From rigged carbon markets to investing in green growth

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Abstract
Reviews failure of global carbon trading under Kyoto and reasons why alternatives emerged. Assesses prospects for climate policies beyond Kyoto and covers shifts toward green growth in governments and private sector investments.

The Kyoto Protocol and its global carbon emission-trading scheme expire in 2012. The World Bank in State and Trends of the Carbon Market found that the market declined in 2010 and is at a crossroads, due to loss of political momentum. There are many new signs of a re-focusing the 20 year international effort to craft national policies and international agreements to curb human (anthropogenic) caused changes to the Earth's climate. As a longtime theorist and participant in this hugely complex set of issues, I will try to connect most of the dots necessary to explain why the Kyoto Protocol design led to the disappointing UN conferences at Copenhagen (2009) and Cancun (2010). Unlike the scorn UN diplomats and many NGOs heaped on "fragmented" pacts and regional "side deals" that have emerged, I applaud them, as does expert David Victor in *Global Warming Gridlock* (2011). These smaller "clubs" of powerful emitter nations are now creating pragmatic agreements, such as those between China and the USA to cooperate on green technologies and Norway's pact with Indonesia to cooperate on managing and protecting forests. Such bottom-up deals reflect local and regional realities and may involve more logically, other pollutants such as soot, ozone-producing VOCs and methane. Curbing these pollutants can actually lower total CO_2 emissions faster and cheaper while protecting the health of those directly exposed, such as providing solar cook stoves to rural women to avoid families inhaling smoke.

The Kyoto Protocol's targets for controlling CO_2 emissions worldwide by creating a global emissions trading structure was a visionary and ingenious plan devised by brilliant economists and mathematical modelers, notably Dr. Graciela Chichilnisky of Columbia University, inventor of catastrophe bonds. Kyoto promised financial markets a bonanza by creating a new asset class for carbon and many CO_2 derivatives, auctionable emissions permits, free allowances, offsets and the alphabet soup of CDMs, CERs, secondary CERs, RECs, along with trade on new exchanges: ETS, ECZ, RGGI, as well as those in China, India, Brazil, Australia and New Zealand. Today, with evidence that CO_2 emissions increased to the highest ever in 2010 of 30.6 gigatons from the International Energy Agency (IEA), new approaches are vital. Carbon markets are blamed for scandalous profits on CDM offsets related to perverse incentives encouraging the burning of HCFC-23, a greenhouse gas 11,700 times more polluting than CO_2 garnered by JP Morgan Chase, Citigroup, Goldman Sachs, Rabobank, Fortis, along with energy companies, E.ON, Enel, Nuon, RWE and Electrabel. European governments of Italy, Holland and Britain, along with these companies, bought these CDM "offsets" which actually increased polluting emissions. Only whistle-blowing by NGOs brought this to the attention of Jos Delbeke, director general of the European Commission for Climate Action, who called for ending "usurious profits" that are "repugnant". Meanwhile, a judge in California is forcing the state to analyze alternative measures to its proposed "cap and trade" plan which experts at a recent carbon expo agree will delay carbon trading there (Reuters). The upcoming conference in Durban, South Africa,

is expected to be a showdown over the Kyoto Protocol and between developing countries and NGOs versus fossil fuel lobbies and carbon traders.

The deeper reasons why this theoretical Kyoto vision of a seamless global emissions trading market, assumed to provide efficient reductions of actual CO_2 emissions, has failed, are explained by Prof. Victor. Creating new markets (and most markets are created by humans not by God's "invisible hand") is in reality, a complex governmental task involving new laws, monitoring compliance, fairness and regulating free riders. Powerful incumbent fossil-fueled industries must be brought into compliance while compensating blameless low or non-emitters, mostly in developing countries. The financial markets geared up to compete for their share of trading the new carbon "asset class" after the UN Framework Convention on Climate Change was set up in Kyoto in 1997. Trading desks at most big banks on Wall Street, in London and a bevy of new firms appeared – as well as early voluntary trading platforms like the Chicago Climate Exchange (CCX) now merged into ICE.

