Trusting in Dark (Carbon) Markets?

THE UN HIGH-LEVEL ADVISORY GROUP ON CLIMATE FINANCE

SUMMARY

Carbon markets as the preponderant source of climate finance would be vulnerable to the influence of excessive speculation by big financial firms, as already experienced in agriculture. The AGF should not ignore the lessons of deregulating commodity markets.

Introduction

At the Copenhagen climate talks in December 2009, one of the most contentious issues was financing: money to assist developing countries to both adapt to and mitigate climate change. To develop proposals on this critical issue, the United Nations Secretary-General's High Level Advisory Group on Climate Change Financing (AGF) was launched in February 2010. The AGF is "guided by the Copenhagen Accord in which developed countries commit to the goal of mobilizing $100 billion a year by 2020, to support the processes of adaption and mitigation, in particular in the poorest and most vulnerable developing countries."[1] Thus far, the best estimate of government pledges of "fast start" financing towards reaching this goal is about $29 billion, with Japan committing $15 billion, the European governments $10 billion and the United States $3.2 billion.[2] Estimates of the annual global cost of mitigation and adaption investments vary widely but are perhaps 10 to 20 times the current "fast start" total pledge.

The AGF's proposals for climate change finance are intended to shape the negotiations at the next CoP in Cancun, Mexico.

At an informal September 2–3 meeting of high-level government officials in Geneva, developing country representatives continued to insist that climate finance be largely a public fiduciary duty of developed countries. But developed countries insisted on a large role for private financial firms to raise and manage climate change finance. The recent bailout of the financial services industry represents a large portion of the global public finance deficit that constrains developed-country government sources for climate finance. The

INSTITUTE FOR AGRICULTURE AND TRADE POLICY

Written by Steve Suppan, October 2010 2105 First Avenue South Minneapolis, Minnesota 55404 USA iatp.org

U.S. delegate Todd Stern said that no "fast start" financing would flow to developing countries until governments agreed to a climate change "package."[3]

Because the Copenhagen Accord was negotiated outside of the U.N. Framework Convention on Climate Change process, the Conference of Parties (CoP) to the UNFCCC merely "took note" of the Accord in December 2009. However, with the assistance of the U.N. secretary-general, the UNFCCC secretariat and the Danish secretariat to the CoP, and the support of the U.S. and EU, efforts have been made to make the Copenhagen Accord the de facto framework to replace the de jure documents agreed by previous CoPs.

The AGF's proposals for climate change finance are intended to significantly shape the negotiations at the next CoP in Cancun, Mexico in November/December. This analysis outlines what is thus far known of the AGF's approach to identifying climate change finance sources for developing countries. While the AGF will be looking at a variety of proposals for climate finance—including direct contributions, revenue from transportation taxes, carbon taxes, and financial taxes—it is likely the AGF will count on carbon trading as its primary source of revenue for developing-country climate change finance. According to the AGF work plan, the first draft of its report is to be finalized by mid-September, and a briefing of its contents may be presented at a UNFCCC side event on October 7 during the negotiations in Tianjin, China.[4]

This paper will examine the AGF mandate, lessons for carbon from excessive speculation on agriculture markets and why carbon markets are also vulnerable to the destabilizing effects of financial speculators. We conclude that the AGF should not report to the UNFCCC Parties that carbon markets are a reliable and practical source of climate change finance. As critics have pointed out, "Carbon trading is a cost-management tool that incentivizes companies to prioritize short-term savings and end-of-pipe changes over long-term investments into low-carbon technology, energy use and production."[5] Instead, the AGF should present policy options that will more directly and rapidly finance investments in a low-carbon economy, particularly in developing countries.

The AGF assumes that "public financing alone will not be sufficient to mobilize the financing required by 2020."

