A Climate-smart Idea?

UNDERSTANDING THE POLITICS, PRACTICES AND PLAYERS OF THE AGRICULTURAL SOIL CARBON MARKET

The World Bank and the U.N. Food and Agriculture Organization (FAO) are promoting "climate-smart agriculture" (CSA), which includes practices that sequester carbon in soils. They are investing significant resources to promote climate-smart agriculture and link it to developing soil carbon markets. They assert that a market for soil carbon offsets could mobilize much-needed investment in developing country agriculture. Yet far from being the silver bullet of agriculture finance and climate mitigation, soil carbon credits could actually be a burden for the communities responsible for delivering them, for the governments who "bank" on them for climate adaptation and for the climate itself.

The basics of soil carbon sequestration

Soil carbon sequestration refers to practices that put more carbon into the soil than is released through normal processes of decomposition. All soils contain some amount of carbon—remnants of living matter that has degraded over time. While soils in industrial agricultural systems are fairly devoid of soil carbon, common practices of organic and sustainable agriculture can increase the amount of carbon in soils. However, soil carbon concentrations are not constant. Soils can only store so much carbon, eventually reaching saturation, and they can only sequester so much carbon in a year.

Carbon "offsets" are credits that are created, bought and sold on either the voluntary or the compliance carbon market. The basic idea of a soil carbon offset is that if the carbon that can be sequestered in soils can be measured and valued, it can then be traded as a credit and sold to generate climate finance.

The bulk of the credits on both voluntary and compliance carbon markets result from emissions reduction or prevention, rather than sequestration because reduction or prevention credits have relatively more environmental integrity than sequestration, and therefore more monetary value. Trees and soil store carbon that has already been emitted, and the sequestration is temporary and currently impossible to reliably calculate. Exactly how quickly this happens depends on soil and other environmental conditions, which can vary considerably. The only truly effective way to cut emissions is to actually reduce emissions at their source, so that they never even reach the atmosphere.

Because of difficulties measuring soil carbon, its non-permanence in soils, and scientific controversies around its use as a genuine form of mitigation, soil carbon has a low and uncertain value on voluntary markets (and is not accepted at all on compulsory markets).[1] Voluntary credits from soil carbon are valued at a fraction of the value of voluntary credits from avoided emissions. The average price of solar energy credits in 2010 was $33.80/ton, while agricultural soil credits were trading at $1.20/ton.

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Manufacturing consensus: turning soil into a commodity

Numerous players, including project developers, technical consultants, management and advisory companies dealing in the business of land use have contributed to the development of a soil carbon credit. They include PriceWaterhouse Coopers, Unique Forestry Consultants, Terra Global Capital, Climate Focus and EcoAgriculture Partners. International NGOs such as the Environmental Defense Fund and CARE are also venturing into creating a supply of soil carbon credits.

The World Bank, the FAO's Natural Resources Department and the Consultative Group on International Agricultural Research (CGIAR) and its Climate Change Agriculture and Food Security program (CCAFS), as well as the International Food Policy Research Institute (IFPRI) all advocate the idea that soil carbon could be a viable "triple" win for food security, climate adaptation and mitigation. Each of these institutions, while acknowledging the lack of demand for such credits and questioning the appropriateness of a carbon market for small farmers, still actively lobbies developing country governments to embrace this approach as a central feature of their climate action plans. CCAFS went as far as to say, "*Carbon markets are unlikely to provide significant benefits to smallholder farmers in the near run and are highly uncertain, but livelihood options that produce mitigation co-benefits and carbon finance schemes that provide additional incentives should help farmers to meet both livelihood and environmental objectives.*"[2] Each of these institutions significantly downplays the risks of an agriculture finance strategy linked to carbon markets, and the problems for small-scale farmers who direct scarce time and resources to these efforts.

IFPRI concluded that "linking smallholder farmers to voluntary carbon markets—**though fraught with difficulties**—can have a large monetary payoff (estimated at up to $4.8 billion USD per year for SSA as a whole) if implemented successfully,"[3] but their conclusions are based on some startling assumptions. They estimate 265 million metric tons of sequestration resulting **annually** from implementing changes in cropland management, grazing land management, restoration of organic soils, restoration of degraded land, and other practices **on over a billion hectares** across Africa.[4] Simple math shows the IFPRI economists are using **a carbon price of $18/ton**. They are also assuming that the voluntary markets would spend $4.8 billion annually on soil carbon credits in sub-Saharan Africa alone, when the value of the entire voluntary market in 2009 was just $387 million.

