



We Need a Well-Designed Cap-and-Trade Program to Fight Global Warming

Rachel Cleetus, UCS climate economist

The debate over global warming has finally shifted from whether it is indeed happening (*it is*) and if human activity is causing it (*it is*) to what we need to do to avoid the worst consequences of climate change. If we stabilize atmospheric concentrations of global warming emissions at or below 450 parts per million (ppm) of carbon dioxide equivalent (CO₂eq), we have a 50 percent chance of preventing the Earth's average temperature from rising 3.6 degrees Fahrenheit (2 degrees Celsius) above pre-industrial levels. Scientific evidence suggests this would avoid some of the worst, irreversible consequences of global warming.

According to a Union of Concerned Scientists (UCS) analysis, even with aggressive action by industrialized and developing countries, the United States would have to cut its emissions by at least 80 percent from 2000 levels by 2050ⁱ. The first step on this path should be reductions on the order of 15-20 percent below 2000 levels by 2020, according to a statement endorsed by more than 1,700 scientists and economists with expertise relevant to our understanding of the scientific and economic dimensions of climate change.ⁱⁱ

This daunting task will require countries to quickly deploy clean energy technologies and develop new low-carbon technologies, using a combination of policies to help spur these activities. Foremost among them is a well-designed cap-and-trade program, which would put a price on carbon emissions that reflects the costs of global warming. This must be coupled with strengthened efficiency standards, incentives, and public investment in clean technologies and infrastructure. A carbon tax could also be part of the solution, but it would not guarantee the necessary level of emissions reductions without an emissions cap in place.

How a Basic Cap-and-Trade Program Works

To set in place a cap-and-trade program, Congress would enact legislation to establish an economy-wide cap on global warming emissions, measured in metric tons of CO₂ equivalent, and the cap would be tightened over time based on the latest climate science. The Environmental Protection Agency would then auction "emissions allowances" that correspond to the level of the emission cap.

The program would require electric utilities, refineries, and other sources of global warming pollution to have an allowance for each ton of their emissions. Polluters would acquire allowances during the initial auction or by trading for them with other emitters. This allowance market would enable polluters that are able to reduce their emissions relatively cheaply to sell allowances to those that are unable to do so, thereby establishing a market price for carbon. The program would create an incentive for polluting facilities to implement the most cost-effective

emissions reduction options and, by putting a price on global warming pollution, encourage investments in new low-carbon technologies.

Key Elements of a Well-Designed Cap-and-Trade Program

All cap-and-trade programs are not equal. Only a well-designed program would achieve the necessary emissions reductions and protect the environment and the economy. The key elements are:

- **Stringently capping emissions, with firm near-term goals.** As discussed above, the United States must reduce its global warming pollution emissions at least 80 percent below 2000 levels by 2050 to avoid some of the worst effects of global warming. Delay in taking action would require much sharper cuts later, making it much more difficult and costly to meet the necessary target. A near-term goal of a 15 percent to 20 percent reduction from current levels by 2020 is also essential.
- **Including as many economic sectors as possible.** The cap should cover all major sources of emissions, either directly or indirectly. They include electric utilities, transportation, and energy-intensive industries, which together comprise some 80 percent of U.S. global warming pollution, as well as fossil fuel emissions from the agriculture, commercial and residential sectors.
- **Including all major heat-trapping gas emissions.** These include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF₆).
- **Auctioning allowances rather than giving them away free to emitters.** An allowance auction would allow the market to set the price of carbon, and it would be the most efficient and equitable way of distributing allowances. Giving away too many allowances would distort the market and could result in windfall profits for polluters.
- **Using auction revenues for the public good.** The government should invest auction revenues in clean, renewable energy technologies and energy efficiency measures. Revenues also could compensate low-income families, provide transition assistance to workers or economic sectors that are disproportionately disrupted by the program, and help communities adapt to the unavoidable effects of global warming.
- **Excluding loopholes that undermine the integrity of the program.** To be effective, a cap-and-trade program should not include a “safety valve” that short-circuits the market signal and sets a maximum price for allowances. This would undermine the integrity of the emissions cap, and reduce the incentive for investments in clean technology.
- **Including strict criteria for cost-containment mechanisms such as offsets and borrowing.** Offsets would allow regulated polluters to purchase emissions reductions from unregulated sectors or countries that do not have caps, instead of reducing an equivalent amount of their own emissions or buying allowances from other regulated facilities. (For example, a regulated electricity generator could pay an unregulated landfill

company to capture its methane emissions and use those emissions reductions to “offset” their own.) Borrowing would allow facilities to emit more global warming pollution if they promise to make sharper emissions cuts later.

