BUSINESS

Carbon copies

The corridors of power in the United States are ringing with the phrase 'cap and trade'. But when will carbon markets arrive in America — and what will they look like? Emma Marris investigates.

The trading scheme for carbon emissions started in 2005 by the European Union (EU) is far from perfect. The price of credits in its first phase, for example, bombed last spring, to the alarm of some investors — although trade in the second phase remains robust (see Market Watch, right).

But the 25-nation scheme is the best model there is — or at least that's the consensus of the people looking to build a corresponding market in the United States. Many of them say the overall approach will be most effective if the two markets can work closely together.

So pleas for such linkage were high on the agenda at a conference on North American carbon markets last month in Washington DC. "Maybe carbon markets are returning to where they were born — in the United States," Per-Otto Wold, chief executive of Oslo consultancy Point Carbon, told the meeting. "I hope that we will see compatibility between the markets."

The approach of limiting pollution by setting caps on emissions and then trading those emissions back and forth was indeed devised largely by US economists in the 1980s. Back then, they were reacting to concerns about power stations emitting sulphur and nitrogen oxides that were causing acid rain. The plan is widely seen as a success: emissions of sulphur dioxide from facilities covered by the US scheme, for example, have fallen from 16 million tonnes in 1980 to about 9 million tonnes in 2005. And US negotiators energetically advocated carbon trading in the run up to the 1997 signing of the Kyoto protocol on climate change — from which the US government later withdrew.

Now there is growing acceptance that some arrangement to cap and trade greenhouse-gas emissions in the United States is on the way. More than 80% of North American power-company managers think that 'binding carbon mandates' will come into effect sometime between 2008 and 2017, according to a survey by Cambridge Energy Research Associates of Massachusetts.

Eileen Claussen, head of the Pew Center on Global Climate Change in Washington DC, estimates that mandatory greenhouse-gas caps are "plausible by 2008 and likely by 2010". The sense that this is so has hardened considerably since the Democrats took control of Congress last November.

Industry in the United States is expecting mandatory carbon caps within the next decade.

N. UT/AP

Several states, including California, are also moving to implement schemes of their own. The Regional Greenhouse Gas Initiative (RGGI), for example, involves nine northeastern states and will cap carbon emissions from power plants from 2009. According to James Werner, the initiative's coordinator in Delaware, the project is based on the supposition that US-wide caps will follow. "We expect that a federal programme is coming," he says.

> "There are no good reasons for the US and European emission-trading schemes to differ."

Industrial resistance to the idea is eroding. On 22 January, ten blue-chip companies, including Caterpillar, the construction-equipment maker, and Pacific Gas and Electric, joined forces with moderate environmental groups to call on Congress to enact legislation that would install a cap-and-trade scheme.

But major questions remain about the structure of such a scheme. One of the most basic is whether carbon credits should be auctioned off by the government — to raise revenue for its own emission-reduction efforts — or be given away free. Environmental groups tend to favour the former approach, businesses the latter. In the EU, only 5% of credits were auctioned off in phase one, but in the RGGI, all states must auction off at least 25% of their credits, and some are planning to auction off all of them. Massachusetts, for example, expects to collect between $25 million and $125 million a year by auctioning off all of its credits.

If all or part of the allocation is given away, the credit begins its life without a price attached. The price is then determined by traders' best guess of what the credits will be worth in the future. "A free allocation system has made the market less efficient," says Louis Redshaw, environmental markets chief at Barclays Capital in London. "It doesn't give a price signal."

Trading places

Another hot topic is the extent to which emissions above a cap can be dealt with by buying offsets, rather than by buying emission allocations from another company. Offsets are emission-reduction measures elsewhere in the world, many of them supported by an element of the Kyoto protocol called the Clean Development Mechanism (CDM). Last year alone, CDM contracts worth $5.6 billion changed hands. A Senate climate bill backed by John McCain (Republican, Arizona) and Joseph

Lieberman (Independent, Connecticut) would allow companies to use the CDM to keep their emissions under the cap. But critics see this as a 'dodge' that won't reduce global emissions.

Then there's the issue of which sources and gases to include. The EU scheme applies only to large industrial emitters — and covers only carbon dioxide emissions. Including the vast emissions generated by transportation is problematic. "You can't actually measure all those sources very accurately," says Damien Meadows, deputy head of the European Commission's trading-scheme unit. "Maritime and transport may come in later — but you need absolute accuracy."

Unlike the EU scheme, the McCain–Lieberman bill — and a rival proposal backed by Senator Jeff Bingaman (Democrat, New Mexico) — would include not just carbon dioxide but all six major greenhouse gases. In the sole carbon-emission market already functioning in the United States, the Chicago Climate Exchange (CCX), participants volunteer to sign legally binding contracts committing them to cut emissions of the six major gases by 6% from a pre-agreed baseline by 2010.

