
Putting a Price on Carbon: An Emissions Cap or a Tax? by : Yale Environment 360

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The days of freely dumping greenhouse gases into the atmosphere are coming to an end, but how best to price carbon emissions remains in dispute. As the U.S. Congress debates the issue, Yale Environment 360 asked eight experts to discuss the merits of a cap-and-trade system versus a carbon tax.

A broad spectrum of people concerned about global warming and U.S. energy independence agree on one basic truth: Sooner or later, emitting planet-warming greenhouse gases is no longer going to be free. Whether it comes this year, or next, or in five years' time, legislation imposing a price on burning fossil fuels seems all but inevitable.

Any law that places a price on carbon must achieve two basic and interrelated goals: discouraging — with increasingly painful economic consequences — the use of oil, coal, and natural gas, and encouraging the development of renewable sources of energy. Two paths to this end have been proposed. The first is a cap-and-trade system, which would place progressively stricter limits on fossil fuel use; require power plants, industries, and other major sources of greenhouse gases, to purchase permits to discharge carbon dioxide; and establish a market in those permits. The second is an outright tax on fossil fuels. Proponents of both methods say the economic hardship created by higher energy prices

could be offset by rebates to taxpayers.

The cap-and-trade option has attracted far more attention and has many more supporters, including President Obama, key Congressional leaders, and an influential coalition of environmental groups and big businesses, including General Electric, Dow Chemical, Shell Oil, and Duke Energy. Congressional leaders say they hope to pass a cap-and-trade bill by year's end, but whether they can achieve that goal remains a major question.

Supporters of cap-and-trade argue that it has two main strengths. It sets a steadily declining ceiling on carbon emissions, and, by creating a market that rewards companies for slashing CO₂ (corporations that reduce emissions below their allotment can sell them on the open market), it uses the free enterprise system to wean the country off fossil fuels and onto renewable energy. Proponents of a carbon tax say their plan has one overriding benefit: Its simplicity. They contend that by imposing a predictable and steadily increasing levy on fossil fuels, the carbon tax will also drive development of alternative sources of energy.

Yale Environment 360 asked a number of environmentalists, economists, and academics to explain which approach — cap-and-trade or a carbon tax — they preferred. There was disagreement on many points, but on one issue most concurred. As Jeffrey D. Sachs, director of the Earth Institute at Columbia University, said, imposing some sort of price on fossil fuels “is a big improvement over the do-nothing *status quo*.”

Here are their responses:

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[Frances Beinecke](#) | [Jeffrey D. Sachs](#) | [Fred Krupp](#)
[Roger A. Pielke Jr.](#) | [Robert N. Stavins](#) | [Charles Ko-](#)
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[Eileen Claussen](#) | [Baruch Fischhoff](#)



Frances Beinecke, president of the Natural Resource Defense Council.

A carbon cap is a more effective approach to solving global warming than a tax. First and most importantly, it sets a clear goal for emissions reductions. With a tax, we are guessing about how much it will reduce carbon emissions, and it may not be sufficient to change the course of global warming. A declining cap gives you firm reduction targets and a system for measuring when you hit them.

Second, we have on-the-ground experience in curbing global warming pollution from cap programs, while the tax model remains entirely untested. Caps are already being used in the European Union and in 10 Northeastern states. They are underway in California. Both the President and Congressional leaders are focused on cap-and-trade. Despite the bubble of pundit interest, there is very little support for a carbon tax among our nation's legislators.

Some advocates claim that a tax would be simpler than a cap. But Congress does not write simple tax bills. When it gets converted into reality, any tax legislation will be complex and vulnerable to loopholes. In 1993, the BTU tax was killed after industry lobbied successfully for a bunch of exemptions, and then cynically lobbied to end the whole thing because it was full of loopholes. One clever lobbying firm went as far as sending blocks of Swiss cheese to members of Congress.

In the end, the discussion about a carbon tax is a distraction, because it frames the debate in fiscal policy terms — How high should the tax be? What

should be done with the revenue? — instead of focusing on how quickly we need to reduce global warming pollution.

