

Cap and trade and more

Pressure is building for a federal cap-and-trade scheme in the US to tackle greenhouse gas emissions. However, such a scheme is a necessary, but not sufficient, condition for addressing the climate challenge, say **Michael Northrop** and **David Sassoon**

'Cap and trade' is thought to be one of the most effective potential mechanisms for reducing greenhouse gas emissions currently known to policy-makers. There are other ways to reduce emissions using building codes, energy efficiency standards and funding mechanisms, for example. But the prevailing wisdom is that there is no other single, politically practical, policy that promises to deliver as steep a cut in emissions, for as big a part of the total emissions inventory, as cap and trade.

Cap-and-trade schemes have the advantage of passing the burden of controlling the emissions of big polluters to the invisible hand of the market. They trigger a large, global economic transition with one meaningful step – imposing a cap on emissions sets a price for carbon in a world that has been accustomed to using the atmosphere as a free dumping ground. Require polluters to secure the ever-scarcer allowances or carbon credits which permit companies to emit, let the law of supply and demand set their price via trading, and watch the profit motive force new patterns of behaviour.

This is why Congressional law-makers have introduced no fewer than six competing large emitter cap-and-trade proposals of varying levels of ambition and effectiveness, ushering in a new season of urgency and political jockeying. This sudden progress has been breathtaking, even though many believe that it will be difficult to pass strong and effective legislation until the next administration takes office.

One pair of companion bills (sponsored by Senators Barbara Boxer and Bernie Sanders and Representative Henry Waxman) could provide a solution on the scale of what scientists are indicating will be needed (see Figure 1). These joint bills would deliver reductions of sufficient depth to stabilise emissions at 450 parts per million of carbon dioxide in the atmosphere. It would seem from the graph that the political challenge is relatively straightforward –

pass legislation with the steepest trajectory through Congress and get it signed by the next president. (Most believe the current president would veto it if it reached his desk.)

But things are not so simple. Historically, it has taken an average of 10–12 years for the federal government to implement a rule of such scope and magnitude. Even if the strongest cap-and-trade measure becomes law in 2009–10, unless its implementation is pursued with unusual urgency, we could be looking at 2020 before deep reductions are fully implemented. The longer we delay embarking upon the downward trajectory of emissions, the harder and more flawlessly a cap-and-trade scheme will have to work later on.

While the timing presents a challenge, it remains unequivocally necessary for the US to enact the toughest cap-and-trade measure

It could take a decade or more for cap and trade to start having a profound impact on emissions

possible, as soon as possible. Yet because it could take a decade or more for cap and trade to start having a profound impact on emissions, it would also be wise simultaneously to adopt a portfolio of policies that will have more immediate impact. The Boxer–Sanders–Waxman bills recognise this, and starts to include other measures that work in tandem with the cap-and-trade mechanism at its core.

A cap-and-trade programme will be most effective against emissions from large sources such as power generators and heavy industry – in the best case, including about 40–50% of the total emissions that need controlling. For the mechanism to be negotiated and created – and then for it to transform market forces that will

reshape our global energy economy – will likely take a longer time than scientists believe we have available.

The fourth assessment report from the Intergovernmental Panel on Climate Change, which evaluates scientific findings only through 2005, does not give us the luxury of that kind of time. Scientists armed with more recent findings sound an even more strident alarm, warning that we are perilously close to a point of no return. Jim Hansen, head of the NASA Goddard Institute for Space Studies, now speaks of the proximity of “tipping points,” a phrase studiously avoided by climate scientists in peer-reviewed literature, until now.

