFCCC, "Use of charcoal from planted renewable biomass in the iron ore reduction process through the establishment of a new iron ore reduction system", http://tinyurl.com/lpbmbl

were ruled out in 2003.[8] Only the Chicago Climate Exchange and a few carbon offsetting companies and schemes, such as C-Lock Technology Canada, provide carbon credits for soil carbon sequestration. Carbon Farmers of Australia have set up the Australian Soil Carbon Grower Register and are lobbying for carbon credits for soil, but as yet these are not being traded. Moreover, the Australian government has reacted sceptically to calls by opposition politicians to support carbon credits for biochar and other soil carbon sequestration methods, saying that the technology is as yet unproven.[9] Nor has the agrofuel industry profited from carbon trading as yet. So far, no agrofuel CDM project, using biomass from crops and trees grown for this purpose or from vegetable oil (other than waste vegetable oil) has been approved. This could soon change, however: the Brazilian company Plantar has just had a new methodology approved for using charcoal made from eucalyptus plantations to produce pig iron.[10] Local communities and human rights organisations have long opposed Plantar's plantations for the damage they have caused to people, biodiversity and freshwater resources, but their concerns have been ignored because of the allegedly more pressing need to combat global warming.[11]

Photo: GRAIN

Onshore fishers contemplate a morning's meagre catch, Kerala, south India, 2008.

Much bigger role for agriculture

In the negotiations under way for the 15th Conference of Parties to the United Nations Framework Convention on Climate Change (UNFCCC), to be held in Copenhagen in December 2009, the idea that industrial agriculture has an important role to play in both mitigation (that is, measures to deal with the causes of climate change) and adaptation (that is, measures to tackle its effects) is being strongly promoted.[12] Leading bodies, including both the International Food Policy Research Institute (IFPRI) and the United Nations Food and Agriculture Organisation (FAO), believe that the exclusion of agriculture should be lifted in the new Copenhagen treaty. Earlier this year FAO issued a press release saying it "has urged policy makers to include agriculture in negotiations for a new climate change treaty".[13] It observes that "soil carbon sequestration, through which nearly 90 per cent of agriculture's climate change potential could be realised, is outside the scope of the Clean Development Mechanism", and claims that, if this were changed, "millions of farmers around the globe could also become agents of change helping to reduce greenhouse gas emissions."[14] Proposals for mitigation include the practice of no-till farming, a move to a "bioeconomy" (where all types of fossil fuel use are increasingly replaced with biomass, including second-generation agrofuels, large-scale wood burning, bioplastics, and so on),[15] and the further intensification of the livestock industry to reduce its greenhouse gas emissions. Proposals for adaptation are largely focused on the development and cultivation of a new generation of genetically modified crops that are "climate ready". At the same time, the United Nations Convention to Combat Desertification (UNCCD), supported by a number of African countries and Belize, is promoting biochar for carbon sequestration and as a soil additive.[16] Biochar, which is fine-grained charcoal applied to soils, is a by-product of technology which processes biomass into bioenergy which can be refined further into so-called second-generation agrofuels. Making biochar eligible for funding under the CDM would thus be warmly welcomed by the companies that have developed this technology.

As a result of this lobbying, it is now being proposed that:

- agriculture should be fully included in the negotiations for the new climate treaty;
- agriculture should be paid for its environmental services, mainly through carbon markets and possibly through inclusion into REDD-plus (Reducing Emissions from Deforestation and Degradation-plus);
- special emphasis should be given to carbon sequestration in the soil, including CDM status for biochar.

FAO sees the inclusion of agriculture in the climate treaty as hugely positive, freeing up resources for the "massive investments in agriculture" needed "to change unsustainable production methods, to train farmers in climate change mitigation practices and

11 See "The Carbon Connection", Carbon trade watch, http://tinyurl.com/bzgyjn

12 See IPCC (2001): Climate Change 2001: Mitigation. Annex II Glossary. http://tinyurl.com/nl54rv

13 "Climate change talks should include farmers", FAO media centre press release, 2 April 2009, http://tinyurl.com/kn29eb

14 *Ibid.*

15 Crop plants used as fuels are often described as "biofuels". In this article we use the term "agrofuel" to make it clear that we are referring to agricultural crops grown as fuel and produced for the market. For details on the relationship between agrofuels and climate change, see also Chapter 1 of *Agrofuels: towards a reality check in nine key areas*, a report published by Biofuelwatch and other organistions in June 2007, http://tinyurl.com/mjkl5o

16 Submission by the United Nations Convention to Combat Desertification, 5th Session of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA 5), Bonn, Germany, 29 March–8 April 2009, http://tinyurl.com/mlvvrb Submission of African Governments (The Gambia, Ghana, Lesotho, Mozambique, Niger, Senegal, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe) to the 5th Session of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA 5), Bonn, Germany, 29 March -April 2009, http://tinyurl.com/ktu7px

Photo: Practical Action

Severe flooding in Bangladesh

to improve overall access to credit". FAO goes on: "These investments will make agriculture more resilient to climate change and at the same time will improve agricultural productivity and sustainability, thus contributing to better food security and poverty reduction."