But by far, the entity that has spent the most resources lobbying developing country governments, organizing meetings, including the first (Hague) and the second Conference on Food Security, Agriculture and Climate Change (Vietnam) is the World Bank. The World Bank's Climate Finance Unit, through its BioCarbon Fund, developed the first soil carbon methodology for sub-Saharan Africa (Kenya Agricultural Carbon Project). The Bank has also played a central role in attempting to create a "consensus" on the need to involve agriculture more directly in the climate regime under the UNFCCC. One central motivation for this move is clearly an end goal of opening the Clean Development Mechanism (CDM) to agricultural and land-use carbon. Soil carbon proponents are seeking more global sanctioning of methodologies, including those for monitoring, reporting and verification (MRV) of emissions in all countries of the UNFCCC. This sanctioning of methodologies is clearly the objective sought in a new SBSTA work program on agriculture, which the FAO articulated as early as 2009. The World Bank's dual role as policy advisor to governments on CSA while being an active agriculture soil carbon developer, manager, broker and trader has thus far not been publicly questioned by governments as a serious conflict of interest issue. The World Bank continues to invest heavily from its own budget to make the Kenya Agricultural Carbon project seem like a success. In 2011, the Bank commissioned two projects (Readiness mechanisms and Readiness support, see below) with outside consultants to build capacity and institutional infrastructure in the Kenyan government to manage soil carbon investments.[5] These projects are being funded directly from the Bank budget, in a budget line called "Readiness mechanisms for climate-smart agriculture." Both project descriptions emphasize the development of guidelines for monitoring, reporting and verification (MRV) —essential for trading soil carbon on the market, but not for preparing the country for climate adaptation.

Denying that the emperor has no clothes

Why have the World Bank and its allies been so keen to establish a work program at the UNFCCC and contemplate their unwavering faith in a future market, the rules of which have not yet been decided, to deliver billions annually from the sale of soil carbon?

There is currently little demand for soil carbon on voluntary markets, and little indication that voluntary market demand will grow to generate the resources the World Bank and its allies have promised to developing countries. Compliance markets are closed to land-use carbon for an indefinite future—in the case of the EU at least until 2020 and in the case of the UNFCCC likely the same. Yet, the Bank continues unwavering in its efforts to increase the supply of carbon credits and ignore the role of demand in a functioning market. For the Bank, this is simply a market imperfection that it hopes to address by spending scare resources that could otherwise be used directly for adaptation.

Proponents clearly believe that decisions taken within the UNFCCC regime could increase both demand for and value of land-use credits. For example,

if the CDM were opened up to land-use credits, and a global GHG compliance market established, demand might be generated for those credits.[6] However, such a vision does not seem to take into consideration the current situation of oversupply of CDM credits relative to demand,[7] the lack of legally binding UNFCCC targets for a post-2012 regime (which are essential for creating demand), the impacts on oversupply and hence low prices that flooding the mechanism a substantial amount of land-use credits would have,[8] or the very real threat posed by large numbers of temporary credits that would undermine the environmental integrity of the mechanism.

The World Bank and other soil carbon proponents continue to encourage developing countries to invest significant resources to mitigate their agricultural emissions and to develop frameworks for monitoring, reporting and verifying those emission reductions. This has real implications for the amount of money that is being diverted away from agriculture adaptation. They continue to convince countries that when they count their carbon, someone on the global market will be willing to compensate them for it.

Allies such as CCAFS and FAO are trying other strategies to get around the complexity and difficulties of monitoring, reporting and verification of soil carbon by thousands of smallholders in a single project, let alone the challenge of establishing baselines and collecting data on actual carbon sequestered. One strategy is to develop simplified methodologies for carbon accounting. Consultants such as PricewaterhouseCoopers and Duke University scientists have been enlisted in this effort. Measurement of carbon is avoided altogether by simply recording farmer practices and creating computer models to provide a somewhat plausible, albeit highly suspect, number for the amount of carbon those practices might have sequestered.[9]

Various actors, including the Bank, are also pursuing the idea of whole landscape accounting, which would simplify carbon accounting on a grand scale and allow the integration of forest and land-use carbon projects in large-scale, sub-national accounting schemes, primarily through use of models and remote-sensing technologies. They have been encouraged in this effort by the recent decision in Durban to initiate a SBSTA work program to consider the feasibility of landscape accounting for land use, land-use change and forestry (LULUCF) accounting by developed country parties under the Kyoto Protocol.

What is the prognosis for these new methodologies and accounting approaches?

New ways of dealing with non-permanence using buffers, landscape accounting and simplified methodologies are all likely to flood markets with cheap, poorly validated credits. They likely will prove to be a serious setback for genuine mitigation. First because the science will have been so compromised in the simplification of these methods as to not actually deliver reductions, and second because these schemes will serve as credits for real polluters in developed countries and provide little incentive to actually change their own practices. This in turn will worsen the adaptation challenge for developing countries.

