

# Carbon pricing—a no-brainer for climate change?

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Credit: Takver

As the Democratic Party prepares for its upcoming convention, the platform committee is reportedly considering the implementation of a carbon tax to deal with climate change.

Most economists and policy experts agree that the most effective and cheapest way to curb the carbon dioxide emissions that are warming the planet is to "put a price on carbon." In much of the world today, the cost of the impacts of carbon dioxide emissions—extreme heat, drought, floods and health effects—are paid for by taxpayers, not by the industries that generate the emissions or those who consume carbon-intensive products.

A recent report from the University of Cambridge Judge Business School found that the cost of fossil fuel companies' emissions for society was greater than their after-tax profits. In other words, if these companies were fully accountable for the impacts of their carbon emissions, they would not be profitable at all. Putting a price on carbon would make burning fossil fuels more expensive and drive producers and consumers to find ways to shift to clean energy. It would enable the economy to reflect the true cost of doing business.

At a conference last fall, Michael Gerrard, the Andrew Sabin Professor of Professional Practice at Columbia Law School and director of the Sabin Center for Climate Change Law, said, "A price on carbon would reverberate through every part of the economy and fundamentally alter patterns of both production and consumption...we would see a massive shift in our patterns of energy use. We would also see a rush of technological innovation."

Currently, almost 40 countries and over 26 jurisdictions have some form of [carbon pricing](#), covering 12 percent of global greenhouse gas emissions. At the Paris climate summit in December, more than 90 countries proposed carbon pricing as part of their national plans to meet

the goals of the agreement reached there. In the United States, carbon pricing is done in the Northeast and mid-Atlantic states and in California, but a national cap and trade carbon pricing bill introduced in 2009 was stymied in Congress.

There are two main types of carbon pricing: a carbon tax and cap and trade. Some hybrid approaches combine aspects of each.

A carbon tax sets a price that must be paid per ton of carbon dioxide generated by every emitter or those from certain sectors. They are required to pay a tax based on the per-ton fee multiplied by their total emissions; if they cut their emissions, they lower their tax. Over time, the carbon tax can be raised to encourage a continued decline in emissions.

The tax is usually imposed at the point where the fossil fuel is extracted from the earth and enters the market or is imported into the country, with the cost passed along down the line eventually to the consumer. A carbon tax can be applied locally, nationally or by the European Union, but not globally since there is no global governing body to enforce it.

Fifteen countries or jurisdictions currently implement a carbon tax, including British Columbia, Chile, Costa Rica, Iceland, Japan and Mexico. Several EU countries also tax carbon for emissions not covered by the European Union Emissions Trading System (EU ETS).

In cap and trade, a market-based scheme, the government sets a cap (a limit) on emissions, and then issues enough permits or allowances to match the cap, each for the right to emit one ton of CO<sub>2</sub>. The cap can cover all sources of emissions or can be limited to, say, electric power generation. The permits are either given out initially for free to emitters or sold to them at auction. Permits can then be traded so that a company that quickly lowers its emissions has an excess of permits that it can sell

for profit, and a company that cannot lower its emissions sufficiently can buy permits from others. If emitters do not have enough permits to cover their emissions, they are penalized. Because of supply and demand, the market automatically adjusts the price of the permits, but the available number of permits remains the same regardless of trading so that the cap is met.

The cap can be ratcheted down each year to ensure that emissions continue to decline. Countries can also link their markets and accept permits from one another. Around the world, there are 17 cap and trade programs.

Hybrid systems might set limits on the prices for cap and trade to keep them from going too high or low; adjust a carbon tax to make sure that specific emission cuts are met; or employ cap and trade for some sectors and a carbon tax for others.



Drought in California. Credit: Columbia University

Eron Bloomgarden, an expert in environmental finance, is a partner with

Encourage Capital, and teaches a course on global environmental markets in the Earth Institute's Master of Science in Sustainability Management program. He gave several reasons why he prefers cap and trade to a carbon tax.