The economic theory behind Kyoto's global emissions trading followed the same expansion of global financial markets after the deregulations of the 1980s led by Britain's Margaret Thatcher and US President Ronald Reagan. This market ideology was underpinned by the Arrow-Debreu model assuming these expansions were part of the desirable goal of "market completion." This goal is now questioned since the bubble in financial markets which burst in 2007-2008 and the rise of theories of the global commons which acknowledge vital global public goods beyond the reach of markets (Transforming Finance). Such planetary resources as air, oceans and biodiversity are essential to human survival and indivisible common property along with the electromagnetic spectrum. Tax payers' publicly funded infrastructure of communications networks, satellites and the internet are all crucial platforms underlying global finance.

The financial debacles of 2007-2008 called the huge expansion of global financial trading into question as shadow banking, securitization, high-frequency trading and derivatives grew as a percentage of GDP in Britain and the USA. Processes of securitization and financial innovation created ever more exotic instruments still proliferating along with volatility. After the May 6, 2010, "flash crash" on Wall Street, it became clear that increased high-frequency trading provided only "faux liquidity" which disappeared when needed. Not surprisingly, CO_2 emissions trading came into question as well. INTERPOL warned that CO_2 derivatives trading could become the next global white collar crime wave. Even conservatives and Republicans in the US taunted "if you like credit default swaps, you're going to love carbon derivatives!" CDM offsets were too often revealed as fraudulent "hot air" credits. Powerful electric utilities gamed the ETS and wangled so many free emissions allowances from compliant politicians, that they actually crashed the price of CO_2 on that exchange. Rolling Stone's Matt Taibbi targeted carbon derivatives trading as Goldman Sachs' next big attempt to create a new bonanza after the housing mortgage securitization game exploded.

Kyoto never produced that envisioned global emissions trading regime despite all the expectations and hype. Instead, diverse national, regional, local and corporate interests devised their own mixes of trading, direct regulating and taxing of emissions, as analyzed by David Victor in *Global Warming Gridlock*. However, he misses most of the reasons emissions trading fails that stem from inside the box of finance itself and all the problems and failures revealed by the 2007-2008 crises – still unresolved by Dodd-Frank, Basel III, G-20, the European Commission and British regulators. Pragmatic use of the other market mechanism: carbon taxes, was promoted by *The Economist* and others including the May 2011 report of

Australia's Climate Commission, *The Critical Decade*. Citing effects of climate change already impacting Australia with extreme weather, the Commission supports Prime Minister Julia Gillard's plan to tax carbon emissions by big polluters after the failure of cap and trade schemes.

The international diplomatic efforts from Kyoto to Copenhagen to Cancun and the agreements on binding caps, targets and time tables have produced the perverse results mentioned earlier. Their rigidity caused national governments, which could not control domestic sources politically, to simply renege on their commitments, as Victor documents. He also explains why the climate issue is less an environmental issue than one of the energy sector – and more amenable to WTO-like negotiations on trade – an imaginative new approach. Many engineering and technology approaches have been hampered by incumbent fossil-fueled industries and sectors. It's time to acknowledge as president Jeffrey Leonard of the Global Environment Fund does in *Washington Monthly*, the 90% of historic subsidies to fossil and nuclear energy that dwarf those to solar, geothermal, wind and energy efficiencies. Feed-in tariffs and renewable energy portfolio standards which address CO_2 emissions directly were needed to help offset the blockages to growing and scaling the many technologies based on capturing the sun's free daily flow of photons: abundant, renewable solar, wind, ocean as well as geothermal sources. The success of such policies in Britain has created energy-efficiency companies that complete globally (NY Times) in this industry, now providing rapid paybacks ("Efficiency: Bedrock of Green Transition").

Transition to uses of lower-carbon natural gas and co-generation are necessary in the short run. The effects of Japan's Fukushima plants make unlikely future reliance on nuclear energy with Japan now shifting to wind, solar, efficiency and I expect also its abundant geothermal resources. Germany has also shifted from nuclear to expanding its green economy. Carbon sequestration of CO_2 from burning coal is unproven, hugely costly and reduces the energy efficiency of power plants. China's research on in situ methods of mining coal may prove viable (Atlantic Monthly, 2010). Most conventional analyses miss the carbon sequestration possible from well-managed lands and forests, as demonstrated by Dr. Allan Savory's holistic management approaches to land-restoration in many countries. Conventional centralized models still overlook the many efficiencies in distributed, smaller scale solar PV, thermal CSP, wind, shallow geothermal, and low-head hydro now gaining market share from central electric utilities. Such *Small is Beautiful* approaches reflect E. F. Schumacher's deep analyses of issues of scale and how decentralization yields many more jobs while saving capital and revitalizing communities.

