CARBON TRADERS

Cities, regions and emerging economies are following Europe in setting up carbon-emissions trading schemes. The amount of carbon capped (filled circles) is shown to the same scale as national emissions volumes (blue circles).

○Emissions (2010) ●Operating trading systems ●Legislated trading systems (by 2015) ●Carbon tax
RGGI, Regional Greenhouse-Gas Initiative. Mt CO₂, megatonnes of carbon dioxide equivalent (including deforestation).

Cap and trade finds new energy

An emerging coalition is implementing carbon trading despite political obstacles. It is rewriting the map of climate diplomacy, says **Michael Grubb**.

Fifteen years ago, the Kyoto Protocol presented a blueprint for a way to curb the increase of carbon dioxide in the atmosphere. One key measure, put forward by the administration of Bill Clinton, the US president at the time, was an enticing extension of free-market logic: establish emissions quotas to limit pollution, and trade them internationally. Let the market find the lowest-cost way to deliver the goal.

Cap and trade is one of two ways to put a price on pollution — taxation is the other. And emissions trading had been enacted successfully through the US Clean Air Act of 1990 to limit sulphur dioxide, a cause of acid rain.

The United States rammed a global cap-and-trade model into the Kyoto Protocol, allowing industrialized countries to meet their commitments with maximum flexibility, such as by buying emissions credits from projects in developing countries. The model was crucial in agreeing national emissions caps for Kyoto's first 'commitment period', from 2008–12.

That time has proved long enough for the grand plan of a globally negotiated, unified cap-and-trade system to unravel. The United States never ratified the protocol. Europe's flagship Emissions Trading Scheme (ETS) is in trouble. Yet, something

unexpected is happening. Smaller carbon-pricing schemes are springing up across the world (see 'Carbon traders'). This renewed momentum may yet deliver an effective response.

ROCKY ROAD

Even though the idea of cap and trade originated in the United States, it fell to the European Union (EU) to implement it for CO₂ after US president George W. Bush repudiated the Kyoto Protocol in 2001. The EU's rapid establishment of a carbon cap and price covering CO₂ emissions from power generation and industry across 27 countries (plus some neighbours) was an astonishing achievement.

The EU ETS evolved in phases. Its first three years (2005–07) ended with the carbon price crashing to zero as industry — fearing a shortage of emissions allowances — instead achieved a surplus by over-complying with emissions cutbacks.

The second phase coincided with Kyoto's first commitment period. The European Commission won a historic legal and political battle to force EU member states to set emissions caps aligned with their national Kyoto commitments. To avoid another pricing roller coaster, the rules allowed for surpluses to be 'banked' for later use. In its

first four years, the ETS is estimated to have cut CO₂ emissions by 40 million to 80 million tonnes a year on average, or 2–4% of the total capped¹.

Flush with apparent success, the EU advocated a global carbon market of similar schemes operating in the member countries of the Organisation for Economic Co-operation and Development (OECD) by 2015 and expanding to include all major emitters by 2020. With the US presidency of Barack Obama, who espoused cap and trade in his 2008 campaign, it seemed that such a vision was back on track. The US Congress began work on the Waxman–Markey energy bill, which had emissions trading as its centrepiece.

But events intervened and appetites for carbon trading waned. The credit crunch brought complex trading instruments into disrepute. The EU ETS saw scandals such as the theft of allowances from registries and fraud associated with complex tax treatments across borders.

In July 2010, the Waxman–Markey bill crashed in the Senate. The consensus became that the United States would not stomach carbon pricing — the public would never accept taxation, and the Senate had rejected the only alternative. Meanwhile, it became clear that the EU would over-achieve its second-phase Kyoto targets, owing to recession and progress on energy efficiency and renewable energy.

To give industry more time to plan, the third phase of the EU ETS was extended to 2020. This turned out to be a poisoned chalice. The surplus of emissions permits from phase two is now so big that it covers all of the cutbacks agreed up to 2020 — rendering the phase-three cap almost irrelevant.

The ETS carbon price has correspondingly slumped to around €7 (US\$9) per tonne, less than one-third of that projected before Europe's recession.

This low price cannot incentivize investment in low-carbon

technology, and it has devastated revenues that were expected to fund innovations such as carbon capture and storage. Instead, old plans for new and upgraded coal-fired power plants have been dusted off, predicated on the belief that the ETS surplus will sustain low carbon prices through 2020. Without changes, the future of the EU ETS — and its role in driving emissions reductions — looks bleak.

Many pundits rushed to declare emissions trading dead. Academics bashed targets and caps as a 'top-down' political process out of sync with the real world. The intelligentsia offered an alternative 'bottom-up' vision of

"Without changes, the future of the EU ETS in driving emissions reductions looks bleak."

SOURCE: A. PRAG, G. BRINER & C. HOOD, MAKING MARKETS: UNPACKING DESIGN AND GOVERNANCE OF CARBON MARKET MECHANISMS (OECD/IEA, 2012).

localized mitigation efforts that would not rely on emissions caps, pricing or international negotiations².

These contributions underlined the importance of local politics and gave renewed attention to energy efficiency and innovation. But the alternative vision was also out of touch with reality, because it could not answer three fundamental questions.

