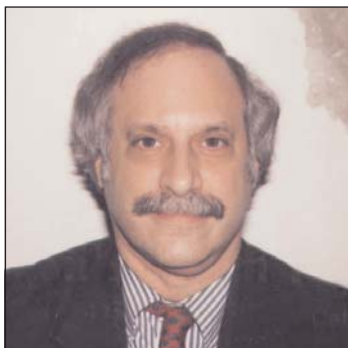


Green Trading™: Managing financial risk for the environment



Peter C. Fusaro, Chairman of Global Change Associates examines the financial risks and opportunities inherent in the growing awareness of environmental damage caused by greenhouse gas emissions.

The Market Today

The existing green trading market can be characterized as having the following characteristics: opaque prices, little trading, few participants, poor liquidity, tremendous inefficiency, and wide arbitrage opportunities. If these attributes sound familiar, they are the primary factors of each emerging market. Having seen the emergence and maturation of oil, gas, power, weather and coal as fungible commodity trading markets, the environment is now well positioned to be the next financial commodity trading market. More unusually it will explode simultaneously throughout the world. Similar to oil market developments circa 1978, we are now seeing the emergence of carbon (CO₂) as a fungible commodity trading market trading in metric tonnes.

Moreover, the other unique aspect of this market is that it has been driven by government mandate. In fact, the US created the carbon template if one looks at the trading regime of the sulfur dioxide (SO₂) allowance market, which began in 1995 and has vintage credits through the year 2030. A true carbon regime will have a span of 50 to 100 years. This is envisioned after 2012 and work at the governmental level is already underway to create the longer-term market.

While the private sector will take the lead on the development of emissions trading markets wherever it has a vested commercial interest in emissions reductions, compliance responsibility, however, will rest with governments. There are strong beliefs that markets will form first, thus creating an emissions-trading marketplace, and that governments should not inhibit such growth. This new marketplace would motivate firms with surplus emissions rights to trade or supply those rights to the market. In effect, despite the risk of uncertainty on future rules,

there are merits to moving forward early. It seems evident that industry-driven schemes will be grandfathered in the future as rules are more clearly defined. Thus, industry can create its own domestic and international portfolio of emissions allowances or credits.

The environment today is now coming to be framed as a corporate financial issue. Greater financial disclosure of corporate environmental risks including climate change has raised the issue to environment as a corporate fiduciary responsibility. Corporate boards are increasingly concerned as shareholders question their environmental practices. Companies such as Innovent Strategic Advisors, the so-called Green Moodys, highlight these environmental financial risks and that concept is now beginning to resonate in corporate board rooms. It is an issue that is gaining momentum. Environmental performance and financial performance of companies are increasingly intertwined. This directly impacts automobile manufacturers, electric utilities, oil and gas companies, banks and insurance companies. Automakers are concerned about carbon dioxide emissions per vehicle produced and sold. Electric utilities are paying more attention to reducing their greenhouse gas (GHG) emissions footprint as part of their air emissions reductions. Oil and gas companies are increasingly concerned about emissions as production, refining, transportation and distribution liabilities. Bank share valuation could fall if they do not have adequate carbon risk management strategies. And insurance and reinsurance companies are now at the forefront of confronting these financial risks such as catastrophic risk for crop failure due to climate change, and health-related risks due to the linkage of climate change and infectious disease. These new financial risks for insurance and reinsurance companies may lead to them dropping coverage for cer-

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tain companies.

As the Kyoto Protocol nears ratification, energy markets and many private companies are already moving forward under their own initiatives to comply with the treaty. Under the Kyoto Protocol, it was envisioned that three international mechanisms would enable developed countries (Annex 1) to reduce emissions to reach Kyoto. Beginning in 2008 through 2012 for all countries that have signed the Kyoto Protocol, emissions trading, joint implementation (JI) and a clean development mechanism (CDM) are the means to achieve Kyoto compliance. The latter two require more international cooperation and the rules are still being formulated as many CDM projects have been rejected this year. However trading emissions presents a near-term viable alternative. So far, the most activity to create emissions trading markets has been in the United States, Canada, Japan and Europe. Many believe actions taken today are likely to be grandfathered into the future revised treaty. The highly successful and pioneering markets for sulfur dioxide (SO₂) and now also nitrous oxide (NO_x) are providing the financial template to be applied for global carbon dioxide (CO₂) markets.

