

# CARBON PRICING

THE BEST SOLUTION TO CLIMATE CHANGE



## THE PROBLEM

Climate change is one of the greatest ecological, economic, and societal challenges the United States has ever faced. Climate pollutants like carbon dioxide and methane, also referred to as greenhouse gases (GHGs), are being released at an alarming rate primarily from fossil fuel use, trapping heat and making the planet warm. While this warming effect has happened in the past from natural phenomena, the rate of change we are experiencing today has no precedent.<sup>1</sup>

The growing impacts of climate change are already being felt around the globe. Scientists estimate that 47 percent of land mammals and 23 percent of birds worldwide are

suffering negative impacts from climate change.<sup>2</sup> Locally, extreme weather events (e.g., droughts, heavy rains) have been increasingly common across the U.S., while wildfires and hurricanes are becoming more intense, impacting wildlife, habitat, and communities.<sup>3</sup> Climate change also affects human health by, for instance, contributing to the spread of tick- and mosquito-borne disease and toxic algal blooms that pollute drinking water.<sup>4</sup>

Currently, emitters of climate pollutants externalize costs onto society and wildlife in the form of diminished health, lost work days, land and water quality degradation, agricultural changes, declining outdoor recreation opportunities, infrastructure damage, and more. When the costs of pollution are borne by society rather than the producer of emissions, the market contains failures requiring policy solutions.

While many U.S. states are adopting carbon pricing strategies to curb climate-altering pollution, their actions, even when combined with steps taken by U.S. cities and businesses, will be insufficient to bring this pollution to safe levels.<sup>5</sup> Smart federal legislation would achieve the most efficient results, and would offer wildlife the best chance at survival in a rapidly changing world. Congress should craft a comprehensive solution that delivers significant pollution reductions swiftly.



*Piping plovers are losing their coastal habitat from sea-level rise and severe storms. Credit: USFWS.*

# THE BEST SOLUTION

Requiring that industrial emitters pay a fee or price for each ton of carbon emitted (including carbon dioxide and potentially other GHGs but here simplified as “carbon”) will internalize the cost of climate pollution, thereby encouraging polluters to reduce emissions. This solution will shift the externalized costs wildlife, communities, and the economy have had to bear to those who are responsible for the harm. In doing so, if the price is high enough, emitters will have incentive to reduce their pollution by investing in cleaner and more efficient fuels, technologies, and processes.

