



Highlights of [GAO-08-605](#), a report to Congressional requesters.

Why GAO Obtained Experts' Opinions

Elevated levels of greenhouse gases in the atmosphere and the resulting effects on the earth's climate could have significant environmental and economic impacts in the United States and internationally. Potential impacts include rising sea levels and a shift in the intensity and frequency of floods and storms. Proposed responses to climate change include adapting to the possible impacts by planning and improving protective infrastructure, and reducing greenhouse gas emissions directly through regulation or the promotion of low-emissions technologies. Because most U.S. emissions stem from the combustion of fossil fuels such as coal, oil, and natural gas, much of this report centers on the effect emissions regulation could have on the economy.

In this context, GAO was asked to elicit the opinions of experts on (1) actions the Congress might consider to address climate change and what is known about the potential benefits, costs, and uncertainties of these actions and (2) the key strengths and limitations of policies or actions to address climate change. GAO worked with the National Academy of Sciences to identify a panel of noted economists with expertise in analyzing the economic impacts of climate change policies and gathered their opinions through iterative, Web-based questionnaires. The findings reported here represent the views of the 18 economists who responded to both questionnaires.

To view the full product, including the scope and methodology, click on [GAO-08-605](#). For more information, contact John Stephenson at (202) 512-3841 or stephensonj@gao.gov.

CLIMATE CHANGE

Expert Opinion on the Economics of Policy Options to Address Climate Change

What the Experts Said

All of the panelists agreed that the Congress should consider using a market-based mechanism to establish a price on greenhouse gas emissions, and 14 of the 18 panelists recommended additional actions as part of a portfolio to address climate change, such as investment in research and development of low-emissions technologies. Experts differed on the initial stringency of the market-based mechanism, with 14 of the 18 panelists recommending an initial price between less than \$1 and \$20 per ton of emissions. In addition, 14 of 18 panelists were at least moderately certain that the benefits of their recommended portfolio of actions would outweigh the costs. To establish a price on emissions, most of the panelists preferred either a tax on emissions or a hybrid policy that incorporates features of both a tax and a cap-and-trade program. A tax would set a fixed price on every ton of emissions, whereas a cap-and-trade program would limit or cap total emissions and establish a market for trading (buying and selling) permits to emit a specific amount of greenhouse gases. Under the cap-and-trade system, the market would determine the price of emissions. A hybrid system differs from a traditional cap-and-trade system in that the government would cap emissions, but could sell additional emissions permits if the permit price rose above a predetermined level. Panelists also identified general categories of benefits, such as avoided climate change damages, and costs, such as increases in energy prices, associated with their recommended actions. Overall the panel rated estimates of costs as more useful than estimates of benefits for informing congressional decision making, with some panelists citing uncertainties associated with the future impacts of climate change as limitations to estimating benefits. Further, the majority of panelists agreed that the United States should establish a price on greenhouse gas emissions as soon as possible regardless of the extent to which other countries adopt similar policies. At the same time, the majority of panelists said it was at least somewhat important to participate in international negotiations on climate change.

Panelists identified key strengths and limitations of alternative policy approaches that should be of assistance to the Congress in weighing the potential benefits and costs of different policies for addressing climate change. Many panelists said that a cap-and-trade program would be more effective in achieving a desired level of greenhouse gas emissions because, unlike a tax, it would provide certainty that emissions wouldn't exceed a certain level. However, some of the panelists also said that taxes would be more cost-effective than a cap-and-trade program because the price of emissions would be certain and not susceptible to market fluctuations. Eight panelists therefore preferred a hybrid approach that incorporates features of both a tax and a cap-and-trade program. On average, the panelists rated cost effectiveness as the most important criterion for evaluating various policy options. Finally, panelists said an important strength of using a market-based approach is the ability for the government to raise revenue through a tax or the sale of emissions permits and to use that revenue to offset the adverse effects of the policy.