Clear as Mud:
Why agriculture and soils should not be included in carbon offset schemes

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Carbon offsetting is big business. And it's growing bigger, as carbon traders and industries look for ever- more opportunities for claiming offsets. Interest is growing in the potential for agriculture to be included in carbon offset schemes, as soils can provide a substantial store for the planet's carbon.

Initiatives such as the World Bank's BioCarbon Fund, the California and Alberta offset schemes, REDD and others are developing or considering agricultural carbon offsets. If carbon can be captured in soils, the argument goes, then surely the huge carbon offset market can be harnessed to direct funds towards climate-friendly agriculture?

But the reality is that including agriculture in offset schemes offers no guarantees for climate benefits. Sequestering carbon in soil is a largely uncertain process. The difficulties in measuring impacts on a large scale have important implications for consumer confidence and the market place. Very little money is likely to make it to projects on the ground. Public funds are being invested, even though the main beneficiaries will be private companies and financial speculators. Furthermore, agricultural carbon offsets are likely to lead to counter-productive and harmful practices that threaten communities, forests and food security, and which could even make climate change worse.

1) Made-up numbers: difficulty in measuring soil carbon

Measuring carbon captured in soils presents major problems. It is simply not possible to measure every square metre of land to assess the carbon stored. Variations in soil type and practice means large uncertainties regarding amounts of sequestered carbon from plot to plot. But reducing the high levels of uncertainty in measuring soil carbon, to a level of accuracy needed to trade carbon for offsets, is technically and financially unviable.

Whilst measuring GHG emissions from industrial sources is also difficult and not directly measured, the process generally results in "proxy" figures with uncertainty ranges of ±10%. When measuring carbon stored in ecosystems such as forests, the margin of error increases to ±50%[1], and can be as high as ±1000%[2]. Potentially even higher levels of uncertainty exist when measuring carbon sequestered in soils through agricultural practice. This is especially the case when thousands of farmers are participating in the scheme, increasing the level of uncertainty.

Agricultural carbon offset schemes use proxy figures that are based on the figures measured in a few sample plots, in the assumption that these will reflect an average amount of carbon sequestered. These proxy numbers are aggregated, in the hope that the total comes close to reality. But as the carbon never actually gets measured, it is impossible to know how close these proxy figures actually are to reality.

However, the difference in measuring emissions from industry and agriculture, and their vastly different uncertainty ranges, could lead to an unintended increase in emissions when agriculture is used as an offset.

Furthermore, the uncertainty over the validity of figures associated with agricultural carbon offsets can deter responsible investors and customers who want to feel confident that they really are contributing to quantifiable carbon sequestration.

2) GM carbon offsets: socially and environmentally destructive agricultural practices

It is clear that good agricultural practices offer great potential for combating climate change. Unfortunately by relying on carbon trading (i.e. offsets) to finance emissions reductions, it is more likely that only the large, industrial, technical and technological approaches such as genetically modified (GM) crops and biochar will be able to engage in these highly complex processes. The technical expertise required and high transaction costs provide a barrier to entry to smallholders and local organisations. Small-scale, organic farmers who really do build up soil carbon through careful techniques that nurture biodiversity, are the least likely to be able to have the time, resources and technical capacity to benefit from carbon markets.

1 Kintisch, E. (2007) Improved monitoring of rainforests helps pierce haze of deforestation. Science. vol 316, 27 April, pp 536-537
2 Chen, W., Chen, J., Liu, J., Cihar J.(2000) Approaches for Reducing Uncertainties in Regional Forest Carbon. Global Biogeochemical Cycles 14(3) pp.827-838

Instead, agrochemical companies who produce crops which are genetically modified for resistance to herbicides would be more likely to benefit. It is claimed that using herbicides instead of tilling for weeds reduces carbon emissions lost from soil - although studies cast doubt that this leads to a net reduction of emissions[3]. Furthermore, the moment a field is ploughed, the "sequestered" carbon emissions can be released again, leading to sequestration "reversals". Another technology being considered is "biochar" which involves the burying of charcoal in soil, supposedly to sequester carbon – but this claim is also scientifically questionable[4]. However, advocates are calling for half a billion or even one billion hectares of land in Africa to be put over to biochar feedstock plantations. Carbon offsets for biochar are thus likely to exacerbate the aggressive land grab that Africa is already experiencing. The land, food, livelihoods, water, forests and ecosystems of farming and indigenous communities are threatened by large-scale biochar developments. But GM and biochar advocates are pushing strongly for agricultural carbon offsets, as they stand to benefit most.