Thus, I agree with political scientist Victor's characterization of current emissions trading as "Potemkin markets" and that carbon taxes are the best market mechanism – allowing governments to set prices rather than quantities of pollution emitted. He also acknowledges realistically that direct regulations will always have a place and that these will grow – along with the growth of regulation-driven industries in recycling, remanufacturing and reuse, as well as companies like Waste Management. The recycling industry in the USA employs more people today than the auto industry (E Magazine). I recall speaking on a panel with Waste Management's president who began by acknowledging that his was a regulation-driven company in a regulation-driven industry.

Old arguments about markets versus regulation (vilified as "command and control") are now countered by the truth that all economies are mixed (mixtures of markets and regulations) determined by their value-systems I termed "cultural DNA" (*Politics of the Solar*

Age, *Building a Win-Win World*). These realities emerge quickly with on-the-ground field trips rather than in GDP and macro-economic aggregations as well as more in-depth understanding of energy markets and technology options. All these real world details were researched by the US Congress Office of Technology Assessment (OTA), multi-disciplinary studies of technological choices and second-order consequences, from 1974 until 1996 when Republicans, led by then Speaker Newt Gingrich, shut OTA down. The OTA's many ground-breaking studies of all these issues are now archived at the Government Printing Office, the Library of Congress, Princeton University, University of Maryland and at the Henderson-Schumacher Library at Ethical Markets Media in St. Augustine, FL.

I served on the Technology Assessment Advisory Council of the OTA from its inception in 1974 until 1980 and helped develop the systems approach to technology assessment – now emulated in many government and academic settings worldwide. From this research experience, I learned that the most systemic approaches to climate change would be to tax all pollutants (not just carbon or its CO_2) by shifting taxes from incomes and payrolls in revenue-neutral ways ("Introduce Green Tax" *Christian Science Monitor*). Such new approaches are now offered by US Senators Maria Cantwell (D-WA) and Susan Collins (R-ME). So far, powerful incumbent fossil fuel and nuclear lobbies have prevented this logical approach – far superior to capping and trading emissions schemes which they promoted then captured. The Waxman-Markey bill in the US Congress in 2008 failed due to this gaming by incumbents, leading to giveaways of emissions permits that were supposed to be auctioned, distrust of the big polluters and Wall Street and the impossibility of meeting Kyoto targets and timetables.

The UN Climate Summit in Copenhagen was thus set up by over-expectations for the train wreck that occurred. Projecting this, Ethical Markets had begun tracking private investments in green companies and technologies since 2007 in its Green Transition Scoreboard. Our first total of $1.6 trillion already committed and in the pipeline, helped push the pragmatic side agreements, also favored by many NGOs and the Climate Bonds Initiative, the Climate Prosperity Alliance, CERES, IIGCC and other investor groups. They included agreements between the US and China on sharing low-carbon, green technologies and the government commitments of multi-billion dollar funds for low-carbon investments, mitigation and adaptation. Government-pledged funds have not yet materialized – largely because obsolete economic models see them only as "costs" since they omit multiple "externalities." The Stern Report showed that these failed economic models had created the world's largest market failure. Direct investment by conventionally trained portfolio managers were still inhibited by these false models ("efficient markets," "rational actors") which omitted externalities. Thus, the risks were misunderstood in their over reliance on Value at Risk models – failing to see the real costs overhanging the balance sheets of polluting companies. As quantitative easing in Britain and the USA printed money for big banks which failed to "trickle down" to revitalize Main Streets, it became clear that such future funds should be directed at investing in greener, future economies.).

Governments were also misled by these incorrect economic models still underlying portfolio analysis and GDP national accounts. All fail to account for the costs avoided by direct investments in growing greener economies. While initial capital costs are higher for all new technologies, in the case of solar, wind, ocean, geothermal and other renewable energy, the fuel is free. Beyond climate stabilization, green development promotes health and avoids huge costs of remediation, mitigation and other "defensive" strategies to both companies and governments. Further evidence of how omitting "externalities" can lead to systemic

inefficiencies is the May 2011 UNEP report Metals Recycling Rates, documenting the waste, unnecessary over-extraction across most of the world's mining and manufacturing – and the overlooked opportunities in re-manufacturing, re-use, recycling and product redesign. At last, the Inter-American Development Bank (IDB) is learning from cities, notably pioneer Curitiba, Brazil, and other cities in Argentina, Bolivia, Columbia and Peru that the 4 million informal workers who recycle materials can be properly compensated as a vital part of the global recycling industry. Job creation and qualitative, healthier growth was also highlighted in the OECD report on Global Green Growth.