Carbon market bubble

The view espoused by FAO ignores a swathe of problems. To begin with, the measuring and certification of the reduction in emissions from agricultural practices and the regulation of such a market will be a big challenge in itself. A large number of agricultural activities could potentially benefit, and it is impossible to predict how much money would be raised. More importantly, the very existence of such a market will free the industrialised countries and their industries from their obligation to reduce their own emissions. In other words, trading schemes in agriculture will not address the fundamental problem of the world continuing to promote a model of permanent economic growth on a planet that has finite resources. Having just experienced the impact of the sudden collapse of a subprime property market, we now run the risk of building a carbon market bubble, the existence of which would have the devastating impact of diverting resources away from the funding of meaningful responses to the climate crisis.[17]

The most worrying impact of all of these proposals is that they will further promote industrial farming. Very often companies argue that they can isolate single elements of very specific traditional or indigenous farming methods and then scale them up and integrate them into industrial farming. Biochar is cited as an example. The companies claim that, by doing this, they will increase yields and thus reduce pressure on fragile ecosystems. But as the climate crisis gains momentum and the world faces growing problems of drought, heat waves, soil erosion and extreme weather, this assertion seems increasingly far-fetched. It is much more likely that industrial farming will continue along its present course, or perhaps move even faster, destroying the very biodiversity and ecosystems that are crucial if we are to have any hope of stabilising climate, producing enough food to feed ourselves and leaving a habitable planet for future generations. As is argued elsewhere in this *Seedling* (*see* "Earth matters", p. 9), agriculture can certainly play a key role in combating climate change, but it is biodiverse, agroecological, non-chemical farming that is needed, a far cry from the kind of farming promoted by FAO.

In 2000 the US proposed that under the Kyoto Protocol an unlimited percentage of the total emission reductions should be allowed to come from tree plantations and agricultural practices, instead of reducing emissions from other sources, such as industry and transport. This was rejected by the EU and many other parties as undermining attempts to address the causes of climate change. Now the US is once again arguing that the CDM should be altered to cover new technologies, such as carbon capture and nuclear power, and that the rules should be changed to make it easier to gain funding for other allegedly "environmentally-friendly" technologies. At present, a maximum of 1 per cent of total credits can come from sequestration in forests (with the term "forests" including tree and shrub plantations) and no CDM credits for carbon sequestration in soils are permitted. Now UNCCD, in particular, is calling for an increase in the 1 per cent limit and for inclusion of carbon sequestration in soils, as well as for changes to the rules by which carbon sequestration projects have to be shown to be "additional" to what would have happened without CDM funding.

Unless the lobbyists can be stopped, the big winners will be agribusiness, particularly US-based corporations. In the US, the proposed climate change legislation includes provisions for agriculture and forestry to provide carbon offsets,[18] and these sectors are expected to provide the vast majority of domestic offsets. Yet, taking carbon trading to a new level of absurdity, the emissions created by the activities providing the carbon offsets will not be capped. In other words, the US is close to introducing legislation by which emissions from "capped sectors" (that is, sectors where limits have been placed on emissions) will be offset by methods not yet shown to be effective in uncapped sectors. These proposals, as well as others which would further boost agrofuel production and industrial wood bioenergy, have been drawn up

17 Friends of the Earth (2008), *Subprime Carbon? Rethinking the world's largest new derivatives market*, http://tinyurl.com/mhpt57

18 A carbon offset is a financial instrument aimed at a reduction in greenhouse gas emissions. Offsets are typically achieved through financial support through the carbon-trading markets of projects that are said to reduce the emission of greenhouse gases in the short or long term.

largely through the efforts of a lobby group called the 25x'25 Coalition. This is made up of leading figures in the US soya and maize lobby together with representatives of the forestry companies. In all, the 25x'25 Coalition predicts that, as a result of climate change legislation, "the [US] agriculture and forestry sector could realise over US$100 billion in additional annual gross revenue" – 50 per cent of the total value of US agriculture.[19]

Conclusion

Our analysis, outlined above, calls into question the effectiveness of the proposed measures relating to agriculture. Agrofuels[20] and other forms of bioenergy from monoculture, probably combined with biochar, no-till GM plantations and industrial livestock, are likely to attract a large part of future carbon credits for agriculture. This means that most of the funding will go into further agricultural intensification and more plantations, which are seen as effective means of reducing greenhouse gases by, for example, the IPCC and by the UNFCCC Secretariat.[21] The idea is that pressure on ecosystems will be reduced by increasing yields. But this is very unlikely to happen. Greater demand for agrofuels and other types of bioenergy, as well as a new, fast-growing market for biochar, if its proponents have their way, will create an unlimited new market for agricultural and forest products. Even if yields can be raised, which is by no means guaranteed, as droughts and floods are becoming more common and soil and freshwater are becoming depleted, demand for bioenergy will grow faster, which means that higher yields will translate into greater production and higher profits, thus creating even more incentives for companies to expand their agricultural activities. This dashes any hope that higher yields will result in less pressure on ecosystems.