"From an environmental perspective, you have control of the absolute level of emissions through a cap and you don't have that with a carbon tax," Bloomgarden said. "Cap and trade allows you to harness markets for what they're good at—finding efficiencies and the least cost mitigation. It also provides incentives for companies that must comply to go beyond what they would have done otherwise, to lower their emissions further, and sell the allowances. ... While a tax seems potentially a lot simpler, the worry is that it needs to be renewed every so often, so you need to maintain the political will to keep it going."

Bloomgarden explained that the most important thing is setting the price on carbon correctly; \$10 a ton is the key threshold. "But if the political will is there, a high carbon tax is better than a weak cap and trade program," he said. "Or I'd rather have a deep and robust cap and trade program with meaningful reductions than a tax that's too low."

In fact, both cap and trade and carbon taxes systems have successfully cut emissions.

Both systems also generate ample revenues. A Brookings Institute policy paper posited that a carbon tax of \$16 per ton of carbon that rose 4 percent a year over inflation could raise \$1.1 trillion in its first 10 years and \$2.7 trillion over 20 years.

[The Partnership for Responsible Growth](#), a bipartisan group of business and political leaders that supports using market forces to combat climate change, estimated that at \$30 a ton, rising yearly, a carbon tax could generate \$1.5 to \$2 trillion over 10 years. To gain the support of those

resistant to carbon pricing, it proposes that half the revenue be used to cut the corporate tax rate from 35 percent (the highest in developed countries) to 25 percent, which could reform the tax code, help keep corporations in the U.S., and enable the U.S. to meet its commitment to the Paris accord. The rest could go to low- and middle-income households through tax credits or rebates.

Revenues can be used in any number of other ways as well. A revenue-neutral system returns all the money to taxpayers through tax cuts or dividends, or by offsetting the carbon tax through reducing sales or other taxes.

Revenues can be used to help train fossil fuel workers who need to transition to new jobs or support communities that face environmental justice issues. They can be invested in renewable energy, greener transportation, energy efficiency, clean energy research and development or infrastructure. They can also be used to help reduce the deficit, or to help developing countries build resilience to climate change.

Opponents of carbon pricing say that it would increase the costs of goods and services and hurt low-income communities and seniors. It would make America less competitive, and do little to curb climate change. A domestic cap and trade program, they contend, would drive companies to leave the U.S. in search of cheaper fuel prices, taking jobs with them.

But let's look at some examples of carbon pricing in action.

[British Columbia's carbon tax](#), established in 2008, levies a tax of \$21 a ton (30 Canadian dollars, the highest price on carbon in North America) on gasoline, natural gas and heating oil. Since 2008, it has cut fossil fuel consumption by 16 percent, while consumption rose 3 percent in the rest of Canada. The tax has brought in \$4.3 billion; and although people pay more for fuel, they pay less in personal income tax and corporate taxes,

making the system essentially revenue-neutral. While British Columbia reduced its emissions seven times faster than was expected, the province's rate of growth equaled or exceeded the rest of Canada's.

[The Regional Greenhouse Gas Initiative \(RGGI\)](#), the first mandatory cap and trade program to reduce greenhouse gas emissions from the power sector in the U.S., was formed in 2003 with 10 Northeast and mid-Atlantic states: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, Vermont and New Jersey (New Jersey withdrew as of 2012). Since 2005, the participating states have cut CO<sub>2</sub> emissions from the power sector 40 percent, while the region's economy grew 8 percent.



Credit: Columbia University

The 2014 cap of 91 million tons will decline 2.5 percent every year until 2020. Through 2013, the program saved \$395 million in energy bills, 1.8 million megawatt hours and avoided 1.3 million tons of CO<sub>2</sub>, the equivalent of taking 245,000 cars off the road.