Ethical Markets' Green Transition Scoreboard has become a focal point for private retail and institutional investors to analyze the growth of green sectors and deepen their due diligence using updated asset valuation models. It provides a guide to the winning technologies that are part of the evolutionary succession from the 300 years of fossil-fueled Industrial Age to the cleaner, greener, information-rich Solar Age. We have recommended that pension funds and other institutional investors shift at least 10% of their portfolios away from risky hedge funds and commodity ETFs to investments in growing green companies. The Mercer report for fourteen global institutional investors representing AUM of over $2 trillion called for a similar switch of 40% of their assets as beneficial for both hedging climate risks and in opportunities to share in the green transition. John Doerr of US venture capital firm Kleiner Perkins estimated this to be nothing less than the $45 trillion reindustrialization of the world's economies. The CERES investor coalition's letter to its members and other shareowners stresses its Roadmap to Sustainability. Mayor Michael Bloomberg, along with 40 other mayors of the world's largest cities (which consumes 2/3rds of the world's energy and emit over 70% of greenhouse gases), meeting in Sao Paulo, will join the Rio+20 Summit in Rio De Janeiro in 2012 in promoting the shift to a green economy and sustainable jobs (C40 for Rio+20).

We agree that this green transition is necessary, viable and inevitable – as those "Potemkin markets" for trading carbon have failed to even slow the total carbon emissions ("Worst-ever Carbon Emissions," IEA). Private investments now at over $2 trillion are still leading the way and encouraging pension funds, as well as governments and international financial institutions to set up guarantees and green bonds. The leadership of UNEP-FI in helping create the UN Global Compact and the UN Principles of Responsible Investment (UN PRI, with 800 firms and assets under management of over $25 trillion) has been unappreciated and hardly mentioned in mainstream media. UN PRI has now helped launch reforms in business school curricula, similar to the RI Academy in Australia. These curricula reforms will address the blockage of obsolete portfolio management and asset-allocation models ("Changing the Game of Finance," SRI in the Rockies) by offering re-training courses for portfolio managers in ESG "triple bottom line" accounting and integrated valuation models of EIRIS and the Global Reporting Initiative (GRI). In truth, there are few "black swans" or "perfect storms" since these labels are simply excuses, concealing narrow, inadequate models and the pernicious practice in economics and too many business models of "externalizing" social and environmental costs (World Affairs). Responsible, ethical investors developed the new accounting protocols in the GRI. Accountants and micro-economists developed the new models at the company level, while the LSE's Paul Woolley Center for the Study of Capital Market Dysfunctionality promotes a set of Principles for Institutional Investors to address the glaring conflicts of interest in the financial system between agents and their principals so familiar in corporate law (Future of Finance review).

Today, at last, governments are facing up to the task of similar reforms to national accounts: GNP/GDP stemming from the Beyond GDP conference in the European Parliament in 2007 (www.beyond-gdp.eu) and the Ethical Markets-Globescan surveys showing large majorities in 12 countries, of the public's understanding of the need to include indicators of health, education, poverty gaps and the environment in GDP and all national indicators. The OECD's new Better Life Index moves in the right direction – and its next revision will include indicators of poverty gaps (GINI coefficients) as cross-cutting measures of inequality and gender. Relying on GDP's averaging of incomes will give way to more granular views of other forms of wealth beyond money: healthy, educated workforces; efficient infrastructure, and productive ecosystems, all set at zero in GDP. Luckily, we can now overcome the persistent objections of macroeconomists ever since 170 nations agreed to reform their GDP in Rio's Earth Summit in the 1992 Agenda 21, Article 40. With the development of the internet and the web, we no longer need macroeconomic models of national accounts in GDP used since World War II. These obsolete methods of measuring war production were never intended to measure national well-being, as warned by their developer Simon Kuznets. Now the website "dashboards" displaying all indicators of well being, quality of life in many disciplines and metrics beyond money-coefficients are growing at the OECD, the EC with Jochen Jesinghaus' MDG Dashboard, in Sweden with Hans Rosling's dynamic displays, Brazil's many new "observatories," and in the USA the pioneering Calvert Henderson Quality of Life Indicators since 2000, still regularly updated at www.calvert-henderson.com.