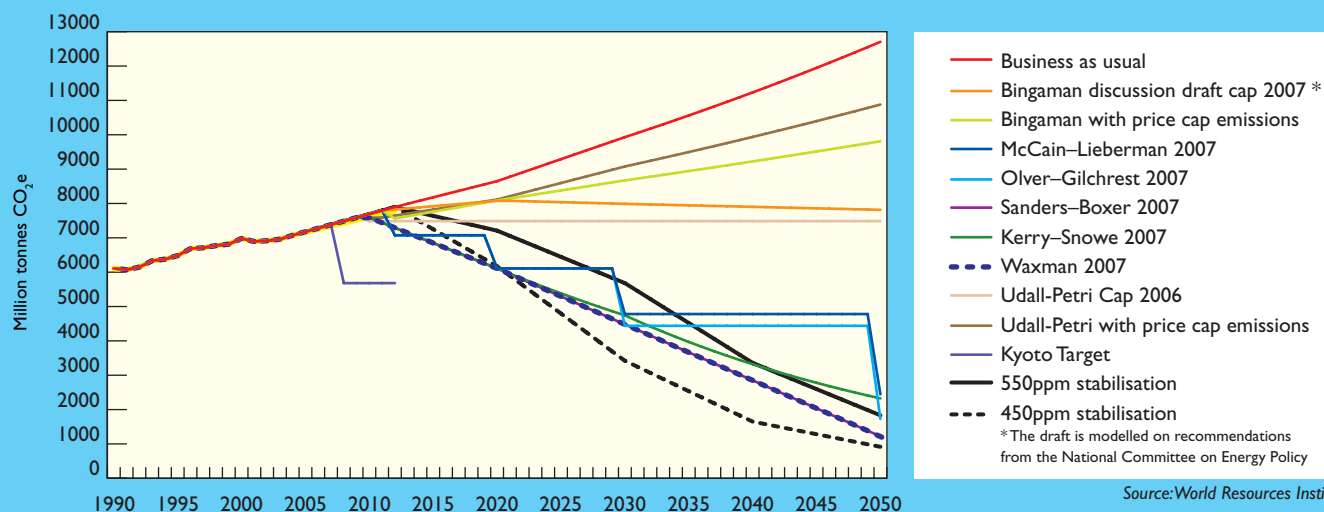
In this circumstance, a fully functional cap-and-trade system in the US is likely to offer its most potent cure if supported by companion measures that work more quickly or more broadly on the 50% of emissions that cap-and-trade will not reach.

Fortunately, the experience of quite a number of US states demonstrates the opportunities available for pushing down emissions through companion measures. By adopting a portfolio of policy measures that touch every economic sector, these states have succeeded in aggregating many small gains into an effective statewide approach that significantly reduces total emissions and generates billions of dollars in energy savings.

Policy-makers have the chance to pull us back from the tipping point of imminent catastrophe by locking in a broad and deep set of solutions from the start. They will best succeed if they carefully balance the difficult politics, timing and cost of cap and trade with the upside of improvements to both climate and economy that can come with a portfolio of incremental solutions.

Getting the details of cap and trade right is everything, and US policy-makers have the

I. Climate bills in the 110th Congress. Economy-wide emission caps (and projections) by bill 1990–2050



advantage of applying the lessons from the 2005–07 Phase I of the EU's Emission Trading Scheme (ETS). As the EU corrects course for Phase II, US policy-makers are extracting two lessons. Auction the credits for public benefit instead of giving them away to polluters, and make sure the credit allocations are scarce enough to create a meaningful and steadily decreasing cap.

So far, at least six of the US states in the northeast Regional Greenhouse Gas Initiative (RGGI) have decided to auction carbon credits. It is an important step forward that ought to be emulated by western states – also considering a regional plan – and the federal government. Even the bipartisan National Commission on Energy Policy (NCEP), whose proposals for climate action, despite recent strengthening, have been industry-friendly and noticeably weak, has now come out in favour of auctions for at least 50% of the allowances.

Auctions, costly for the worst polluters, have a broadly beneficial upside. They generate funds that can be deployed to support further reduction measures.

"The auctions of carbon credits will generate billions of dollars that can be used for a variety of purposes," says Sonia Hamel, a climate consultant who for three years was state lead for Massachusetts on RGGI. "The funds can promote energy efficiency, kick-start jobs training and underwrite financing for innovative new technologies."

Although setting a price for carbon is important, a carbon credit auction will not, by itself, assure that cap and trade will succeed in its mission. Negotiating the terms of the cap itself is of equal importance, and any system design must rise to meet a number of challenges.