There are several parallels between the development of emissions trading schemes and the dual process of electric power industry liberalization in many countries. Emissions trading and electric power deregulation intersect since the power industry contributes to greenhouse gas emissions.

Exchange Opportunities

Since almost all environmental financial contracts such as SO₂ or CO₂ are traded on the OTC markets, there is an opportunity for exchanges like the New York Mercantile Exchange (Nymex) to offer OTC clearing which would effectively make them quasi-futures contracts under government oversight. This could help make them more acceptable to risk managers. Nymex could also supplement this effort by launching environmental futures contracts such as SO₂, NO_x, CO₂ and Renewable Energy Credits (RECs). Currently Nymex trades WTI crude oil, heating oil, gasoline, natural gas, electric power and coal futures, which are directly linked with emissions. These efforts are under consideration by the Exchange. This opportunity is also true for the International Petroleum Exchange (IPE) in London to trade emissions in the EU.

In Japan, both the Tokyo Commodities Exchange and

Tokyo Stock Exchange are considering launching carbon derivatives contracts. Presently, the ground rules in Japan are in a state of flux between a ‘cap and trade’ market and a baseline market. There is also a movement emerging to create the next trading regime beyond 2012 and the Kyoto Protocol to include developing giants such as China, India and Indonesia.

The Chicago Climate Exchange (CCX) is following another route to Greenhouse Gas (GHG) market maturation and will launch a voluntary carbon exchange in the September 2003. This voluntary carbon exchange will be US and Canadian centric and currently has 20 active companies participating. It is a risky venture since it is the first exchange to launch in a time of changing US attitudes on global warming. However it is a precursor to other North American exchanges that may wish to enter this emerging market space.

The GHG market has been estimated at \$2.3 billion by the Council of Foreign Relations a noted foreign policy advisory group based in New York and they may have underestimated its potential size. This market sizing attracts capital. Typically, commodity contracts trade six to twenty times the physical underlying market. To put this in perspective, the US SO₂ market has been estimated at \$6 billion. The energy derivatives markets, both exchange traded futures contracts and OTC price swaps, has been estimated at about \$2 to 3 trillion. The global foreign exchange and interest rate swaps market is over \$120 trillion in notional value.

Exchanges may be established quickly on the Internet following the model of the CCX. Internet-based emissions trading would allow immediate disclosure for market players and has low costs of operation. As the market matures, it is envisioned that Internet-based trading will be the platform that allows quickly evolving global emissions trading schemes and seamless cross-border carbon trading.

Enter Agriculture

The agricultural sector is beginning to realize the market potential and financial benefits of renewable energy, not just in the form of rents from siting large wind towers but from self-generation with wind and biomass. The utilisation of plant and animal farm waste can produce additional cash crops to be ‘harvested’ and commercialized for their environmental attributes. The energy and agricultur-

al sectors can join forces to develop new energy supplies while reducing externalities and creating new industries in America that can be exported throughout the world.

Together energy and agriculture are the world's largest businesses. They are also the most deeply liquid commodity markets. Financial engineering on environmental financial products will grow cross commodity arbitrage opportunities for energy and agricultural commodities and GHG, renewable energy and efficiency. The inflexion point for this sea change is during the next two years.

Project Finance Implications

Another emerging trend that may hold the key to GHG emissions liquidity is the structured finance market i.e. 'Green Finance'. A fuel type shift to greener and cleaner fuels such as natural gas in preference to coal or oil is becoming embedded in the fabric of new power station project financing. Since these plants have a useful life of 30 to 40 years, they will bring a stream of emissions credits that can be banked or used up front. They are unlocking another avenue for market evolution. This type of thinking is just beginning at investment and commercial banks in New York, London, and Tokyo.

Moreover, it can be envisioned that an environmental checklist is emerging in the green or environmental finance arena, yet another area where financial engineering can bring about market development and liquidity. There is no time to fight past demons. Forward-thinking and globally based energy participants should embrace the inevitability that international policy on greenhouse gases is being set by both media and public perceptions. In this context, the rational response by enlightened industry participants is to develop and support market-based solutions to global pollution.

In an imperfect world, this is the reality. In order to reduce CO₂ emissions, emissions trading will act as the catalyst of change in the transition of world economies toward renewables and accelerated transfer of more efficient and greener technologies.