Non-industrial, biodiverse farming by small-scale farmers is unlikely to benefit from the proposed climate deal. As Larry Lohmann from Corner House states: "The CDM's market structure biases it against small community-based projects, which tend not to be able to afford the high transaction costs necessary for each scheme."[22] As a result, no effective response to climate change is likely: on the one hand, the large-scale inclusion of agriculture and soil carbon sequestration into carbon trading as offsets will further weaken any incentives to reduce fossil fuel emissions, and, on the other hand, the main beneficiaries of the proposals are likely to be industries, such as South America's soya industry (because of its use of no-till farming) and companies that own tree plantations. These industries are likely to continue large-scale deforestation and other ecosystem destruction, thus accelerating climate change, causing greater pollution of the air, soil and water, and further displacing indigenous communities, small farmers and other communities.

There are alternative models for the future of agriculture, but they are currently neglected in the UNFCCC process. They include biodiverse ecological agriculture and agroforestry, which can increase food production and reduce the climate footprint of agriculture, as well as play a major role in ecosystem restoration and maintenance. Agriculture should be recognised as a multifunctional activity: it not only produces food, medicine, materials, fibres, and so on, and effectively recycles waste into soil restoration, but also does a lot else. This includes not only protecting biodiversity, soils and water sources but also satisfying people's cultural, landscape, and well-being needs, over and above their requirement for food. Finally, it is a repository for knowledge built up over generations that we lose at our peril. As long as the UNFCCC relies on carbon trading from agriculture and other sectors to resolve the climate crisis, it will not reduce emissions.

Messages like these come, for example, from farmers themselves, as in La Via Campesina's report on how small-scale sustainable farmers are cooling down the earth[23] and in Practical Action's paper on biodiverse agriculture for a changing climate.[24] The International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) report, written by 400 scientists in a cooperative process between a wide range of UN institutions and approved by 57 governments prior to publication, also notes: "A powerful tool for meeting development and sustainability goals resides in empowering farmers to innovatively manage soils, water, biological resources, pests, disease vectors, genetic diversity, and conserve natural resources in a culturally appropriate way."[25] Great caution is needed about adopting new agriculture practices and techniques for climate change mitigation. Policy makers should not assume that solutions to climate change are essentially technical; the most important are social and cultural. We urgently need to shift our focus away from the promise of future technological fixes to the readily available knowledge, experience and resourcefulness of local communities.

19 25x'25, *Agriculture and Forestry in a Reduced Carbon Economy: Solutions from the Land, A Discussion Guide*, 1 April 2009, http://tinyurl.com/n79mg2

20 Many authors now believe that the production of agrofuels is intensifiying the climate crisis. See, for example, J. Fargione *et al.*, "Land Clearing and the Biofuel Carbon Debt", *Science*, Vol. 319, No. 5867: 1235–8; T. Searchinger *et al.*, "Use of US Croplands for Biofuels Increases Greenhouse Gases Through Emissions from Land-Use Change", *Science*, Vol. 319, No. 5867: 1238–40.

21 See UNFCCC, Workshop on opportunities and challenges for mitigation in the agricultural sector, 4 April 2009, http://tinyurl.com/m3r2n2

22 L. Lohmann (ed.), *Carbon Trading: A critical conversation on climate change, privatisation and power*, Dag Hammarskjöld Foundation, Durban Group for Climate Justice and The Corner House, 2006. http://tinyurl.com/2e7fgq also available as *Development Dialogue*, No. 48, Dag Hammarskjöld Foundation, http://tinyurl.com/2g97dt

23 Via Campesina, "Small scale sustainable farmers are cooling down the earth", background paper, 9 November 2007 (accessed 20 May 2009), http://tinyurl.com/ncp7a2

24 Practical Action, *Biodiverse agriculture for a changing climate*, 2009, http://tinyurl.com/lqg2yd

25 IAASTD, Executive Summary of the Synthesis Report, Island Press, Washington DC, 2009, http://tinyurl.com/nrv8ou See also Practical Action, GM Freeze and Friends of the Earth, *New Labour and the International Assessment of Agricultural Knowledge, Science and Technology (IAASTD) – Meeting the Challenge*, Special Briefing, 2009, http://tinyurl.com/n7zqcp