First, complete baseline data is needed as soon as possible. The Western Regional Air Partnership (WRAP), a collaboration of 13 states, tribal government representatives and federal agencies, recently completed an inventory and forecast of emissions, leaving Hawaii as the only western state without one.

Northeastern states, through RGGI, have already made these measurements, as have other individual states. It would be neither difficult, nor expensive, for the federal government to order and complete a much-needed national assessment of emissions. This can be accomplished through a combination of mandatory emissions reporting by stationary sources, and the rigorous accounting of non-stationary emissions. The resulting data will be enormously useful in clarifying where a cap can most effectively be applied and speeding its adoption.

Second, the right deal must be cut despite pressure from special interests. Lobbyists, speculators and opportunists are going to be awfully busy securing for themselves and their clients the best passage possible for this forced migration to a new world where there's a price on carbon. Negotiations will be bruising, but the public interest must prevail. The reduction trajectory must be based on the cuts that scientists say are necessary.

Third, we must accept that cap and trade alone can take us only part way. "It would be awfully hard to make a cap apply to everything. For example, it would be a nightmare trying to impose a cap on an individual motorist," says Ken Colburn, former executive director of Nescaum, the association of Northeastern air quality agencies, and now a climate policy consultant. "We do, however, have really good, comparable data on the enormous emissions of power generators and heavy industries. That is the logical, though not fully comprehensive, place to start."

The western states in the US say they want to design a system that will control emissions of other large sectors of the economy, but this is uncharted territory. Even the EU, which has been working hard on this, has only just started to scratch the surface of capping emissions more broadly. This further supports the notion that we will need companion legislation and regulation that works on transport, buildings, appliance efficiency and smart growth.

We've written in these pages before about

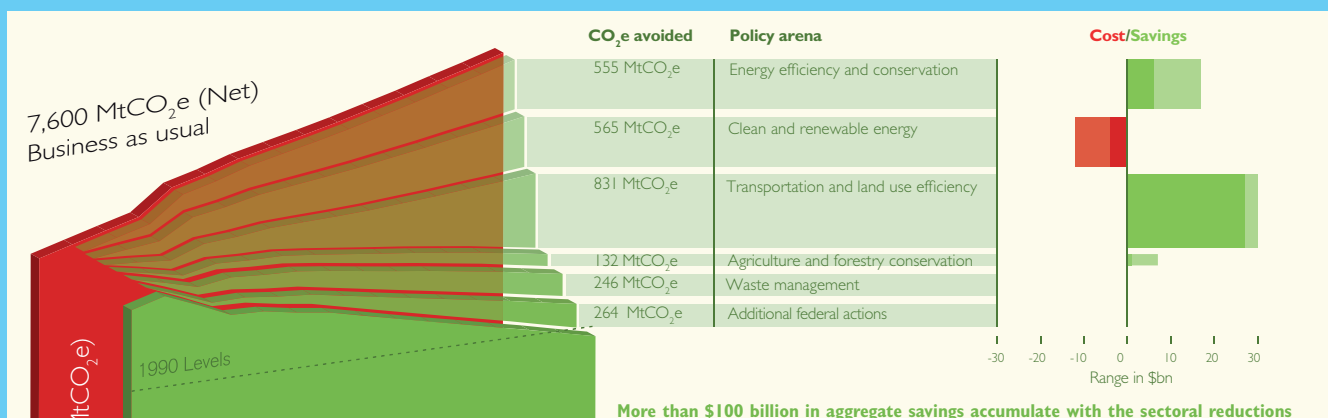
the pioneering climate action that a significant and growing number of US states are taking (see *Environmental Finance*, November 2006, pages S35–36). Their climate plans and legislative efforts are resulting in cost savings, job creation and economic development, critical components of politically palatable climate action. States have a lot to teach Congress about this win-win portfolio of solutions that can be deployed to broaden reductions and fill some of the unavoidable time delay between capping and trading.

