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The Economic Implications of Climate Change

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The White House has undertaken a variety of steps that will stall progress on combatting climate change, including:

- Withdrawing the US from the Paris Agreement, joining only Syria and Nicaragua in non-participation.
- Working to roll back the Clean Power Plan, which would have significantly reduced US greenhouse gas emissions.
- Attempting to overturn emissions-reduction initiatives.

Most economists predict that fighting climate change will be costly, but far less costly than the costs of climate change.

Climate change causes real economic costs that will rise over time. New estimates predict warming of 2° C or more by 2100. Every 1° C of temperature increase is expected to impose costs of 1.2% of GDP on the United States (\$223 billion in 2016). These costs include:

- Sickness and death, mostly from heat and pollution.
- Damage to agriculture and forestry from heat, pests, and increased extreme temperature and precipitation events.
- Threats to commercially important marine species from ocean acidification caused by elevated carbon dioxide.
- Damage to private and public property and drinking water contamination from sea level rise and storm surges.
- Reduced worker productivity caused by pollution and heat.
- Increased property and violent crime caused by heat.

The US costs of climate change will be unevenly distributed.

- Agricultural yields may drop most in the Midwest.
- Mortality rise may be largest in the southeast and Texas.
- Total damages are expected to be greatest from Texas north and east to the mid-Atlantic region.

What are the costs of fighting climate change?

- The greatest costs will come as energy shifts to low-emission and renewable sources.
- Some costs will appear in higher energy and consumer bills, while others will come from public infrastructure spending.
- Some climate investments will increase energy efficiency; in some (but not all) cases these may pay for themselves.
- Jobs in “dirty” industries will be lost, although they will be approximately offset by jobs created in green technology.

Smart policy can minimize the costs of fighting climate change.

- Carbon tax or cap-and-trade puts a price on emissions, making the price of higher-emitting activities reflect their true costs to society and incentivizing cleaner decisions.
- Economists consider carbon pricing the lowest-cost way to fight climate change.
- Revenues can be used for climate mitigation or adaptation.

Additional Information

Under the Paris Agreement, countries submitted Intended Nationally Determined Contributions (INDC's). The US's INDC, submitted in 2015, calls for a 26-28% reduction in emissions by 2025. Under the previous administration's policies, the US was on track to achieve only a 17-22% reduction in emissions. Under the current administration's new policies, even with state-level actions, by some estimates we will achieve at most a 10% emissions reduction. Further regulatory rollback will worsen this situation.

The White House's anti-climate measures have occurred through the use of the Congressional Review Act and through executive orders. The EPA and other agencies are also reversing course on smart climate policies.

Although renewable energy and energy-efficient technologies are becoming cheaper, reducing emissions is still costly. We cannot count on private citizens and businesses alone to take the steps that will fight climate change. Proactive policy is needed.

Economists recommend fighting climate change with "carbon taxes" or "cap and trade systems." These function similarly: both price carbon and other pollutants. A carbon tax adds a per-unit-of-emissions cost to all emissions-producing activities. A cap and trade system uses purchase-able permits for each unit of emissions, and sets a "cap" on those available. These permits can be traded on markets with other polluters. The level of the tax in a carbon tax or the cap in a cap and trade system determines policy stringency; a higher tax or lower cap encourages greater reduction of emissions but impose more abatement costs. Economists use models to calculate the optimal tax or cap. Since both systems create incentives to reduce emissions, they let emissions be reduced for a lower cost as compared to inflexible policies (like rigid emissions limits that don't allow trading).

Energy efficiency policies (like federal fuel economy standards and California's energy codes for buildings) can be also used, but such policies alone cannot solve climate change. Indeed, there's debate about how much energy efficiency mandates actually reduce energy use, since efficient technology often does not perform up to expectations and people adjust to efficient technology by using it more (the so-called rebound effect).

Climate change is already underway, so regardless of emission-reduction policies, we must also pursue policies to enable people at the local level to engage in adaptation, that is, to reduce the unavoidable damages from and consequences of climate change.

Policies that fight climate change would yield additional benefits unrelated to climate change. This is because many additional pollutants are emitted along with greenhouse gases, such as nitrous oxides, particulate matter, and sulfur oxides. These pollutants damage human health, causing illness and premature death. Since fighting climate change will reduce these other forms of pollution, reducing emissions generates "co-benefits." In some cases (as with the Clean Power Plan), these co-benefits are so large that they may offset the costs of emissions control policy, even disregarding climate benefits.

Climate change is real and has significant consequences. Fighting it is costly, but doing so will reduce the damages we will face in the short and long term. Smart policy can get the most climate benefits at the lowest costs. Legislators need to pursue policies that will reduce emissions and protect the population from climate change-related damages.

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