

EXECUTIVE SUMMARY: A CARBON TAX IN BROADER U.S. FISCAL REFORM



CENTER FOR CLIMATE
AND ENERGY SOLUTIONS

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Economists refer to the climatic damages of human-induced greenhouse gases (GHGs) as “external costs” because the emissions impose a cost on society that is not reflected in the prices of goods and services that produced them. Policymakers can correct this market failure by putting a price on GHG emissions, for example by taxing GHG emissions, and thereby cost-effectively reducing emissions through market forces. A GHG emissions tax would reduce emissions by changing the relative prices of fuels and other goods and services according to their emissions intensity. Such a tax would also produce revenue, raising the option of including the measure in a broader package of fiscal reforms. The largest source of GHG emissions is carbon dioxide from the combustion of fossil fuels, so many economists particularly advocate an excise tax on the carbon content of those fuels, or a “carbon tax.” (The terms “carbon tax” and “GHG emissions tax” are used interchangeably throughout this report, unless specified otherwise.)

This report examines the issues and options for designing a carbon tax in the United States. It reviews the rationales for a carbon tax in the context of broader fiscal reform, explains the design issues, describes the potential revenue and environmental benefits, and explores options for using the revenue. The paper’s key points include:

A well-designed carbon tax could improve the long-run U.S. fiscal situation while reducing emissions. For example, estimates suggest that a tax on the carbon content of fuels in the energy sector that started at \$16 per ton of CO₂ in 2014 and rose at 4 percent over inflation per year would raise more than \$1.1 trillion in the first 10 years and more than \$2.7 trillion over a 20-

year period. A broader tax base that included emissions of other greenhouse gases (e.g., non-energy CO₂ and methane) would raise even more revenue. The long term revenue and emissions reductions would depend on a host of hard-to-predict factors such as economic growth and the evolution of energy technologies.

The carbon tax with the least economic cost would be predictable, start modestly, ramp up gradually, and minimize administrative costs.

- Over the long run, the price on carbon should be consistent with the “social cost of carbon,” as best as it can be estimated, and it can be updated as new information develops. A gradual and predictable policy would promote efficient turnover of long-lived industrial plants and equipment, allow households to adjust with minimal disruption, and incentivize innovation and deployment of new technologies. Some economists recommend that the real rate of increase in a tax should match the returns on relatively low-risk capital assets, which is about four or five percentage points above inflation.
- A tax applied as broadly as feasible to fossil fuels, non-energy sources of CO₂ emissions, and other greenhouse gases (based on their global warming potential relative to CO₂) would deliver the same incremental incentive to reduce emissions in all sectors, and therefore be the most economically efficient.
- A carbon tax could be applied either “upstream,” where the fossil fuels enter the economy, or “downstream,” where the carbon is emitted to the atmosphere. An upstream tax on the carbon content of fossil fuels could price 80 percent of U.S. GHG

emissions by taxing fewer than 3000 entities, thus minimizing administrative costs while offering broad coverage.

- Carbon that is not emitted, for example because it is sequestered underground or embodied in long-lived products, should be eligible for a tax rebate or credit.

A carbon tax could create opportunities within a tax reform package that may not otherwise exist. Taxing something we do not want (e.g, GHG emissions) rather than something we want more of (e.g., productive labor and investment) could help lower the economy-wide cost of the program and may even have economic benefits in addition to its environmental benefits.

- The overall economy-wide effects of a carbon tax would depend on three factors: the price increases that result from the tax (i.e. who bears those prices and by how much); the final disposition of the carbon tax revenue (i.e., how the revenue is used); and how these changes would ripple through the broader economy.
- Including a carbon tax as part of a broader fiscal reform could ameliorate the potential regressivity of a carbon tax, which could result because lower income individuals may spend a larger share of their income on energy. Directing about 15 percent of annual revenues toward households whose incomes fall below 150 percent of the poverty line would ensure that the poorest fifth of households would not be made worse off under a carbon tax. Regional variations in the burden of a carbon tax as a share of income would be modest due to regional patterns of fuel consumption and use, but some particularly coal-intensive states could face relatively larger burdens.
- Revenues from a carbon tax could fund reductions in other taxes. As seen in **Table 1**, policymakers could:
 - Reduce the U.S. statutory marginal corporate income tax, currently the

highest in the developed world, while simplifying the tax provisions that allow most corporations to pay far lower effective rates.

- Reduce payroll or personal income taxes, prevent cuts in social safety net spending, and reduce the federal budget deficit.

A carbon tax could reduce the need for other climate and energy policies. An appropriate tax would lower GHG emissions and spur clean energy innovation, making less-efficient energy and climate policies unnecessary.

- One scholar estimates that about \$6 billion in annual direct and tax expenditures for clean energy deployment could be replaced with a modest carbon tax with the same impact on deployment.
- A broad national carbon tax could reduce GHG emissions more effectively and less expensively than sector-by-sector and state-by-state regulation under the Clean Air Act.
- Federal funding for basic research and development would remain important under a carbon tax because those activities would be under-funded by market forces alone.

Emissions leakage and concerns of energy-intensive trade-exposed (EITE) industries could be managed under a carbon tax. A number of approaches could apply:

- The carbon tax could start modestly, giving EITE firms time to lower their carbon-intensity.
- A border carbon adjustment could tax select imports of EITE goods from countries with less ambitious climate policy goals.
- The carbon tax revenue could fund reduction in other taxes that make U.S. firms less competitive.
- The United States could use its policy as leverage to encourage other countries to take stronger climate action.

TABLE 1: Summary of Options for Using Carbon Tax Revenue

REVENUE USE	EFFECTS ON ECONOMY	PROGRESSIVE	COMPENSATING THOSE WHO BEAR CARBON PRICE?
<i>Lump sum rebates to households</i>	Does not lower burden of tax system on the economy. Could boost consumption in a slack economy.	Yes	Likely under-compensates higher income households.
<i>Reduce federal budget deficit</i>	Economy benefits from lower future tax burdens and greater investment now.	Maybe. Depends on structure of future tax system and who benefits from higher investment.	Maybe
<i>Reduce (or prevent increases in) payroll or labor income taxes</i>	Benefits economy to the extent it encourages more work. Benefits could be substantial.	Depends on implementation. Does not help those without earned income.	Depends. Could under-compensate highest income households.
<i>Give \$ to utilities to lower electricity rates</i>	Increases costs by blunting incentives to conserve and driving abatement to costlier sectors.	Depends on how it is implemented by state utility regulators.	Yes for electricity consumers, but does not benefit consumers of other energy.
<i>Reduce capital taxes (corporate income tax or capital gains tax)</i>	Economic benefits could be substantial. Some think that using some money for an investment tax credit may be even better.	Likely not; the evidence on the incidence of corporate taxes is mixed.	Maybe
<i>Fund climate, energy, and adaptation R&D</i>	Could benefit economy if money is used for useful research the private sector would not do otherwise. The total revenue raised by a carbon tax would be far more than appropriate to devote to solely this category.	No	Maybe. Could reduce costs of abatement in the future.
<i>Give money to states or other sub-federal entities</i>	Depends on what states do with it. Could benefit economy if they reduce deficits or other taxes.	Depends on what states do with it.	Depends on what states do with it.



The Center for Climate and Energy Solutions (C2ES) is an independent nonprofit organization working to promote practical, effective policies and actions to address the twin challenges of energy and climate change.