The AGF mandate

Just as proponents of the Copenhagen Accord did not regard themselves bound to the terms of the UNFCCC, the 21 AGF members (including heads of state, U.N. officials, bankers and economists)[6] selected by the secretary-general "have further agreed that since the AGF is not a negotiating group, the solutions it explores don't have to be strictly confined to what is negotiated in the UNFCCC process."[7] Despite this non-conformity with the UNFCCC, the AGF terms of reference anticipate that its final report, to be delivered by November 2010 to the secretary-general and the Danish and Mexican presidents of the CoP, will contribute "to an appropriate decision of the UNFCCC Conference of Parties at its 16th session in Mexico."[8]

During an AGF presentation at a UNFCCC side event on August 5 in Bonn, Venezuela said that the secretary-general's AGF report should not be presented to the UNFCCC parties, since they had not requested the study. Instead the study should be presented to U.N. Missions in New York City, whose delegates would decide whether to forward the study for consideration by the CoP.[9] Venezuela's insistence on adhering to the agreed UNFCCC process and diplomatic protocol, rather than to a process emanating from the Copenhagen Accord, may be in vain. With China's intention to pilot a national carbon market, the Tianjin Climate Exchange, by 2011,[10] the AGF report will generate local, as well as UNFCCC, interest. Although we do not have access to the AGF first draft report, the AGF presentations made and documents released thus far give sufficient indication of its assumptions.

First, like a "green sectoral" bond proposal from International Emissions Trading Association (IETA) (which represents over 170 transnational financial, law, energy and manufacturing firms),[11] the AGF assumes that "public financing alone will not be sufficient to mobilize the financing required by 2020."[12] Indeed, developing countries are forewarned not to expect too much from developed countries, since "consideration need[s] to be given to the fact that developed countries are in a period of intense pressure on their budgets and the implications of this for identifying sustainable sources of finance."[13] The AGF recommendations to the UNFCCC on these sources will not be "in an accounting mode,"[14] i.e., the AGF won't attempt to estimate how much money might be raised annually by each source identified. The AGF recommendations will not result in pledges to raise annually defined amounts of finance from sources that fulfill the AGF criteria.

AGF member Dr. Nicholas Stern said in the August 5 briefing to the UNFCCC Parties that public finance sources, such as a carbon tax, bunker fuels tax and financial transaction tax might each deliver $10–20 billion a year for developing countries to adapt to climate change and reduce each country's estimated GHG production.[15] However, achieving even this level of public finance might prove difficult under the AGF terms of reference. As Dr. Stern clarified, the "acceptability" AGF terms of reference criterion means the "political acceptability" in developed countries of raising public finance and targeting it for developing-country climate change adaptation and mitigation, capacity

building, and technological development and transfer.[16] Each donor government will determine how much climate finance investment its electoral political situation will allow.

Lessons from agriculture for carbon markets

If AFG's recommendations lean heavily toward a carbon market–based approach for climate finance, as seems likely, it cannot ignore a decade of regulatory exemptions, exclusions and waivers that have allowed big financial institutions to dominate commodity futures exchanges. Critics have focused, with good reason, on the significant market integrity problems—including outright fraud—in the trading of carbon emissions permits and carbon-offset credits in the primary market, including under the UNFCCC/ World Bank Clean Development Mechanism, currently valued at about $2.7 billion.[17,18,19] Even if current initiatives to close regulatory loopholes are successful, the legislative design of carbon markets makes carbon uniquely vulnerable to fraud and extreme price volatility. Trading derivatives based on the value of offset credits whose greenhouse gas reductions have not been verified is just one practice that makes carbon price signals unreliable for decision making about long-term investments in low-carbon technology. (For more, see "Smaller, Simpler and More Stable: Designing carbon markets for environmental and financial integrity" by Friends of the Earth, available at foe.org.)

Big financial institutions, such as Goldman Sachs and Morgan Stanley, deeply influence commodity futures prices using two key tools. One, they create commodity index funds, which bundle up to 24 agricultural and non-agricultural commodities (such as oil and gold) into a single investment instrument. The funds bet on prices to increase and once the profits are large enough, they sell. And unlike traditional buyers and sellers of consumable commodities (say corn), these index fund dealers are not subject to limits on how many contracts they can purchase. These unregulated funds controlled 33 percent of all U.S. agricultural futures contracts in 2007-08.[20] Two, Wall Street speculators use over-the-counter (OTC) trades, i.e., unregulated private trades between firms, rather than trading on public and regulated exchanges. This "dark" OTC market prevents government regulators from having enough timely information to assess whether speculators are distorting prices through massive purchases and sell-offs.