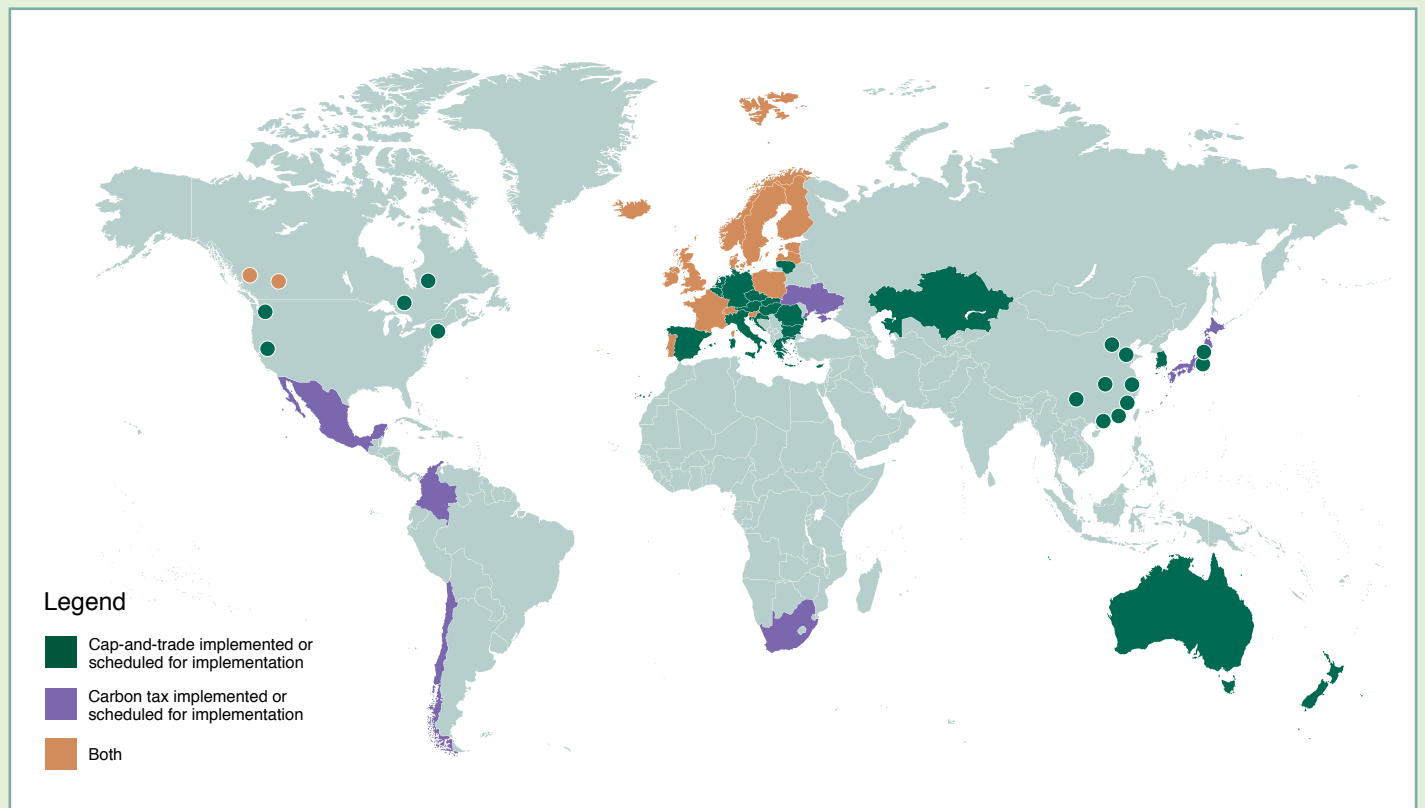


*American pika in the Rocky Mountains will have nowhere to flee as their alpine habitats warm past the level to which they can adapt. Credit: Marshal Hedin, Flickr.*

*Congress should craft a comprehensive carbon pricing solution that delivers significant pollution reductions swiftly.*

Appropriately designed policy can create a price signal to decrease emissions across all major sectors, including energy, transportation, and industry. While emitters would be paying for formerly externalized costs, the policy can be designed to protect consumers from cost differences for low-carbon products. In fact, carbon pricing has already proven very effective at not just reducing pollution but keeping prices low for consumers while supporting robust economic growth.

There are multiple mechanisms for placing a price on carbon, and more countries and regions are adopting them every year. Chief among them are carbon tax and cap-and-trade programs, as well as hybrids of these two systems.



*Existing and Planned Carbon Pricing Schemes. Adapted from: World Bank and Ecofys. May 2017. Carbon Pricing Watch 2017. Washington, D.C.: World Bank.*





*Brook trout are losing valuable habitat as cold, fast flowing streams become shallower and warmer. Credit: Chesapeake Bay Program.*

## CARBON TAX

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Carbon taxes set known prices on greenhouse gas emissions emitted by fuels, but do not specify a limit on those emissions. Emissions reductions are achieved by making the market more competitive for low-carbon fuels that do not bear the costs of higher carbon fuels. Carbon taxes create business certainty by allowing for long-range planning based on a prescribed price for each ton of carbon dioxide (or other greenhouse gas) emitted. Yet, the resulting collective carbon reductions are less predictable as it is uncertain how emitters as a whole will respond to the price. However, modeling by Resources for the Future shows significant economy-wide response to a carbon price above \$20 per ton.<sup>6</sup> British Columbia implemented a carbon tax of \$10/ton in 2008, rising an additional \$5/ton annually, to \$30/ton since 2012. BC's tax has successfully resulted in fossil fuel emission reductions of nearly 13 percent per capita, without impeding economic growth.<sup>7</sup> Alberta, Ontario, and Quebec all now have their own carbon pricing systems, and Nova Scotia plans to create one in 2018.<sup>8</sup> The federal government is preparing now to implement a nationwide price of \$10 per ton in 2018, to increase to \$50 per ton by 2022, applying in provinces without their own carbon price.