3) Public funds for private profit: money goes to speculators, not communities

Carbon credits rarely deliver money to projects and communities on the ground. Out of a total carbon market volume of $144 billion in 2010, only 3,370 million (0.2%) was for project-based transactions[5], with only a very small proportion of that likely to reach the community level. Most of the money stays in the global North, even though projects themselves are in the South. Those that benefit most from carbon trading are financial speculators such as J.P.Morgan, Goldman Sachs and Merryl Lynch, who buy and sell carbon credits like they do any other internationally tradable commodity.

Financial speculators make their money through fluctuations of commodity prices, so it is in their interests to see carbon prices going up and down as much as possible. Through their buying and selling, these speculators cause the price of carbon to fluctuate wildly. Projects will lose out because fluctuating prices, the uncertainty of measuring emissions reductions, risk of reversals, and the risks associated with projects around land tenure, further deter responsible investors from making long-term investments in land-based offset projects.

Developing countries may open up to agricultural carbon offset projects, in the expectation that this will generate income for communities. But in order to set up these projects, massive initial investment is required. Public money is being spent to support these projects to develop their capacity, technologies and methodologies, all in the name of developing climate solutions. But carbon offset projects tend to be run by Northern-based profit-generating private companies. This means that instead of going towards the real solutions for climate change, vast public funds are being used to develop projects for private profit. These projects are unlikely to deliver any benefits to the communities. They are likely to fail due to poor investment. They will certainly not benefit the climate. But they will be hugely profitable to financial speculators.

4) Alternatives to carbon offsets in agriculture

Agriculture, with its intensive use of fossil fuels, synthetic agro-chemicals, machinery, transport and intensive livestock rearing, is clearly a significant contributor to climate change. But done properly, the right kind of agriculture can also be a major part of the climate solution.

The International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD)[6], the largest-ever international study on agriculture, was published by 400 of the world's agricultural experts in 2009. The report specifically recommended the use of agro-ecological farming systems to minimise agricultural GHG emissions, and to restore soil carbon. These approaches also provide numerous "multi-functionality" benefits for adaptation, ecosystems, human health, equitable access to resources, and long-term food security.

In addition to the difficulties for smallholders and local organisations in participating in complex carbon offset schemes, carbon offsetting requires projects to be competitively priced. This can lead to a "race to the bottom" in which socio-economic and environmental considerations are often ignored as projects compete to offer cheap carbon offsets. Carbon offsetting schemes will therefore fail to lead to the kind of agriculture and multi-functionality urgently needed for real climate change mitigation. Carbon offsets, and in particular agricultural carbon offsets, are not a solution.

Alternative financing systems, such as international taxes and levies, and redirecting fossil fuel subsidies[7], are needed to support agro-ecological farming projects, which can provide real solutions to climate change and communities.

3 http://www.ucsusa.org/food_and_agriculture/science_and_impacts/science/ag-carbon-sequest-fact-sheet.html
4 http://www.gaiafoundation.org/sites/default/files/Biochar%20Africa%20briefing(2010).pdf
5 World Bank, state and trends of the carbon market 2010. Project transactions include the CDM, JI and voluntary carbon market.
6 http://www.agassessment.org/
7 For a summary of finance alternatives to carbon trading, see: Clearing the Air: moving on from carbon trading to real climate solutions. Friends of the Earth, 2010. http://www.foe.co.uk/resource/reports/clearing_air.pdf