Even if current initiatives to close regulatory loopholes are successful, the legislative design of carbon markets makes carbon uniquely vulnerable to fraud and extreme price volatility.

The result of excessive speculation in agriculture has been extreme price volatility that may be transmitted through the supply chain from the farm to the supermarket. Numerous reports and statements from NGOs,[21] the U.N. Special rapporteur on the right to food,[22] a special committee of the Food and Agriculture Organization,[23] and the U.N. Commission on Trade and Development[24] have concluded that excessive financial speculation played a major role in driving up agriculture prices in 2007-08.

Agriculture's experience with excessive speculation on commodity futures markets is directly relevant to new carbon markets. Carbon offset credits—aggregating claimed greenhouse gas reductions from agricultural activities, have been and will be traded on commodity exchanges, such as the Chicago Climate Exchange. If commodity index funds are allowed to bundle carbon contracts together with agriculture and other commodities, the price volatility induced by tying markets for an artificial and legislated commodity to the markets of consumable commodities could dangerously delay efforts to reduce greenhouse gases, as well as increase global food insecurity. OTC trading of carbon could once again allow big financial players to undermine effective regulation. OTC trade data, reported to private data repositories, are often incomplete due to confidentiality clauses in the derivatives contracts. As a result, regulators are unable to monitor the size and movement of the market and cannot assess when or whether to intervene to prevent excessive speculation.[25]

Currently, both the U.S. and EU are rushing to strengthen regulation of these commodity markets. These new rules, much less implementation and enforcement, are far from settled. For example, the U.S. Commodity Futures Trading Commission (CFTC) has just begun a process for writing 30 new commodity trading rules—all of which will apply to any eventual U.S. mandatory carbon trading scheme—to implement the recently passed U.S. financial reform bill.[26] The European Commission, in its proposed revision of the financial derivatives and market abuse legislation, is deliberating how to ensure that regulators have sufficient and timely data so they may act to prevent a future variation on the financial service industry crisis of 2008.[27] More immediate, and hence pertinent, to the AGF's evaluation of carbon markets is the European Commission's current revisions of its Emissions Trading Scheme.[28] Trading under the ETS has been characterized by extreme price volatility that has delayed urgently needed long-term investments in low-carbon technology by major emitters."

Carbon markets in the "dark?"

OTC trading is already commonplace on carbon markets—particularly the world's largest such market, the EU's ETS. According to the carbon trading consultancy, Point Carbon, in 2008,

about 44 percent of carbon traded under the Emissions Trading Scheme was OTC traded, although the volume of ETS trading declined about 10 percent from 2009 to 2010.[29] See figure below.

IETA has advocated to the European Commission a variation on "light touch" regulation for OTC trades. "Light touch" regulation, e.g., the commodity and financial markets during the Bush administration, is characterized by myriad rule exemptions and waivers, industry "self-regulation" and weak or non-existent enforcement of rules. In effect, IETA requests that the commission provide a sectoral carve-out for its members and their clients: "A balance has to be struck to avoid disproportionate or ill-conceived transparency requirements that negatively impact liquidity in what is still a young and growing market."[30] IETA contends if carbon markets are as transparent as regulated exchanges, investors will not invest in carbon. CFTC projections about the value of a mandatory U.S. carbon market suggest that the characterization of carbon as a small market will be very soon out of date. In 2009, the CFTC estimated that a mandatory U.S. carbon credit and carbon derivatives market would result in a projected $2 trillion of notional value (contracted value, as opposed to the value of revenues netted in trades) in carbon contracts by 2017.[31] Under such a scenario, IETA's request for a carbon market transparency carve-out would apply to a commodity that would become dominant in notional value over all other U.S. regulated commodities and perhaps over all commodities globally.