The proceeds from auctioning off permits garnered over \$1 billion,

which was invested in energy efficiency, renewable energy, and energy bill assistance for taxpayers.

A Duke University study of RGGI found that it was responsible for half the region's cut in emissions, while the other half of reductions were due to the recession and low natural gas prices. Without RGGI, the region's emissions would have been 24 percent higher.

[California's cap and trade program](#), which came into effect in 2013, covers electric power and large industrial plants, and fuel distributors. It aims to reduce emissions more than 16 percent by 2020. In the first two years, emissions dropped over 3 percent, surpassing the targets. The program's \$912 million in revenue was reinvested, 51 percent of which went into projects for disadvantaged communities.

However, California's cap and trade program, which is linked to that of Quebec's, currently faces legal and financial challenges. In May, only 11 percent of the available permits were purchased. One reason for this may be due to uncertainty facing the system. The California Chamber of Commerce has filed suit because it contends the cap and trade program functions like a tax, but wasn't voted in by the majority needed to pass a tax. The legal challenge threatens the planned \$64 billion high-speed rail project linking San Francisco and Los Angeles, which is dependent on revenue generated by the cap and trade program.

[The European Union Emission Trading Scheme \(EU ETS\)](#), established in 2005, was the world's first large cap and trade system and is still its biggest. It auctions permits in the 28 EU countries as well as in Iceland, Liechtenstein and Norway, limiting the emissions of power stations, industrial plants and airlines operating between the countries. The program covers approximately 45 percent of the EU's emissions. Companies can also buy carbon credits for clean tech projects in developing countries around the world to cover some of their emissions.



In Phase 1 and 2, allowances were mainly given away for free, but in Phase 3, from 2013 to 2020, up to half of allowances will be auctioned. Fifty percent of revenues are to be used to reduce greenhouse gas emissions in EU countries, with a portion of the rest going toward demonstration carbon capture and storage and innovative renewable energy projects.

Since the beginning of Phase 3 in January 2013, the cap has been reduced 1.7 percent each year and emissions have declined 5 percent. In 2020, emissions are projected to be 21 percent lower than they were in 2005; in 2030, they will be 43 percent lower.

Whether or not the U.S. can muster the political will to pass a bill on pricing carbon, the concept is gaining momentum in companies, states and nations around the world. More and more American and Canadian companies (97 in 2015) are putting an internal price on carbon to reduce their emissions, including Colgate-Palmolive, Campbell's Soup and General Motors. In June of 2015, the chief executive officers of Europe's six largest oil companies approached the United Nations about establishing a European or global price on carbon. Over 1,000 companies say they have implemented or plan on implementing carbon pricing before 2017, with many in Africa and Asia.

The U.S. EPA's Clean Power Plan gives each state the flexibility to decide how it will reduce its emissions from power plants. Carbon pricing could be used as a strategy. Carbon tax advocates in Washington and Oregon are working on proposals, and New York, Massachusetts, Rhode Island and Vermont are considering carbon tax programs as well. Ontario and Manitoba have expressed interest in joining the California-Quebec cap and trade program, and New York Gov. Andrew Cuomo would like to link it to RGGI.

On Jan. 1, 2015, Korea implemented a cap and trade program and

Portugal levied its [carbon tax](#). After running seven regional pilot cap and trade programs, China announced that its national cap and trade program will begin in 2017. Once it does, it's estimated that half of the world's greenhouse gas emissions will be covered by countries or jurisdictions that are pricing carbon. If the U.S. put a price on carbon, an additional 16 percent of global greenhouse gas [emissions](#) would be covered.

The more states and regions and countries that participate in pricing carbon, the more effective the systems will be, because it becomes more difficult for companies to move their operations to places that don't have carbon pricing.

Bloomgarden is hopeful that the U.S. soon might put a price on carbon "if we get another Democratic administration and a receptive Supreme Court. Because everything would get challenged legally, we need the alignment of the administration, the courts and Congress."

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