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COMMODITIES

Hog Wild for Pollution Trading

Why environmental markets are becoming a very big deal.

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By Cait Murphy

"Two offers at 150."

"Where was the last trade?"

"147."

"640 for NOx 2002s."

"75 cents for 165s in September."

"Anyone want Texas Grill?"

It's the conventional chatter of a trading desk, this one at the offices of commodities broker Natsource in downtown Manhattan. But these brokers--mostly young, mostly male, mostly dressed in jeans or khakis--are buying and selling an unconventional commodity: pollution. Or more precisely, the right to emit pollutants like sulphur dioxide (SO₂), nitrogen oxide (NOx), particulate matter (PM), and the ever popular volatile organic compounds (VOCs).

Is this some shady Enronesque development? Hardly. There have been government-backed pollution-trading programs since the 1970s. But only in the past few years has the market for pollution--a term participants wince at, preferring "environmental market" or "emissions market"--burgeoned. Now there are markets for everything from dirty water to methane from hog manure. And pollution trading is about to become a much bigger deal, for good reason: When it comes to cleaning up the earth, air, and water, trading works.

Perhaps the best example is the SO₂ cap-and-trade system, set up by Congress and the other Bush administration in 1990. The Environmental Protection Agency gave each of the nation's 200 or so largest power plants the right to emit a specific number of tons of SO₂ every year (the "cap"); the plants also had to install technology to track their emissions. At the end of the year the EPA determines whether each plant's emissions exceeded its allowances. Slackers are punished--through heavy fines, reduced allowances, or both--and the number of allowable emissions is reduced every year. The novel twist: The EPA set up a trading system enabling companies to buy or sell allowances to meet their requirements.

Let's say a coal plant facing unexpectedly high demand realizes that it is using its SO₂ quota too quickly. It has a number of options: It can install scrubbers, burn lower-sulfur coal, or switch to natural gas. Alternatively, it can go to the SO₂ market and buy allowances from a plant that reduced emissions more than it was required to do and therefore has SO₂ to spare. The buyer saves money, the seller makes money, and because the EPA gradually lowers the cap, pollution recedes.

By limiting the output of SO₂, the EPA was in effect creating a value for a commodity that had been free. Therefore, thinking went, companies would reduce emissions when and where it was cheapest to do so. They would also have an incentive to reduce their emissions faster than required, because they could sell the surplus. The emphasis was on achieving a specific goal (less acid rain) not on dictating how to do it ("thou shalt install scrubbers").

The result? SO₂ emissions have fallen faster, further, and at less cost than anyone dared expect, and the system has been extended to more than 2,000 power plants. Even as the economy has grown, SO₂ emissions are on track to fall to half their 1980 levels by 2010 (see chart below). The cost to industry is about \$1 billion a year; the EPA figures the benefits, just in terms of less sickness and fewer premature deaths, will reach \$50 billion by 2010.

The market for SO₂ isn't as frenzied as that for, say, oil or pork bellies, because companies need to prove compliance only once a year. At Evolution Markets, one of the larger emissions traders, an average day sees perhaps a half-dozen trades. But the \$4-billion-a-year market is already sophisticated enough to feature swaps, forwards, puts, calls, and options. SO₂ allowances are used as collateral, loaned, or swapped for other pollutants. They can even be bought and then retired--the perfect gift for the environmentalist who has everything. "I don't think Congress envisioned all these types of transactions," laughs Gary Hart, manager of emissions trading at Atlanta-based Southern Co. "But if you give an incentive, people will get creative."

The success of the SO₂ program has convinced almost everyone that trading can be useful environmental policy. The U.S. already trades wetlands, water pollution, and fishing rights; in what could be a huge expansion of the environmental market, the Bush administration's proposed clear-skies legislation would stiffen requirements for SO₂ emissions and create national markets for mercury and NO_x (there are already regional NO_x programs). And this isn't just an American idea. China and Slovakia have SO₂ cap-and-trade programs. Chile trades total suspended particulates. Australia has a renewable trading market. Canada trades SO₂, NO_x, and VOCs.

Put it all together, though, and pollution is still a boutique market. "It's small compared with almost any other commodity," says Jack Cogen, president of Natsource. "But this is going to grow and grow. I think it will be the dominant thing we do in five years." That's because there is about to be a significant new entry to the field: greenhouse gases (GHGs).

How Trading Lowers SO₂

U.S. sulfur dioxide emissions (millions of tons)

Year

| | |
|------|------|
| 1980 | 17.3 |
| 1990 | 15.7 |
| 2000 | 11.2 |
| 2010 | 8.95 |

Source: EPA

Under the 1997 Kyoto Protocol, most developed countries agreed to cut emissions of GHGs, particularly carbon dioxide (CO₂), as a first step to reduce the risks of global warming. The U.S. has rejected the agreement; moreover, either Russia or both Canada and Poland must sign before Kyoto becomes legally binding. Regardless of what happens to Kyoto, a market for GHGs looks like a certainty. Europe is already working on a cap-and-trade system for CO₂ that could begin as soon as 2005 and would cover almost half of its CO₂ emissions. European companies like Shell and BP have lively internal programs, and Denmark and Britain have begun trading GHGs, albeit on a small scale. The British market, which

opened in April, trades all six greenhouse gases and records two or three trades a day, with an average lot size of 7,500 tons of CO₂e (carbon dioxide equivalent, the basic unit of GHG accounting; a large SUV, like the Suburban, emits a little less than 7,000 tons of CO₂e a year). There has also been a trade between Denmark and Britain in which Elsam, a Danish electricity supplier, swapped allowances with a British division of Royal Dutch/Shell.