First, major investments are made on the basis of economic returns. If there is no carbon price, why should investors decarbonize? The alternative is regulation directed against the grain of price signals — hardly appealing to conservative critics. Second, emissions targets set goals that can direct effort. Why would not specifying a target be more likely to spur action? Third, innovation requires years of nurturing, development, commercialization and growth, based on the prospect of profitable markets. Why should low-carbon technologies emerge faster without carbon goals and prices to reward and help to finance such innovation?

Some advocates of the new vision cite the decline in US emissions, despite the lack of a carbon price, as proof of concept³. But it does not follow that carbon trading and targets are irrelevant. High global oil and coal prices, economic slowdown, stronger energy-efficiency programmes and renewable energy policies have contributed to lower US emissions, as has an abundance of cheap shale gas. Both price and non-price factors are important. Cheap gas will reduce emissions if it displaces coal but not if it displaces renewable energy sources. The CO₂ savings achieved in recent years could be reversed if there is not a carbon price sufficient to ensure that gas remains cheaper than coal for generating power.

THE NEW RULES

In practice, events are challenging the 'top-down' and 'bottom-up' caricatures as well as the assumed leadership role of developed-country governments. With stalled national progress and a mix of concerns about climate change, energy security and stimulating investment and innovation, some states, cities and emerging economies are forging ahead with local carbon taxation and trading policies⁴.

Asian economies have rushed to fill the void. In 2009, South Korea adopted the most environmentally oriented stimulus package of any country, and legislation for emissions trading passed its parliament in May 2012. Beginning in 2015, the scheme will set caps for facilities responsible for 60% of the country's emissions⁵.

China's National Development and Reform Commission in July 2010 launched pilot 'low-carbon development zones' in five provinces and eight cities. Under the country's five-year plan for 2011–15, five cities (Beijing, Tianjin, Shanghai, Chongqing and Shenzhen) and two provinces (Guangdong and Hubei) will establish pilot emissions trading schemes. Adoption of a national cap-and-trade scheme by 2015 seems implausibly fast, but with the pace of Chinese developments, who knows.

India has developed the 'Perform Achieve Trade' system to implement energy-efficiency goals in three phases during 2012–20, for essentially the same sectors covered by the EU ETS.

In wealthy countries, several regional governments have pushed ahead. This month California held the first auctions for its CO₂ emissions trading system, with which Quebec is also affiliated. In 2008, British Columbia introduced the first major carbon tax since the Scandinavian countries did so 20 years earlier, with the price rising to Can\$30 (US\$30) per tonne in 2012. In 2011, Tokyo became the first city to adopt a municipal cap-and-trade system for carbon — an example emulated by Rio de Janeiro ahead of Rio+20, the 2012 United Nations Conference on Sustainable Development in Brazil⁶.

Australia has clung to its domestic scheme, which came into force this summer as a three-year carbon tax that in 2015 will morph into a trading scheme linked with the EU ETS. The Australian government announced on 9 November that it intends to join the EU in signing on for a second period of the Kyoto Protocol.

By next year, about 10% of global emissions will be covered by a carbon price; by 2015, the Korean and Chinese pilot schemes will take this closer to 15% — and more plans are emerging. The effort will look nothing like the Kyoto vision or the EU's idea of an OECD-wide market. But it will be the first big step for an emergent 'coalition of the willing' that recognizes carbon pricing as integral to any credible strategy for sustainable and innovative low-carbon economic growth.

The dichotomy between 'bottom up' and 'top down' is false — it is like arguing over "whether a supertanker needs an engine or a captain", as Christiana Figueres, executive secretary of the United Nations Framework Convention on Climate Change, has put it (go.nature.com/mievx3). The 'engine' of emissions reductions is inevitably bottom up, and it must combine efforts on efficiency, pricing and innovation. But a top-down strategy, with national goals and international negotiations, is also essential

to orient these efforts, address common problems and provide the international assistance required for global progress.

The Kyoto Protocol's grand plan is dead — so too is its antithesis. Carbon pricing is proliferating. Last year's United Nations conference in Durban, South Africa, launched negotiations for a global deal to be reached in 2015; this could reinforce, and help to link and orient, these emerging efforts.

NEXT STEPS

Three things need to happen. First, the United States must rejoin the global effort. Since Hurricane Sandy, New York City mayor Michael Bloomberg and New Jersey governor Chris Christie have opened the political window for renewed climate-change debate. The Obama administration needs to reinforce the message that the confluence of climate science and market economics demands a carbon price, whether by tax or trade.

Second, the EU needs a coherent suite of policies for efficiency, pricing and innovation. The ETS is a means to pricing and a route to financing efficiency and innovation, but it is not the whole game. The most urgent problem is to shift investment from new coal plants to low-carbon sources. There are grounds for removing the accumulated surplus of ETS emissions allowances; placing a minimum price on future auctions of allowances could deter coal plants and make the system more robust against future shocks⁶.

Third, many developing countries in the United Nations take a negative negotiating position that is out of touch with their domestic progress and strategic interests. This is not a zero-sum game, and haggling over 'sharing the burden' is no solution. The emerging economies need to drop the blame game and use international negotiations to support their domestic efforts, so that clean, secure and sustainable energy overtakes carbon-intensive development worldwide as soon as possible. With these steps and initiatives elsewhere, a powerful coalition for effective emissions reductions could yet emerge and cement its progress in the global deal targeted for 2015. ■

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