"Because it is not practical to deploy cap and trade at the scale of an individual state, states have had to consider other reduction opportunities – sector by sector, policy by policy," says Colburn. "They have demonstrated what happens when you get a 1% or 2% reduction from each of 40 or 50 measures across the entire economy. You end up with a powerful plan. That's the 'silver buckshot' you hear people talking about, and it's also applicable on a national scale."

Thanks to this framework, California and New Mexico are aiming to bring emissions reductions to 1990 levels by 2020. Even Arizona – the highest growth state in the nation – is projecting reducing emissions to below 2000 levels by 2020. Projections to 2040 in these leadership states envision cutting emissions in half. Most of the almost 20 state plans either complete or in development are carefully negotiated through a process that brings all stakeholders to the table, including key industries. The plans achieve close to unanimous bipartisan consensus and so are not politically difficult to implement.

Historically, state action like this has provided the model upon which federal legislation, especially in the environmental arena, is eventually built. And governors and state legislators have already provided testimony before Congressional committees on how federal and state governments must work together to

2. Reaching 1990 GHG emissions levels in the US by 2020 (cap and trade not included)



Source: Center for Climate Strategies/EESI, 2007



Barbara Boxer: solution matches the climate science

secure the 80% reduction in emissions that is needed and the wisdom of a portfolio approach.

In a forthcoming paper¹, Robert McKinstry, a professor at Penn State University, and Tom Peterson, head of the Center for Climate Strategies, took the states' portfolio framework and scaled it up to a national level. Their rough first analysis showed that the framework would have huge benefits that would dovetail nicely with cap and trade.

The paper also estimates emission reduction potential and associated costs or savings in each of six sectors (see Figure 2). The aggregated estimates point to the possibility of reducing US greenhouse gas emissions to 1990 levels by 2020 – essentially laying the foundation of the needed reduction trajectory.

The cost? The portfolio of measures will actually generate annual net economic savings, largely through energy efficiency, of between \$30 billion and \$42 billion by 2020. Further, the analysis indicates that the cumulative economic benefit between now and 2020 will surpass \$100 billion. The logic suggests we can do even better by also deploying cap and trade.

"I think we're seeing a window finally opening up for us to harmonise national climate and energy policy by integrating local, state and federal programmes, paired with a focus on major

economic sectors," Peterson says. "We don't have all the answers yet, but we certainly have the frameworks and the tools and a growing cadre of experienced experts that can help law-makers weave these strands together."

This complementary convergence of effort between the states and Congress has also received strong support from the federal judiciary. The Supreme Court handed down a landmark decision in April, ruling that CO₂ is a pollutant that falls under the regulatory purview

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of the Clean Air Act. This offers another important opportunity for merging federal and state climate action.

One implication of this is that a right-minded chief executive of the country, through the Environmental Protection Agency, can exercise authority to regulate emissions without legislation, adding another much-needed avenue for problem-solving. After the 2009 presidential inauguration, if all three branches of the federal government are rowing in unison on climate, this will be an important option for progress.

This coming alignment will be strength-

ened by the growing support of many new important constituencies with powerful electoral clout. Business leaders and leading investors, a growing number of evangelicals, renewable energy entrepreneurs, builders and architects, farmers, and hunters and anglers are all now voicing their support for action on climate and energy. National security hawks, too, are starting to make the link between energy security and climate change. These hawks remind us that it has cost the US \$50 billion–60 billion a year to keep oil flowing through strategic choke points on the globe, not counting the quarter trillion dollars spent on the war in Iraq.

"Dependence on foreign oil leaves the US more vulnerable to hostile regimes and terrorists, while clean domestic energy alternatives help us confront the serious challenge of global climate change. The issues are linked, solutions to one affect the other," says General Chuck Wald, a member of the SAFE Energy Security Leadership Council.

This too is a remarkable convergence of common interest, holding out the hope that we can usher in a new era in which climate change, energy security and the war on terror can be addressed with a price on carbon and a portfolio of companion measures.

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¹ 'Developing a System for Climate Change Policy in the US: Building Bridges between Governments and Economic Sectors,' by Tom D Peterson, Robert B McKinstry Jr and John C Dernbach. Forthcoming 2007.