There is every reason to believe a sizable GHG market will evolve in America too, even if it never signs the Kyoto Protocol. Eight companies--Alcan, BP, DuPont, Entergy, Ontario Power Generation, Pechiney, Shell International, and Suncor--have signed up with the nonprofit group Environmental Defense to report, monitor, and cap their emissions. The goal is to reduce emissions by 80 million metric tons of CO₂e by 2010; the eight companies intend to establish a trading system among themselves to help them get there. Expect the first trade by the end of the year.

In an even larger project, more than 40 companies, with combined emissions almost equal to Germany's, are creating the Chicago Climate Exchange (CCX), a voluntary national pilot market for all six greenhouse gases. The CCX is supposed to start trading in early 2003. As a first step, participants will be asked to reduce emissions from their 1998-2000 averages by 1% a year. Eventually, the CCX wants to cooperate with the EU, Mexico, and Canada (which has a voluntary system in place) to create a larger, more diverse market that will drive down prices. "Three, six, seven markets will spring up, then they will evolve into one market," predicts Richard Sandor, who helped set up the SO₂ and interest-rate futures markets and is one of the brains behind the CCX. Corinne Boone, managing director of CO₂e.com, a division of Cantor Fitzgerald, expects the GHG market to be "fully commoditized" within ten years, trading pollutants with the same ease as orange juice futures or wheat. That spells opportunity: The World Bank predicts GHG will be a \$10 billion market by 2005.

In practical terms, there will be two complementary greenhouse gas markets. One will be an allowance market that operates much like the current SO₂ system. The other will be a so-called offset market--more complicated, more arduous, more expensive, and more interesting. (All the trading systems under consideration envision the use of both allowances and offsets.) In the offset market, companies will get credit for emissions reductions at home by developing--or buying credits for--offsetting projects abroad.

To see how an offset transaction might work, consider Heartland Pork in Alden, Iowa. Every year Heartland sells about one million hogs that collectively produce 22 million gallons of manure. Manure emits methane, a greenhouse gas. In a deal last year with GEMCo, a not-for-profit Canadian consortium of private companies that wants to reduce GHG emissions, Heartland agreed to store its hog waste in concrete containers as opposed to, say, open lagoons. Lagoons are cheaper but emit more methane (and yes, they stink more too). Working with Iowa State University, Heartland and GEMCo agreed on the amount of emissions reductions that would be appropriate. An independent auditor confirmed the numbers. GEMCo got 300,000 tons' worth of CO₂e emissions that it could apply toward its target; Heartland found a new source of revenue (but won't say how much).

The Kyoto Protocol has two mechanisms to encourage offsets. "Joint implementation" refers to projects, like the Heartland-GEMCo deal, that involve industrialized countries. The Dutch government has been actively experimenting with this concept. It has bought more than four million tons of CO₂e reductions (for about \$30 million) by, among other things, setting up a wind park in Poland. Such projects generate emissions-reduction units (ERUs). Then there is the "clean-development mechanism," which refers to projects in developing countries--for instance, replacing kerosene lamps in India with solar panels, as one U.S. company has actually done, or building a hydroelectric station in Uganda, as the World Bank has done. These will generate certified emissions reductions (CERs). The goal is to make ERUs and CERs readily tradable financial instruments.

Offset markets will be slower to trade than allowance systems. Crucial issues, such as how to count emissions, how to value them, and who owns them, are still up in the air (so to speak). But if the logistics can be worked out, and transaction costs lowered, the offset market could provide a powerful incentive to

replace dirty power with clean technology--and give needed liquidity to the GHG market. However odd it sounds to trade the pollution value of a new wood-chip plant in Romania, such deals are not impossible. The U.S. has a well-functioning offset market to help power plants meet air-quality standards.

All told, perhaps 200 million tons of CO₂e have been traded in the past five years, or about what America spews in 40 days. That's not a lot of hot air, but given that carbon is still a free commodity, why has anyone bothered at all? Sure, it's good public relations; less cynically, some companies feel it's their duty. The bottom line, though, is that this is becoming a bottom-line issue. At the 2000 World Economic Forum, a gathering not noted for its fuzzy embrace of far-out ideas, participants identified climate change as one of the most important future variables for business. Credit-rating agencies are beginning to include GHG programs in their analysis of environmental risk factors. "The reason people are [reducing emissions voluntarily] is not about Kyoto compliance," Randy Nornes, managing director of Aon's risk strategies group, told a recent conference on the subject. "It's about capital allocation and competitive advantage." Not exactly music to green ears, perhaps--but self-interest has never yet failed as a powerful boardroom motivator.