The crisis of global warming is so urgent that we can't wait for lawmakers, industry, and the American people to spend years hashing out the details of an entirely new system. We have to act now to reduce emissions, and a declining cap is the way to do it.



Jeffrey D. Sachs, director of the Earth Institute at Columbia University.

Cap-and-trade emissions trading seems to politicians to be the ideal solution. It is "market-based," does not require the T-word (taxes), and can be worked out with special-interest groups in back-room negotiations. For the rest of us, however, cap-and-trade seems a funny way to do business.

A straightforward carbon tax has vast advantages. It can be levied upstream at a few dozen places — at the wellhead, the mine face, and the liquid natural gas depot — rather than at thousands or tens of thousands of businesses. A carbon tax covers the entire economy, including automobiles, household use, and other units impossible to reach in cap-and-trade. A carbon tax puts a clear price on carbon emissions for many years ahead, while a cap-and-trade system gives a highly fluctuating spot price. A carbon tax raises a clear amount of revenue, which can be used for targeted purposes (R&D for sustainable energy) or rebated to the public in one way or another, while the revenues from a cap-and-trade system are likely to be bargained away well before the first trade ever takes place.

It's sometimes claimed that cap-and-trade will lead to more certain emissions reductions than a tax. In

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theory this could be true, but in practice it's likely to be false. In fact, a cap-and-trade system can be more easily manipulated to allow additional emissions; if the permits become too pricey, regulators would likely sell or distribute more permits to keep the price "reasonable." Since the long-term signals from cap-and-trade are less powerful than a multi-year carbon tax, the behavioral changes (e.g. choice of the type of power plant) brought about by cap-and-trade could well turn out to be far fewer, as well.

Let me be clear, though. Cap-and-trade is a big improvement over the do-nothing *status quo*, even if it's less desirable than a carbon tax. If politicians insist on cap-and-trade, we shouldn't let the best be the enemy of the good.



Fred Krupp, president of the Environmental Defense Fund.

President Obama got it exactly right when he called on Congress for a market-based cap on greenhouse gas emissions "to truly transform our economy, to protect our security and save our planet from the ravages of climate change."

From an environmental point of view, the advantage of an emissions cap over a carbon tax is clear: A cap puts a legal limit on pollution. A tax does not. Guessing what level of tax might drive the pollution cuts we need to avert runaway climate change is a risk we simply can't afford to take. Only a cap with strong emissions reduction targets — and clear rules for meeting them — can guarantee that we achieve the environmental goal.

Cap-and-trade also has the upper hand on the economics. When we create a market that rewards emissions reductions, we put the vast know-how, manufacturing base, and investment capital of the

private sector to work. Nothing can match the immense resources that the private sector can bring to bear — and nothing beats a cap when it comes to driving sustained investment in the jobs and technologies that will solve the problem.

We know from the EPA that cap-and-trade will mean as little as \$98 a year — about a dime a day — for American households. Those costs are small, but they are real. Fortunately, Congress has options for ensuring that the cap is equitable and that consumers are treated fairly as the country makes the long-term transition to a low-carbon economy. President Obama has proposed putting revenue generated by the auction of emissions allowances back into Americans' wallets. The U.S. Climate Action Partnership, of which the Environmental Defense Fund is a member, has a blueprint for legislation that would enable regulated energy suppliers to offset costs for consumers.

The bottom line is that cap-and-trade gives us an affordable environmental guarantee that you can't get with a tax. The dime a day we'll spend is the hardest working dime in America: It cleans the air, reduces our oil dependence, creates jobs, and averts a looming environmental crisis.



Roger A. Pielke Jr., professor of environmental studies at the University of Colorado.