Ironically, the global market that now seems best positioned for trading is the renewable energy credit (REC) market. Renewable energy has undergone a quantum technology shift in terms of increased efficiency and lower costs with a few financial players focusing on the new factors that drive this market. Once again, government mandates, called Renewal Portfolio Standards in the US, are driving market maturation. But in the physical market wind and solar power are growing 40% and 30% per annum globally with costs now competitive with gas and coal. Tax subsidies for waste to energy and biomass power generation will move the equation further. Looking at a small installed base of renewable power generation today misses that fact that ramping up of this technology is global. These power stations are also getting bigger with wind turbines of 2.5 to 3.5 MW and multiple siting of 300 to

400 MW wind farms being developed. More importantly, they have created another fungible commodity market that can be traded cross border as the credits are measured in megawatt hours. Such green power initiatives will create a highly fungible market for RECs.

Need for Price Indices

Markets in environmental derivatives are positioned for rapid growth due to political initiatives and business opportunities, but these markets will reach their full potential only if based on reliable indices widely accepted by the trading community. To focus solely on Greenhouse Gas Emissions (GHG) misses the opportunity to capture the benefits of other energy/environmental market-based solutions to global pollution such as renewable energy credits or energy efficiency (negawatt) trading. Therefore, in order to maximize the business opportunity for an established exchange, several environmental products for various geographic markets must be traded using regional environmental indices as the underlying benchmarks. The composite of these financial indices will contribute to a global index as well. The need is to establish exchange-traded derivatives products for sulfur dioxide (SO₂), nitrous oxides (NO_x), carbon dioxide (CO₂), renewable energy credits (RECs), negawatts (energy efficiency), mercury and other environmental verticals with the first step being the creation of several tradable indices in North America, Europe, and Asia.

Because government mandates are the primary market driver for environmental financial products, the scope of activity has been limited to a small number of players. Nonetheless the growth of emission trading and profit opportunities are attracting a new generation of traders in the market. Commodity traders from the world's largest banks and financial institutions are responding to these opportunities by opening trading operations on both sides of the Atlantic. The inhibiting factor is – the lack of a reliable index – has so far muted their effort to create a liquid market. The current trading environment is handicapped by the operational complexity of having adequate allowance inventory on hand to complete a trade such that there are still more sellers than buyers of. This limits access only to those with ample allowances or those that can borrow allowances. Furthermore it takes time to transfer allowances from one party to another and the process can take weeks, limiting traders' ability to enter or exit the market with ease. An index would remove this impediment making it possible to attract more players into the market, by allowing more trade structures, and by turning the environmental market into a cash settled operation. Because of the potential for improving regulatory policy we expect close cooperation between government regulatory agencies and any exchange seeking to use the indices as underlying benchmarks for trading financial products.

Need for New Metrics

Many countries have renewable energy, energy efficiency and greenhouse gas programs. Some coordination to provide consistency needs to take place, but most such programs today are and have been independently developed. Consistent methodologies for measuring emissions, including GHG, renewable and efficiency efforts would facilitate project investment. Consistency would facilitate development of project templates thereby reducing costs and gaining rapid dissemination of the learning gained from early projects. National and international markets for GHG credit trading would offer the liquidity necessary to return value to projects and thereby financing. To function efficiently such markets require assurance of integrity – clear definitions, avoidance of double counting, verification, and liquidity. At this point in market development, it is critical for some consensus to develop around development of common metrics for the private sector and policymakers to analyze opportunities at the regional national and international levels. Greenhouse gas reg-

istries managed by a third party, non-governmental entity could serve as a model at both the state level like California or at the federal level like in most EU countries.

Today, we have a one off market with many companies not acting on what will ultimately affect them financially. A few innovators are proactive. The reality is that environment is emerging as a key financial liability of multinational corporations globally. These liabilities are the market drivers for change. The quantification of these risks will keep analysts and mathematicians busy for many years as the dynamic models have yet to be built.

The GreenTrading™ markets today are still embryonic yet starting to accelerate in the market maturation process. The market characteristics for commoditization are there. The essential elements for trading are growing. The timing is right. The financial risk is real. The leadership is lacking, but the market opportunity is coming on strong for GreenTrading™. The next two years promise to be the breakthrough time for the next financial market to emerge globally. ■

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