- Offsets and borrowing could lower the cap-and-trade program’s short-term costs for polluters. However, by postponing emissions reductions from major emitting sectors, they would delay much-needed technological innovation and jeopardize the program’s long-term goals. Any offsets should meet rigorous standards to ensure the activities are permanently removing carbon from the atmosphere beyond what would happen in a business-as-usual scenario. Borrowing should not reach unsustainable levels that threaten the program’s viability.
- **Strong Institutions.** A cap-and-trade program requires a strong institutional framework to function well. The regulatory authority, the EPA, will play a critical role in ensuring that the program achieves its emissions reduction role, and will have to work in close consultation with scientists, policymakers and the regulatory entity that will oversee the emissions trading market. Strict monitoring and enforcement of standards for offsets will be necessary, and a trustworthy fiduciary entity must oversee the disbursement of the auction revenues from the sale of allowances.
- **Linking with similar programs.** There are important economic advantages to linking a domestic cap-and-trade regime with those in Europe and other regions that have adopted a stringent emissions cap. Doing so would require the U.S. program’s design to be compatible with these other regimes.

Lessons from Existing Cap-and-Trade Programs

In 2005 the European Union implemented a cap-and-trade program, the EU Emissions Trading System (EU ETS), covering 27 countries. In its first phase, the program covered the electric power and major energy-intensive industrial sectors. The program has been criticized for setting overly generous caps for polluters and giving away most allowances, resulting in huge windfall profits for power generators. The EU is making adjustments for the next phase of the ETS, which extends from 2008 through 2012. A U.S. cap-and-trade program should learn from the EU’s experience and implement strong design principles from the outset to avoid these costly mistakes.

Any federal cap-and-trade system also could borrow from examples here in North America. The Regional Greenhouse Gas Initiative (RGGI), which will officially begin in January 2009, is a cap-and-trade program designed to reduce emissions from the electric power sector in ten Northeast and Mid-Atlantic States. All RGGI states have committed to auctioning a majority of their allowances and they have established a reserve price for allowances. California has set a cap of reaching 1990 levels of global warming pollution by 2020, and is moving to implement a suite of policies, including an emissions trading system, to achieve that goal. Meanwhile, six Western states and two Canadian provinces have launched the Western Climate Initiative to develop a regional cap-and-trade regime, and several Midwestern states are proposing similar programs as part of climate change legislation.

At the federal level, the Acid Rain Program provides a pioneering example of a successful cap-and-trade program that has greatly reduced power plant emissions of sulfur dioxide (SO₂) and nitrogen oxides (NO_x), the pollutants that cause acid rain and smog. These reductions were achieved at a significantly lower cost than originally assumed.

Cap and Trade Alone is not Sufficient

A cap-and-trade program alone would not be sufficient to meet the challenge of climate change. While a cap-and-trade policy would address the failure of the market to account for harm to the climate, it cannot by itself provide sufficient incentives for the technologies and other measures that will be needed to establish a true low-carbon economy. The government must implement parallel policies alongside a cap-and-trade regime to ensure development and deployment of the full range of clean technologies. These policies include requiring utilities to generate a higher percentage of their electricity from renewable energy sources, requiring automakers to increase vehicle fuel economy standards, stronger energy efficiency policies, incentives for investments in low-carbon technologies, and policies encouraging smart growth. Studies have shown that a comprehensive approach including these parallel policies would lower the price for allowances, cut emissions, and save consumers money by lowering their electric and gasoline bills.

What about a Carbon Tax?

A well-designed cap-and-trade program has an important advantage over a carbon tax. The former would require the specific emissions reductions necessary to avoid dangerous climate change, while a carbon tax by itself cannot guarantee any particular level of emissions reductions. Moreover, a cap-and-trade program would more easily dovetail with similar existing and proposed regimes in other countries and regions. In addition, allowing developing countries to sell carbon credits from avoided tropical deforestation emissions reductions would provide a powerful incentive to address the source of some 20 percent of global warming pollution emissions.

Nevertheless, a carbon tax, like a cap-and-trade program, would use the power of the market to achieve cost-effective emissions reductions, and both would generate revenues that could be used for the public benefit. It may be possible for the two policies to co-exist and complement one another.

Any effective U.S. climate strategy must cut global warming pollution deeply enough to avoid the worst effects of climate change, which means at least 80 percent below 2000 levels by 2050. Emissions trading and carbon taxes are both tools we can use to achieve these reductions, as are technology standards, incentives, and public investment in clean technology and infrastructure. What's most important is that we move aggressively to address the climate crisis, and that we begin the transition to a low-carbon economy without delay.

ⁱ *How to Avoid Dangerous Climate Change: A Target for U.S. Emissions Reductions*

http://www.ucsusa.org/global_warming/solutions/big_picture_solutions/a-target-for-us-emissions.html

ⁱⁱ *U.S. Scientists and Economists' Call for Swift and Deep Cuts in Greenhouse Gas Emissions*

http://www.ucsusa.org/global_warming/solutions/big_picture_solutions/scientists-and-economists.html