But because it is voluntary, the CCX is tiny, trading just 1.23 million tonnes of carbon in 2005, according to Point Carbon, compared with the 362 million tonnes traded in the EU scheme that year. The Chicago market's supporters nonetheless advocate it as the most sensible forum for emerging US trading based on mandatory caps. They say that an experimental trade conducted by Baxter Healthcare of Deerfield, Illinois, last year showed that it would make for good interoperability between US and European markets.

But Henrik Hasselknippe of Point Carbon says that carbon trading could end up happening in any forum that proves to be convenient. "The market tends to make its own marketplace," he says.

Overall, the highest concern of those at the Washington meeting was that the US approach should be tied as closely as possible to the EU scheme. That will require it to contain certain features, such as synchronized phases, and to exclude others that have been mooted in the United States, such as a cap on how high the price of emission credits can go. "A safety valve or a price cap in the United States would make linking incompatible," says Meadows. "I would emphasize the need for simplicity."

There are no good reasons for the two schemes to differ, says James Cameron, vice-chairman of European investment banking group Climate Change Capital. He calls for the US system to mirror the European one. "Don't reinvent, connect," he says. ■

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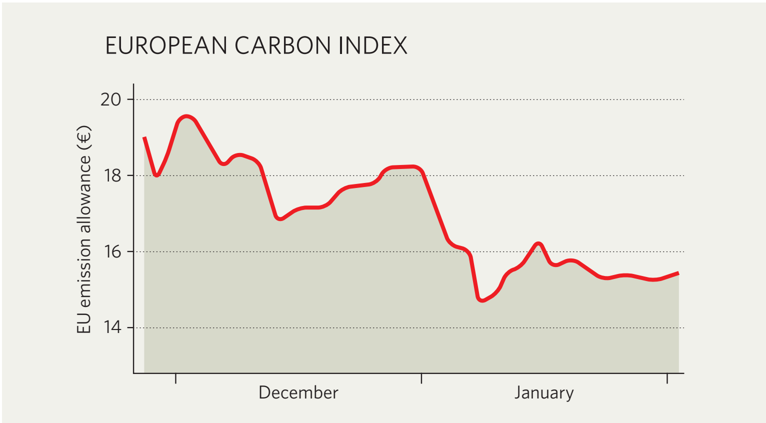
IN BRIEF

SAFETY STEPS The US Food and Drug Administration (FDA) has announced a set of measures to improve the science it does, the safety of drugs it has approved, and the way it communicates safety concerns to the public (see *Nature* 443, 372; 2006). Among these is a pilot programme to assess the safety of drugs with novel active ingredients 18 months after they have gone on market. But Senator Christopher Dodd (Democrat, Connecticut) says the measures don't go far enough and, with Senator Chuck Grassley (Republican, Iowa), he has introduced legislation that would give the drug agency additional powers to enforce the safety of existing drugs.

CELL BANK Richard Branson, flamboyant chairman of Virgin Group, has set up a company that will charge parents £1,500 (US$2,900) to store blood stem cells from umbilical cord tissue for possible future use in the treatment of blood diseases. Virgin Health Bank, which will run the store in collaboration with London-based investment company Merlin Biosciences, will also put half of each sample in a bank for public health use. Branson says that profits will be donated to fund stem-cell research.

BIOFUELS WINNER BP says it will spend $500 million over ten years on biofuels research at an Energy Biosciences Institute to be established at the University of California, Berkeley. The university won the race to host the centre against rivals reportedly including the Massachusetts Institute of Technology and Imperial College London. Its bid was backed by Arnold Schwarzenegger, the governor of the state, which will also contribute $40 million to the centre. It will operate as a consortium that will include the nearby Lawrence Berkeley National Laboratory and the University of Illinois at Urbana-Champaign.

MARKET WATCH



SOURCE: EEX

Allowances to emit one extra tonne of carbon dioxide in Europe during 2007 can now be bought for a song — €2.30 (US$2.99) last week — and all eyes are turning towards the second phase of the European Union (EU) emissions-trading system, which runs from 2008 to 2012.

Carbon futures for 2008 are being traded at €15 — down from almost €20 two months ago and sharply below last April's peak of €32.

Market-watchers say that the decline reflects steadily falling prices for natural gas. The resultant switch from coal to cheaper and cleaner gas by European electrical utilities has dampened demand for emissions credits, as companies grow confident that they will stay below their emissions caps. And on 30 November, the European Commission loosened restrictions on the number of credits that companies can obtain on the basis of emission reduction projects outside the EU.

As a result, phase-two allowances are selling for a lot less than the €20–30 predicted by London-based consultancy, New Carbon Finance, back in November.

But Guy Turner, an analyst at the consultancy, says that right now it is more important for the market to prove that it can operate successfully, than for it to attain a high price that will force emissions reductions in Europe. "Political integrity is more important than environmental integrity at the moment," he says. "The EU needs to show the United States and China that it's possible to manage the process — that emission trading can be done and is a club worth joining." ■

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