An indispensable roadmap beyond the Kyoto protocols and the "Potemkin markets" inadvertently created is David Victor's *Global Warming Gridlock*. While explaining the wrong approaches of the past, Victor also sees that the world "requires a massive re-engineering of energy systems." He even calls for geo-engineering, which we see as risky and unnecessary. Kyoto's obsession with carbon and CO_2 was required by financial traders to create a single new "asset class." This was pushed by the market fundamentalists, including economists as well as entrepreneurial economic guilds in the US and Britain, along with big banks and the financing sectors, and elite US environmental groups, led by the Environmental Defense Fund. We now need to go straight to the green transition and continue growing the infrastructures of the global green economy: smart grids; public transport; compact, pedestrian-friendly cities and sustainable forests, land management and organic agriculture. Progress is bringing better batteries, LED lighting and direct conversion of solar energy based on photosynthesis. We can re-frame "low-carbon" industries properly as "low entropy" since sustainability and eventual climate stabilization is about reducing throughput of energy and materials in economies to the minimum – across the board – beyond the dismal of Jevon's Paradox.

Even the UNFCCC and the IPCC have now changed course in the right direction as others advocate. The UN's IPCC with the World Meteorological Organization have recommended policy-makers shift toward addressing emissions of soot, VOCs and methane in local hotspots – thus lowering CO_2 emissions more swiftly and cheaply, based on the local and regional agreements that are politically practical. Victor's main strategic advice in *Global Warming Gridlock* on forming smaller "clubs" of those willing and enthusiastic about addressing climate change is widely visible: in US-China green technology accords, Britain's legally-binding "Green Deal" and green bank, the World Bank, local trading systems, private green bonds in the Climate Bonds Initiative and daily shifts in institutional portfolios toward growing the green economies. The UNEP's Green Economy Report, based on its Green Economy Initiative which was launched in Geneva in 2009, has gathered adopters and led to greater interest in Rio+20 to be held in Brazil in 2012. NGOs continue to provide most of the

pressure with WWF, IUCN, Global Footprint, IISD and the Green Economy Coalition leading the way. The UNEP report on *Recycling Rates of Metals* mentioned earlier provides another landmark, describing another huge market failure in properly pricing these metals and accounting for the full costs of their extraction and use – still widely "externalized" from company and government balance sheets. Correction of these pricing errors will reduce virgin extraction rates and lead to expansion of today's recycling, reuse and remanufacturing industries – already employing millions of workers worldwide. IISD has exposed the absurdities of massive subsidies to fossil fuels even as governments try to cap their emissions and is now correctly fostering more sensible procurement of green technologies.

A seminar in the USA's prestigious Council on Foreign Relations asks "Are Economists Necessary?" My view has always gone beyond economics, since all public and private decisions must be based in multi-disciplinary systems models such as we pioneered at OTA and later at the Calvert Group. Adam Smith was right about "the human propensity to barter," but more and faster trading is not always better. We are aware of market failures and false prices, as well as special interests and tax policy manipulation. Economics can be useful at the micro-level, but macro-economics has failed and is in disrepute. Economics' focus on money transactions – only one form of wealth – misses all the others. Internalizing all those externalities can help get prices corrected as Trucost is proving. But all the other forms of wealth need the multiple metrics and disciplines now used in indicators of well-being, social and ecological assets and quality of life.

Beyond helping develop the newer, more practical approaches needed for the eventual controlling of further carbon-emitting, lies the ultimate industrial design revolution toward biomimicry: learning the efficiency principles in Nature's billion year experimentation and innovative use of materials and design. Britain's Tomorrow's Company has launched its Tomorrow's Natural Business program to familiarize corporate managers with these deeper principles of long-term success and sustainability. Beyond costly methods promoted by coal companies, we can use Nature's carbon sequestration through proper land-management such as pioneered by Allan Savory and shift to forest-saving and the working business models of biomimicry in human production as pioneered by Janine Benyus, John Todd, Gunter Pauli, the Bioneers and others showcased at www.ethicalmarkets.com and by the Buckminster Fuller Awards. All these design reforms and new metrics will reform and re-shape financial markets for the future.

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