Because OTC trade data are sent to private companies, and not delivered daily to regulators, data volume, volatility, value and trading trends are "dark" to regulators in the real time of price formation. The direct and daily data flow allows regulators to monitor whether a trading entity and its affiliates have exceeded limits on the percentage of all contracts held during a given trading period—known as "position limits." These limits are necessary to prevent the excessive speculation by just a few huge financial players that has plagued commodity futures markets. But IETA calls such contract position limits a "blunt regulatory tool" for preventing market abuse by any individual trading entity, whose anonymity IETA seeks to guarantee. IETA opposes the use of aggregate position limits for carbon as a tool to measure market abuse or the potential for it.[32]

DERIVATIVE: A financial instrument, the price of which is derived from the value of one or more underlying assets, such as mortgages, commodities, bonds, securities, indices etc. For example, carbon futures contracts are derived from the value of carbon in the primary market. Subsequent derivatives could include carbon bundled into commodity index funds or credit default swaps based on the value of carbon derivatives.

CARBON ALLOWANCE CREDIT: A tradable permit, in carbon dioxide equivalent metric ton units, to pollute, given freely or auctioned according to an annual allowance distribution formula.

FUTURES CONTRACT: The building block of subsequent derivatives. The contract obliges the sale or purchase of an agreed quantity of a commodity at an agreed price for delivery on an agreed date, generally, 90 days for agricultural commodities and 180 days for non-agricultural commodities from the contract start date.

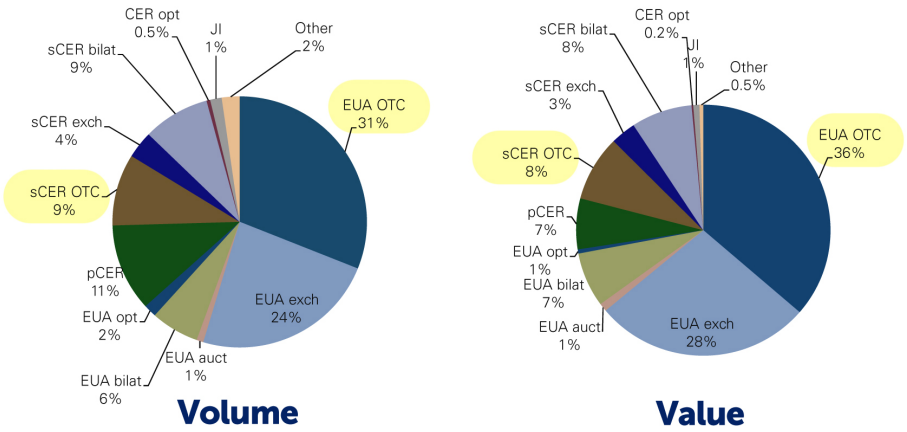
OVER-THE-COUNTER TRADING / DARK MARKETS: Commodity or financial derivatives trading that is not done on a publicly regulated exchange, but which occurs between two private parties and may be exempted from having to be reported to regulatory authorities, if deemed to be a customized trade.

AGGREGATE POSITION LIMITS: The number of derivatives contracts (optimally defined as a percentage of all contracts open to traders) that any one entity can hold during a given time for a given commodity in all trading venues. Position limits prevent one entity or category of entities from creating extreme price volatility through the weight of money of the number of contracts they control.

Currently, OTC traders have a crucial information advantage over those who trade on public and regulated exchanges. That information advantage will be maintained if IETA's support for "appropriate disclosure of trades and positions to regulators" would allow regulator access to data only after private firms have edited and packaged the data. Not surprisingly, given this crucial information advantage, OTC trades in general vastly exceed trades on public and regulated venues, e.g., by about $605 trillion compared to $125 trillion in notional value for all exchange traded bond and equity stocks.[33]

Unfortunately, it appears that on September 15 the European Commission granted IETA members and other derivatives traders the kind of reform that they had requested.[34] The draft OTC derivative rule stipulates that OTC trades will be reported to private trade depositories, rather than to the European Securities Market Authority or to the commodity market regulatory authority that the EU currently lacks.[35] Now, it will be up to the European Parliament to revise the commission's draft OTC derivatives and market

European Emmissions Trading System OTC Trading 2008



Source: Point Carbon

abuse rules to ensure immediate and unmediated regulator access to all trade data.