Geoengineers are gambling with Gaia

ETC Group*

What is geoengineering? According to geoengineering's advocates, climate chaos is accelerating beyond all predictions; critical "tipping points" might already have passed; governments don't have the political will to take unpopular decisions, especially in a worldwide financial depression. Humanity urgently wants a technological fix, even one that is profoundly regrettable and known to be hazardous. With the after-effects of the industrial revolution as "proof of principle" that geoengineering "works", a current bright idea is that technology got us into this and so technology can get us out. Geoengineering – intentional, strategic manipulations of terrestrial, aquatic and/or stratospheric regions – could solve our problems or buy us time. Among the technologies are: (1) Ocean fertilisation – dumping iron nanoparticles into the ocean to stimulate algal blooms to sequester CO_2 (though a dozen experiments have failed to prove its effectiveness); (2) Stratospheric sulphates – blasting a continuous aerosol sulphate stream to block sunlight and turn down the thermostat without reducing greenhouse gas (GHG) emissions; (3) Cloud whitening – "albedo" enhancement (increasing reflectivity) to reduce heat absorption, which will rise as darker seas replace Arctic ice; (4) Biochar – burning crop "waste" to sequester carbon and apply it to soils; (5) Synthetic trees – large land areas covered by giant "goal posts" to suck up CO_2; (6) "Climate-ready" crops – vast, genetically uniform and Terminator-protected (i.e. sterile) food crops and agrofuel plantations with enhanced stress tolerance and (theoretically) CO_2-fixing capacity.

At what scale? When? The scale could not be bigger and the time is now. Each year global warming is already seriously affecting 300 million people and causing US$125 billion-worth of damage. Since the last report of the Intergovernmental Panel on Climate Change (IPCC) and the dire warnings of the UK's Stern Report, technological fixes once considered off the wall are suddenly on the table for governments and industry. After decades of denial, industry sees a silver lining to the climate's storm-clouds, and governments see an escape route from tough decisions, and a way to stimulate their economies. In the lead-up to the Copenhagen climate conference in December, the White House, the US National Science Foundation and the UK's Royal Society (among others) are testing the waters to judge public acceptance of geoengineering. An added attraction for policymakers: unlike negotiating UN accords on GHG emissions, where everyone has to be on the same page for anything to work, a single superpower or a "coalition of the willing" can regauge Gaia without intergovernmental consensus. Just as the Cold War made atmospheric and deep-sea nuclear testing possible (at least for a time), the panic that is building over climate chaos may give the G8 carte blanche to try to rejig the barometer.

Geoengineering's impact on the environment? The scheme has to be massive. Solar screens or whitened clouds must deflect a lot of sunlight; artificial forests must displace a lot of flora and fauna; ocean fertilisation must cover a lot of sea. The problems that these will create for biodiversity – and food security – would be huge, and (possibly) intractable.

On health? Geoengineering will present its own risks to health, whether from sulphate pollution in the air or from major land-use changes, with diseases possibly migrating or mutating.

On human rights? Geoengineering is a high-stakes gamble. The truth may be obfuscated and dissent terminated. Even successful interventions will have unexpected consequences, and allies will be exposed to "friendly fire". The Pentagon has already declared climate change a threat to national security. Civil rights and human rights could be early victims.

On governance? Even though geoengineering violates basic UN principles and contravenes its binding Environmental Modification (ENMOD) Treaty, ratified by all major powers, it won't go away because there is money to be made. In effect, geoengineering may lead to a unilateral environmental WTO, with countries heavily penalised if they stand in its way and powerless to evade its impacts.

Players: While still sending up trial balloons, some wealthy countries are encouraging their scientific and military institutes to investigate. Scientific conferences are held and reports trickle out; more are expected before and after Copenhagen. Rogue philanthro-capitalists, and aerospace, energy, chemical and agri-businesses see lucrative opportunities.

Fora: The first global skirmishes have taken place through the UN Convention on Biological Diversity (CBD), and a showdown is certain when the CBD's 192 members meet in Japan late in 2010. More immediately (and importantly), geoengineering may spring from obscurity to become a *cause célèbre* in Copenhagen. Researchers want the UNFCCC's green light, as well as government grants for real-world experiments. In the US, Republican efforts from 2005–6 to establish environmental modification legislation may be born again in this Congress.

The bottom line: Geoengineering is the wrong response to climate change. The only valid approach is for OECD states to make immediate, drastic, measurable reductions of CO_2 emissions at source. No market – compliance or voluntary – should grant carbon "offsets" for any geoengineering technique. Geoengineering must not be undertaken unilaterally by any nation. The UN must reaffirm (and, if necessary, expand) the ENMOD Treaty, recognising that any unilateral modification of climate is a threat to neighbouring countries and, very likely, the entire international community.

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