Millions of dollars of mostly public monies are still flowing toward creating soil carbon as a commodity even though technical problems of measurement, aggregation and permanence remain and despite the fact that there is no functioning market. Policy analyses written by proponents such as Climate Focus[10] and EcoAgriculture Partners[11] acknowledge growing doubts on the part of players involved for years in the promotion of a soil carbon market. Both organizations provided less than rosy prognostications about the market for soil carbon, particularly with regard to benefits for smallholder farmers.

The World Bank's BioCarbon Fund continues to invest millions to keep the hope alive, extending it to an even broader framing of emission reductions from landscape accounting. Individual governments look set to do the same, from the UK $60 million investment in the Africa Climate Solution to the $900,000 investment by the U.S. government in political risk insurance for TerraGlobal Capital's land-use carbon project. Consultants from PricewaterhouseCoopers to Unique Forestry Consultants to Duke University researchers will continue to earn large salaries trying to solve the intractable problems of the soil carbon market.

Who pays the ultimate price here for a failed market and failed investments? Not the World Bank, nor high-paid consultants, nor firms that can afford risk insurance against the possibility that a carbon price does not materialize. Developing countries will ultimately pay the highest price because they have been told to invest resources into MRV systems now, and to expect revenues later to address the adaptation challenges that climate change will bring to their agriculture. Unfortunately, this diversion of resources away from adaptation and towards counting carbon poses huge opportunity costs for governments who are facing imminent threats to agricultural production from climate change even now. It is a scandalous use of public money, of fast-start finance, and of limited developing country capacities in their agriculture sectors. Ultimately, this means that developing country governments must be willing to play dice at the global financial casino with the future of their national food security and its impacts from climate change.

Endnotes

1 Many policy analyses assume that at least one tonne per hectare per year can be sequestered on a steady, long-term basis, however, Lal, R. 2004 shows much lower amounts depending on environmental conditions: from 0 to 150 kg carbon per hectare per year in dry and warm regions, and 100 to 1000 kg carbon per hectare per year in humid and cool climates. Lal, R. 2004. "Soil carbon sequestration impacts on global climate change and food security." Science 304: 1623-1627. More recent studies predict that rising temperatures are likely to emit more carbon into the atmosphere than remove it from soils (see Hopkins et al." Warming accelerates decomposition of decades-old carbon in forest soils" May 2012 accessed at: http://www.pnas.org/content/early/2012/06/07/1120603109.abstract.

2 http://ccafs.cgiar.org/our-work/research-themes/pro-poor-mitigation.

3 Bryan, E., W. Akpalu, M. Yesuf, and C. Ringler. 2010. "Global carbon markets: opportunities for sub-Saharan Africa in agriculture and forestry?" Climate and Development 2 (4): 309–331.

4 Smith et all 2008. "Greenhouse gas mitigation in agriculture." Philosophical Transactions of the Royal Society B 363: 789-813.

5 http://www.unique-forst.de/images/unique/_pdf/2011-1121-PStB-WB-Climate-smart-agriculture-Kenya-EN.pdf.

6 "In the near term the voluntary market incubates methods for agricultural and landscape-level sequestration. But for these measures to really expand in this direction, the market for them will need to be linked to the future global compliance market." World Development Report 2010.

7 http://www.bloomberg.com/news/2011-12-30/record-surge-in-co2-credit-volume-may-hamper-2012-price-rebound.html.

8 Brian, E et al 2010 estimate the carbon market value of soil carbon in Africa alone to be $4.8 billion annually. (See footnote 25).

9 See "The carbon monitoring should follow an "activity-based" approach, where emission reductions are estimated based on the activities carried out by the farmer rather than on much more expensive soil analyses." World Development Report 2010.

10 "Accurately measuring carbon stock changes may be costly, in particular in agricultural systems. In addition, the carbon benefit at the farm level for smallholders may not justify the transaction costs related to carbon measurement and accounting." (Climate Focus Author) Streck, C 2012. Towards policies for climate change mitigation: incentives and benefits for smallholder farmers. CCAFS Report 7, Denmark: CCAFS.

11 "Meanwhile, given the current low price of carbon, costs of project implementation and the length of time required for credit development, carbon revenues are far less than the full costs of the project. (describing a CARE-supported agricultural carbon project in Western Kenya) This kind of project requires more appropriate financial mechanisms..." EcoAgriculture Partners. 2011. Blending climate and agriculture finance to support climate-smart landscapes. Washington, D.C.: EcoAgriculture Partners.