Critical to effective enforcement of EU commodity regulations, including those for carbon, is a French government proposal to create an EU-wide commodity regulatory authority.[36] Rather than rely on national authorities to implement and enforce EC regulations, both in the physical commodities and commodity derivatives markets, the new agency could be endowed with analytic and enforcement resources to prevent exploitation of inconsistencies in national authority implementation and enforcement. The French proposal is expected to face fierce opposition, particularly from United Kingdom commodity traders. If "light touch" regulation and inconsistent enforcement continue to reign over the expanding OTC EU carbon derivatives market, the resulting carbon market price signals will be neither practical nor reliable for climate finance.

Green bonds vulnerable to dark markets

The AFG anticipates an important role for International Financial Institutions (IFIs) in leveraging private finance. One likely role, as outlined in an article by a World Bank official,[37] is for the World Bank to design green bonds to sell to large institutional investors, such as pension funds and endowments, based on greenhouse gas reductions. The bond sales would be managed by investment banks and proceeds would be used to finance specific World Bank–approved and managed projects, e.g., "scaling up renewable energy systems in Argentina." The bond principle with interest would be paid back at an agreed upon time.

In contrast to the World Bank's "plain vanilla" green project bonds for fixed income investing, IETA proposes that the IFIs' role would be to act as a public guarantor in the event that developing country governments defaulted on green sector bonds bought by private investors.[38] However, the definition of "default" would not just be failure to repay the interest and principal on the bond. Rather, "default" would also encompass a downgraded bond due to the failure of a developing-country project to reduce greenhouse gasses. The success or failure of a greenhouse reduction project would be determined by an International Green Bond Board (IGBB) that would design the bond and monitor and verify its financial and environmental performance.

It is difficult to understand how the AGF will be able in good faith to recommend carbon markets as a reliable and practical source of climate change finance.

The IGBB, in effect, would supercede the UNFCCC executive committee for the Clean Development Mechanism, as the main current UNFCCC facility for climate finance. Investors would receive developing-country carbon credits as bond collateral and could "commoditize" these credits ad infinitum as carbon derivatives until such time as the bond was repaid and the collateral redeemed. Under this scenario, developing countries trying to pay back the money raised through green bonds from the sale of carbon offset credits and/or other revenues would be extremely vulnerable to the volatility of a poorly regulated carbon market. If prices drop and stagnate, developing countries could find themselves in very long-term green-bond debt.

Conclusion

Few proponents of carbon markets as the preponderant source of climate finance have thoroughly considered widely available criticism of OTC derivatives trading, as already experienced in agriculture.[39] The AFG report should not repeat this analytic and policy formulation omission.

Despite public budgets decimated by financial industry bailouts, it will be tempting for the AGF to recommend a "lightly regulated" market approach to finance important climate-related initiatives. But such an approach carries great financial and environmental risks. For most developing country governments, just starting to attract capital flows at less than half the pre-2007 crisis level of $1.2 trillion,[40] the prospect of depending again on the financial markets that tore apart their economies in 2008 is not likely to be appealing. It would be tragic if the IFIs and the developed countries reduce climate finance options largely to those dominated by carbon markets while the trading practices and data of those markets remain dark to regulators. Under current conditions, it is difficult to understand how the AGF will be able in good faith to recommend carbon markets as a reliable and practical source of climate change finance.

Of course, carbon markets are not the only option for climate finance. We urge the AGF to consider a fuller range of options. Prior to the Cancun UNFCCC meeting in December, IATP will review and evaluate alternative climate finance proposals that promise to be more equitable and effective in addressing global climate change.

Further reading on IATP.org:

The New Climate Debt: Carbon Trading Wrapped in a Green Bond Proposal

Speculating on Carbon: The Next Toxic Asset

Commodities Market Speculation: The risk to food security and agriculture

Resources

1. UN Secretary General's High-level Advisory Group on Climate Change Financing, "Report on the first meeting, 31st March 2010 in London," http://www.un.org/wcm/webdav/site/climatechange/shared/Documents/LondonMeetingReport_31%20Mar%202010.pdf.

