

Key Elements of the U.S. Tax System

What is a carbon tax?

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A. Emissions of carbon dioxide and other greenhouse gases are changing the climate. A carbon tax puts a price on those emissions, encouraging people, businesses, and governments to produce less of them. A carbon tax's burden would fall most heavily on energy-intensive industries and lower-income households. Policymakers could use the resulting revenue to offset those impacts, lower individual and corporate taxes, reduce the budget deficit, invest in clean energy and climate adaptation, or for other uses.

WHY TAX CARBON, AND HOW MUCH?

Emissions of carbon dioxide, methane, nitrous oxide, and other greenhouse gases are increasing global temperatures, raising sea levels, shifting rainfall patterns, boosting storm intensity, and harming coral reefs and other marine life. Greenhouse gas emissions thus create a host of potential economic and environmental threats, including property damage from storms, human health risks, reduced agricultural productivity, and ecosystem deterioration (Environmental Protection Agency 2017; National Aeronautics and Space Administration 2018).

Energy prices do not currently reflect these costs of greenhouse gas emissions. Those who benefit from burning fossil fuels generally do not pay for the environmental damage the emissions cause. Instead, this cost is borne by people around the world, including future generations. Imposing a carbon tax can help to correct this externality by raising the price of energy consumption to reflect more of its social cost. The most efficient way to collect such a tax would be upstream from a limited number of fuel producers and importers, rather than downstream from fuel users.

Estimates of the environmental cost of carbon emissions are sensitive to scientific and economic assumptions and thus differ greatly. One prominent estimate, developed by an interagency working group of the United States government, is that carbon dioxide emissions impose social costs of about \$40 per metric ton (Interagency Working Group on Social Costs of Greenhouse Gases 2016).

HOW WOULD A CARBON TAX AFFECT WELFARE?

A carbon tax would increase the price of burning fossil fuels and any resulting goods or services. A tax of \$40 per ton would add about 36 cents to the price of a gallon of gasoline, for example, or about 2 cents to the average price of a kilowatt-hour of electricity (Marron, Toder, and Austin 2015). Higher energy prices would raise costs for industry and households, resulting in lower profits, wages, and consumption.

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The impact of a carbon tax would differ among economic groups depending on the extent of energy price changes and on regional energy production and consumption patterns. Clearly, a carbon tax would fall more heavily on workers and investors in carbon-intensive industries as well as on regions that depend heavily on carbon-intensive fuels, particularly coal.

The distributional impact of a carbon tax would depend on the extent to which businesses could pass higher energy costs to their customers. If demand for goods is less “elastic” (that is, responds less) to price changes than the supply of goods, then consumers will bear more of the carbon tax burden than investors and workers.

Because low-income households consume a more energy-intensive basket of goods than wealthier households do, a carbon tax would be regressive; it would cost poorer households a higher share of their income than wealthier households (Marron, Toder, and Austin 2015). A carbon tax of \$20 per ton would account for about 0.8 percent of pretax income for households in the lowest income quintile, as compared to 0.5 percent for the highest income quintile.

The environmental benefits from reduced emissions would be shared by people around the world. Combatting climate change thus poses a fundamental collective action problem. American reductions will be most valuable if they are accompanied by comparable reductions in other nations.

DEPLOYING THE REVENUE

A carbon tax could raise substantial revenue. The Joint Committee on Taxation and the Congressional Budget Office estimated, for example, that a broad-based carbon tax starting at \$25 per ton in 2017 and rising at 2 percent more than inflation would have raised \$1 trillion over its first decade (Congressional Budget Office 2016). This is close to the amount that the United States currently raises with all its other excise taxes—about 0.5 percent of gross domestic product per year.

The welfare impact of a carbon tax package would depend on how those revenues are used. Using some revenues to increase transfers, reduce Social Security contributions from low-income households, or compensate workers in carbon-intensive industries could soften the regressive impact of the carbon tax. Revenues from a carbon tax could also be used to finance cuts in existing taxes that act as a disincentive to growth. Before the 2017 tax bill, one prominent idea was using carbon tax revenue to reduce the corporate income tax (Marron and Toder 2015). However, because tax cuts on profits would largely benefit the wealthy, this would exacerbate the regressivity of the carbon tax. Revenues could also be used to reduce personal income and payroll taxes, to reduce future deficits, or to invest in clean energy and climate adaptation. What combination to choose depends on political, social, and economic considerations (Marron and Morris 2016).

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Further Reading

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Morris, Adele, and Aparna Mathur. 2015. "[The Distributional Burden of a Carbon Tax: Evidence and Implications for Policy.](#)" In *Implementing a US Carbon Tax*, edited by Ian Parry, Adele Morris, and Robert Williams, 97–119. New York: Routledge.

National Aeronautics and Space Administration. 2018. "[Global Climate Change: Vital Signs of the Planet.](#)" Updated May 17, 2018.