The Carbon Conundrum

By David Hemous, Assistant Professor of Economics and Political Science with Chris Howells, Deputy Editor

To reduce emissions in a meaningful way, governments need to accept higher investment into new green technologies as well as some protectionism to complement carbon taxes and "cap-and-trade" systems.

U.S. President Barack Obama wants the U.S. Congress to revive a failed "cap-and-trade" bill that would put the U.S. on the road to an environmental policy – a policy departure for the country that stands out as the leading industrial power without one. Obama wants it so much he warned Congress in his recent State of the Union speech that if they failed to form a market-based solution to climate change, he would go it alone.

Actually, Obama is not "alone" among leaders in this regard: with no global agreement in sight, countries too, are already acting unilaterally to reduce carbon emissions. Carbon markets have been established in Europe, Australia, California, China and South Korea. But carbon taxes or "cap-and-trade" systems are only half of the battle, according to INSEAD Assistant Professor of Economics and Political Science, **David Hemous**.

In an interview with INSEAD Knowledge on his recent paper, Environmental Policy and Directed Technical Change in a Global Economy: The Dynamic Impact of Unilateral Environmental Policies, Hemous points out in a two-country, two-sector model, that the implementation of carbon taxes alone, whether done unilaterally or multilaterally, only causes more challenges.

“What happens when a country implements a carbon tax or a group of countries implements a carbon tax is that some of the polluting industries are going to move from the regulated group of countries to the unregulated group of countries. And that’s what’s classically called the ‘pollution haven effect’,” he said.

Hemous also illustrates that carbon taxes are inadequate in driving clean innovation unless they are big enough to make the current methods of production more difficult.

Reallocation of trade

Countries taking steps to curb emissions by taxing carbon on goods produced could also find themselves reallocating their own trade flows. Hemous points to research which examines the impact of countries signing the Kyoto Protocol: “The researcher found that countries reduce their emissions by around seven percent. But the total amount of emissions embodied in their consumption – not only what is produced, but what is imported – does not change.” This is caused by countries switching to importing high energy intensive manufactured products from unregulated countries rather than manufacturing them.

This was echoed in a recent study by the World Bank and the Centre for Global Development. The study found that if rich countries imposed unilateral carbon emissions cuts in 2020 to 17 percent below what they were in 2005, the impact would be a 12 percent cut in exports of energy intensive manufactured products from the U.S. and boost the imports of such goods for America by 4 percent.

“There could be a big leak effect. We’ve seen Southern countries building up a comparative advantage over time in energy intensive sectors,” said Hemous. Carbon leakage occurs when there is an increase in carbon emissions in one country as a result of a reduction in another.

The problem of pricing carbon

Meanwhile, carbon trading markets are in desperate need of policy intervention. The European Union is grappling with a glut in emissions permits that is undermining the effect of carbon allowances on emissions. The price of EU carbon allowances have suffered their biggest quarterly slide since 2011 in the first quarter of this year.

Europe's parliament is set to vote on April 16th on withholding some allowances over the next three years to boost prices and reassert carbon trading as an effective tool to reduce emissions.

"The way to go [in Europe] will actually be to lower the cap and then the price of carbon will increase. A lot of free allowances were given at the beginning. I think this type of policy is going to be useful, but you cannot do everything through it," said Hemous.

The right mix

So what is the best policy mix to effectively take on climate change? Hemous says countries should be investing in green technologies and innovation, but concedes that it is a long-term objective. "The problem is, we don't know when a global agreement is going to come, so if it's very far off in the future, then it's a lot of investment now for returns in maybe 30-40 years. You may be copied and lose the advantage," he said.

Hemous says if countries are moving unilaterally to reduce carbon emissions, they should do so with a mixture of clean investment and carbon taxes. He points to China as a good example, having just announced steps to implement a carbon tax, while at the same time, investing in clean technology and innovation. Last year, the government invested US$65 billion in clean tech industries, US$20 billion more than the United States. However, he points out that China's current environmental predicament means it needs to make much deeper cuts to its emissions than these moves imply and that it should be contributing more positively in global negotiations.

"Carbon taxes are not going to be able to change world emissions much because even if you cut your emissions completely, you're not going to change much what happens in the world. If you become a leader in clean technologies, when the world finally comes up to the table for some form of

a general agreement, then you can be a leader in a useful technology and diffuse it to the rest of the world," he said.

In the absence of U.S. leadership and a concerted policy effort, China is starting to take the lead in wind and solar energy to meet its goal of 20 percent of total energy demand sourced from renewable energy by 2020. This is part of its 12th five-year plan on environmental protection.

Is some protectionism necessary?

"But of course if you cannot come up with this form of general agreement then the optimal mix would be something like a carbon tax and clean energy subsidies, but on top of this, you want to have some barriers to trade in order to slow down the movement of polluting industries to non-regulated countries," said Hemous.

This would mean a carrot and stick approach for polluting industries, Hemous concludes. "You want to force your polluting sector to become cleaner over time but you also want to reduce your emissions. But the problem in some senses is that it's going to take some time for research to pay off so it's going to take time for clean technology to actually become very competitive."

David Hemous is Assistant Professor of Economics and Political Science at INSEAD.

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