2. Heinrich Böll Stiftung, Overseas Development Institute, "Fast Start Finance," Climate Funds Update, http://www.climatefundsupdate.org/fast-start-finance Accessed on September 12, 2010.

3. International Centre for Trade and Sustainable Development, "Geneva meeting pushes climate finance to top of Cancun agenda," Bridges Trade BioRes, September 10 , 2010 at http://ictsd.org/i/news/biores/84558/.

4. High-Level Advisory Group on Climate Change Financing, "High-Level Advisory Group on Climate Change Financing," UN Secretary General, http://www.un.org/wcm/content/site/climatechange/pages/financeadvisorygroup/pid/11403.

5. Jutta Kill, Saskia Ozinga, Steven Pavett and Richard Wainwright, "Trading Carbon: how it works and why it is controversial," FERN, August 2010, 52. Available at http://www.fern.org/node/4771.

6. High-Level Advisory Group on Climate Change Financing (AGF), "Membership, High-Level Advisory Group of the UN Secretary-General on Climate Change Financing," AGF, http://www.un.org/wcm/content/site/climatechange/pages/financeadvisorygroup/group-members.

7. UN Secretary General, "Background Note on the UN Secretary-General's High-level Advisory Group on Climate Change Financing," http://www.un.org/wcm/webdav/site/climatechange/shared/Documents/Background%20Note%20on%20AGF.pdf.

8. High-Level Advisory Group on Climate Change Financing (AGF), "Terms of Reference," AGF, http://www.un.org/wcm/content/site/climatechange/pages/financeadvisorygroup/tors.

9. Hilary Chiew and Meena Raman, "UN S.G.'s advisory panel on climate finance comes under fire," Third World Network Bonn News Update No. 7, August 6, 2010.

10. "China embraces emissions trading," Carbon Positive, July 22, 2010 at http://www.carbonpositive.net/viewarticle.aspx?articleID=2055.

11. "Green Sectoral Bonds: Draft Concept Note for Review & Discussion," International Emissions Trading Association, May 25, 2010, http://www.ieta.org/ieta/www/pages/download.php?docID=3466.

12. UN Secretary General's High-level Advisory Group on Climate Change Financing, "Report on the first meeting, 31st March 2010 in London," http://www.un.org/wcm/webdav/site/climatechange/shared/Documents/LondonMeetingReport_31%20Mar%202010.pdf.

13. Ibid.

14. UN Secretary General, "Background Note on the UN Secretary-General's High-level Advisory Group on Climate Change Financing," http://www.un.org/wcm/webdav/site/climatechange/shared/Documents/Background%20Note%20on%20AGF.pdf.

15. UNFCCC, "AGF briefing during the UNFCCC negotiations," UNFCCC Webcast, August 5, 2010, http://unfccc2.meta-fusion.com/kongresse/100802_AWG/templ/play.php?id_kongresssession=2946&theme=unfccc.

16. Ibid.

17. Stacy Feldman, "World Bank Caught In Controversy Over Suspect Carbon Credits," Solve Climate, September 7, 2010, http://solveclimate.com/blog/20100907/world-bank-caught-controversy-over-suspect-carbon-credits.

18. e.g., Felicity Carus, "21 people held after UK offices raided in carbon trade inquiry," The Guardian, May 1, 2010

19. Michelle Chan, "Ten Ways to Game the Carbon Market," Friends of the Earth, May 2010.

20. Christopher L. Gilbert, "Speculative Influences on Commodity Futures Prices 2006-2008," UNCTAD Discussion Paper No. 197, March 2010, derived from table 4, 16.

21. Institute for Agriculture and Trade Policy, "Commodities Market Speculation: the Risk to Food Security and Agriculture," November 13, 2008, http://www.iatp.org/iatp/publications cfm?accountID=451&refID=104414.

22. Special rapporteur on the right to food, Food Commodities Speculation and the Food Price Crisis, September 2010, http://www.srfood.org/index.php/en/component/content/article/1-latest-news/894-food-commodities-speculation-and-food-price-crises.