Cap-and-trade is doomed to failure. It might lead to some new and substantial revenues for the government, but it can never succeed at limiting carbon dioxide emissions. The reason is very simple: A hard cap on emissions would inevitably lead to increases in the costs of energy, which will lead to increasing costs throughout the economy. If these costs are felt by consumers (which is of course what such a policy is designed to do) then they will complain. No

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elected official will want unhappy constituents, so they will work hard to help people avoid the increasing costs. This fundamental political reality will consequently turn the theory of a hard cap into the practice of a very soft cap that has backdoors and safety valves that allow the cap to be evaded in order to reduce the effect on costs, ultimately defeating the purpose of the policy.

Putting a price on carbon, however, makes good sense. A straight carbon tax — at whatever level would be politically acceptable — is a far better place to start than with a fully gamed cap-and-trade system. The point of such a tax would not be to change behavior, but to start the process of pricing carbon directly and to raise some significant revenue for clean-energy investments. Some experts suggest that \$5-per-barrel oil tax would not be noticed by consumers but would raise \$500 billion over five years to fund investments in a new green economy.

With progress in de-carbonizing the economy, a steadily rising carbon tax should be politically possible, thereby creating a virtuous circle where the price of carbon rises with — and reinforces — progress made in increasing energy efficiency and expanding the role of carbon-neutral energy sources. With Exxon Mobil supporting a low carbon tax, I reject the contention by some who argue that a carbon tax is politically impossible.

Cap-and-trade is a big, fat political mess that cannot succeed in reducing emissions, but can lead to lots of benefits to many special interests. Hence it has many champions. A straight carbon tax, applied upstream in the energy economy, is a much preferable approach to help bring about the long-term de-carbonization of the global economy.



Robert N. Stavins, Albert Pratt Professor of Business and Government at Harvard University and the Di-

rector of the Harvard Environmental Economics Program.

While there are tradeoffs between the two principal market-based instruments targeting CO₂ emissions — cap-and-trade and carbon taxes — the best and most likely approach for the short- to medium-term in the U. S. is a well-designed cap-and-trade system.

There are differences between taxes and cap-and-trade that need to be recognized. First, environmental effectiveness: A tax does not guarantee achievement of an emissions target, but it provides greater certainty regarding costs. On the other hand, political and economic forces strongly point to less severe targets if carbon taxes are used, rather than cap-and-trade — this is not an acceptable tradeoff, and this is why environmental NGOs are opposed to the carbon-tax approach.

In principle, both carbon taxes and cap-and-trade can achieve cost-effective reductions, and — depending upon design — the issue of who ultimately pays for the higher price placed on carbon can be similarly resolved in both approaches. But the key difference is that political pressures on a carbon tax system will most likely lead to exemptions of sectors and firms, which reduces environmental effectiveness and drives up costs, as some low-cost emission reduction opportunities are left off the table. Political pressures on a cap-and-trade system will lead to different allocations of allowances, which affect distribution, but not environmental effectiveness and cost effectiveness.

Proponents of carbon taxes worry about the propensity of political processes under a cap-and-trade system to compensate sectors through free allowance allocations. But a carbon tax is sensitive to the same political pressures, and may be expected to succumb in ways that are ultimately more harmful, thus reducing environmental achievement and driving up costs.

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Charles Komanoff, co-director of the Carbon Tax Center.

A cap-and-trade system helped curb sulfur emissions and lessen acid rain. But by any measure, the task of reducing carbon emissions and averting climate catastrophe will be orders of magnitude more massive.

Decarbonizing the world's energy systems will entail scaling up hundreds of innovative technologies, some of which don't yet exist, as well as rewiring humanity's ecological consciousness. Only a carbon tax can quickly drive the across-the-board transition from fossil fuels to renewable and efficient energy. Its key attributes make it far superior to cap-and-trade:

- *Price-certainty* — Carbon-critical decisions — where to locate a home or facility, how to design a product, which products to create — must be made with the fullest knowledge of future carbon prices. The clear price signals from a ramped-up carbon tax stand in stark contrast to the price volatility endemic to cap-and-trade.
- *Simplicity and immediacy* — British Columbia enacted and implemented a carbon tax in five months. North America's only comparable carbon cap-and-trade system, covering the Northeastern U.S., took five years of negotiation and rule-making.
- *International harmonization* — Carbon-taxing nations can easily offset import price differences with a "border tax adjustment."