23. Food and Agriculture Organization, Joint Intersessional Meeting of the Intergovernmental Group (IGG) on Grains and the Intergovernmental Group on Rice, FAO, September 24, 2010, http://www.fao.org/fileadmin/templates/est/COMM_MARKETS_MONITORING/Grains/Documents/FINAL_REPORT.pdf.

24. Supachai Panitchpakdi, Secretary General of UNCTAD, Statement before the Trade and Development Board, September 13, 2010, http://www.unctad.org/templates/webflyer.asp?docid=13832&intItemID=3549&lang=1.

25. European Commission, "Impact Assessment of a Proposal for a Regulation of the European Parliament and of the Council on OTC derivatives, central counterprarties and trade repositories," SEC (2010) 1058/2, September 2010, 15–16. Available at http://ec.europa.eu/internal_market/financial-markets/docs/derivatives/20100915_impact_assessment_en.pdf.

26. For an overview of the opportunity to comment on Commodity Futures Trading Commission implementation of Dodd-Frank, see http://edocket.access.gpo.gov/2010/pdf/2010-21269.pdf.

27. e.g., see the announcement of the Commodity Futures Trading Commission public hearing on real time reporting of OTC derivatives trades at http://www.cftc.gov/PressRoom/PressReleases/pr5886-10.html and "Remarks before ISDA Regional Conference: Chairman Gary Gensler," September 16, 2010 at http://www.cftc.gov/PressRoom/SpeechesTestimony/opagensler-50.html

28. Some proposed reforms, e.g., on beginning to auction carbon credits, rather than give them away for free, are proper to the ETS (e.g., see "Emissions trading: Member States back unanimously Commission proposed rules for auctioning of allowances," EC Directorate General for Environment press release http://europa.eu/rapid/pressReleasesAction.do?reference=IP/10/948&format=HTML&aged=0&language=EN&guiLanguage=en).

29. Jeff Coehlo, "Analysts say global carbon trading volume down 10%," July 7, 2010 and John McGarrity, "European exchanges tighten grip on carbon market," June 8, 2010, www.pointcarbon.com

30. International Emission Trading Association, "Market integrity and transparency regime for the EU's carbon market: IETA position paper," June 2010, http://www.ieta.org/ieta/www/pages/getfile.php?docID=3477, 5.

31. Commodity Futures Trading Commission, "Regulators Readying for Climate Change: Agency Anticipating Largest Commodity Markets," U.S. Commodity Futures Trading Commission press release, May 13, 2009.

32. International Emission Trading Association, "Market integrity and transparency regime for the EU's carbon market: IETA position paper," June 2010, http://www.ieta.org/ieta/www/pages/getfile.php?docID=3477, 8.

33. Sean Cota, "2009 World Chart Values," http://www.tradeobservatory.org/library.cfm?refID=107469

34. Jeff Coelho, "Carbon trade welcomes call for tighter OTC rules," September 15 2010, http://www.pointcarbon.com/news/1.1474339.

35. European Commission, "Derivatives," The EU Single Market, http://ec.europa.eu/internal_market/financial-markets/derivatives/index_en.htm.

36. Javier Blas and Nikki Tait, "France leads the charge on commodity markets reform," Financial Times, September 8, 2010, http://www.ft.com/cms/s/0/8124cdf8-bb74-11df-a136-00144feab49a.html.

37. Heike, Reichelt, "Green bonds: a model to mobilize private capital to fund climate change mitigation and adaptation projects," The Euromoney Environmental Finance Handbook, 2010, at http://www.policyinnovations.org/ideas/policy_library/data/01583/_res/id=sa_File1/Euromoney_2010_Handbook_Environmental_FinanceforGBPage.pdf.

38. Steve Suppan, "The New Climate Debt: Carbon Trading Wrapped in a Green Bond Proposal," IATP, June 2010, http://www.iatp.org/iatp/factsheets.cfm?accountID=451&refID=107549.

39. e.g., Gillian Tett, "Derivatives body needs to undergo a radical rethink," Financial Times, August 27, 2010.

40.UN Department of Social and Economic Affairs, "World Economic Situation and Prospects 2010: Update as of mid-2010," http://www.un.org/esa/policy/wess/wesp2010files/wesp10update.pdf, 16.