A cap-and-trade system offers no such yardstick.

- *Transparency* — With Americans recoiling from opaque, insider-driven financial instruments, a carbon tax's directness is gaining political traction.

"The American people want us to level with them," Rep. John B. Larson (D-CT.), said in March. "We create price certainty without any new bureaucracies or complicated auction schemes." Larson, a member of the House leadership, is looking to meld traditional American pragmatism with a newly resurgent idealism. His bill, and carbon taxing, deserve our support.



Eileen Claussen, president of the Pew Center on Global Climate Change.

An economy-wide greenhouse gas cap-and-trade system sets a clear limit on greenhouse gas emissions and minimizes the costs of achieving this target. Environmental integrity and cost-effectiveness are two critical advantages that make cap-and-trade the right policy mechanism to tackle climate change in an economically responsible manner. Complementary measures and incentives — including for coal, transportation, technology commercialization, and buildings and energy efficiency — are also necessary pieces of the climate solution.

Unlike traditional regulation, a cap-and-trade program constrains emissions but lets market forces set a price on emissions. Rather than mandating a specific technology, the flexibility afforded by emissions trading markets helps identify where emission reductions can be achieved most cost-effectively.

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Cap-and-trade stimulates the development of new technological solutions that can enable much deeper emissions cuts at lower cost in the future.

A carbon tax is often presented as a main alternative to cap and trade. A core difference between these approaches involves the issue of certainty. A tax provides cost certainty by setting a fixed cost on emissions, whereas cap-and-trade delivers emissions certainty by establishing a declining emissions limit based on an assessment of the reductions level required to protect the climate. In contrast to a cap-and-trade approach, a tax would not provide the same level of emissions certainty during any given compliance period.

An economy-wide cap-and-trade policy is supported by President Obama, by Congressional leaders drafting bills in the House and Senate, and by the 25 major corporations and 5 NGOs working together as the U.S. Climate Action Partnership. Greater flexibility to achieve emissions reductions in a cost-effective manner and greater certainty that environmental objectives will be met are key advantages of a cap-and-trade policy.



Baruch Fischhoff, Howard Heinz University Professor of Social and Decision Sciences and Engineering and Public Policy at Carnegie Mellon University.

I favor a well-designed, comprehensive national energy policy, comprised of simple components, such a revenue-neutral energy tax.

A national energy policy with simple components would focus on easily understood outcomes, such as reducing environmental damage and improving industrial efficiency. It would reward innovation in engineering, rather than in designing financial and legal instruments. It would be transparent and trustworthy. It would favor a simple carbon or energy tax over a complex cap-and-trade program.

Such a tax has clear goals (e.g., use less energy) and direct responses (e.g., adopt efficient technologies). It should even have simpler loopholes, such as giving special interests explicit exemptions, rather than giving them unfair portions of the capped allowance of permissible energy consumption.

A comprehensive national energy policy would create pressure to look for common ground that allows the players to support one another's programs. It would provide politicians with the cover that complex options can offer: "I'm supporting subsidies for nuclear power, but I'm getting aggressive energy conservation, focused on low-income families." It would signal to the public just how big the problems are.

Designing the best simple, comprehensive policy will require analytical and empirical research. For example, electricity-pricing programs will need rigorous pre-tests and field evaluations, along with tariffs providing appropriate incentives for utilities to reward their customers' energy conservation. Energy-saving products will need intensive usability tests. Political leaders will need clear, nuanced descriptions of the public's desires, free from pundits' interpretations and opinion polls' simplifications. Such descriptions can come from intensive interviewing and case studies of experiences like British Columbians' responses to the province's revenue-neutral carbon tax and Americans' responses to our complex, fragmented financial bailout.

I predict that a well-designed, comprehensive, simple energy policy would convince many individuals that its proponents are serious about addressing the energy-and-environment problem, not using it as an excuse to do more favors for special interests.

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