## CAP-AND-TRADE

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A cap-and-trade system sets a limit for carbon emissions while allowing the market to determine the resulting price of carbon via buying and selling of pollution permits. This carbon pricing option has advantages because it is more likely to guarantee a set level of pollution reductions. The permits (also called credits or allowances) are bought and sold on an open market, allowing entities to buy what they need to cover emissions or sell permits as they succeed in reducing emissions. This system is already being used in California and by several Northeast states participating in the Regional Greenhouse Gas Initiative (RGGI). While some have criticized these initiatives as starting off too modestly, California is on track to meet its goal of reducing GHGs to 1990 levels by 2020. The state has now adopted a new goal to cut emissions 40 percent below 1990 levels by 2030.<sup>9</sup> Northeastern RGGI states have cut pollution by 37 percent since 2009, much faster than expected, and provided \$2.9 billion in regional economic growth.<sup>10</sup> Meanwhile, the region's economy has grown at a healthy rate (8% between the difficult economic years of 2005-2013).<sup>11</sup>

*Carbon taxes create business certainty by allowing for long-range planning based on a prescribed price for each ton of carbon dioxide emitted.*

# HYBRID CARBON PRICING PROGRAMS

Hybrid systems are often an effective way to ensure the desired emission reductions are met. Several countries use a hybrid approach where a tax is imposed on some sectors, and a cap-and-trade system applies to others. Other hybrids can adjust a tax to meet emissions goals, or take other approaches.



*Polar bears are losing the Arctic sea ice they depend on to hunt seals.  
Credit: USFWS.*

Carbon offset programs can also be implemented to allow cost-effective conservation measures that store carbon to be counted toward carbon reduction goals. Land use and forestry currently offset nearly 12 percent of U.S. GHG emissions by absorbing carbon dioxide from the atmosphere.<sup>12</sup> To maximize pollution reduction opportunities, ecologically-sound land use measures should be part of a comprehensive solution. Smart conservation practices will not only have carbon benefit, but will provide direct wildlife benefit as well by improving soil and water quality, increasing food resources, restoring native vegetation, and more. Plus, a carbon price could turn these smart practices into potential revenue streams for landowners as carbon storage benefits become a monetized commodity.

The National Wildlife Federation has developed a set of principles for needed carbon pricing policy to guide lawmakers in crafting bipartisan legislation that protects wildlife. These principles reflect shared goals to bring emissions down quickly to prevent damaging climate change while spurring cleaner economic growth and protecting vulnerable people.

# NATIONAL WILDLIFE FEDERATION'S BIPARTISAN PRINCIPLES ON CARBON PRICING

1. Put emissions on a path to help keep global temperature increases well below 2 degrees Celsius (with an aspiration of below 1.5 degrees Celsius).
2. Establish a single, economy-wide system to price GHG emissions.
3. Include a mechanism to review and require mandatory adjustments to the price to achieve emissions reductions goals.
4. Protect low-income individuals and communities most vulnerable to the impacts of climate change.
5. Invest in transition for affected workers, families, and communities.
6. Invest in wildlife and natural resources.
7. Preserve the competitiveness of U.S. business and labor.
8. Protect authority to reduce carbon pollution through other means, but recognize redundancies.

*\*For a more in depth look at NWF's Carbon Pricing Principles, see our full principles document at <https://drive.google.com/file/d/0B9Yg3CNqWULUWFNz0Z6VXpOZnM/view>*

<sup>1</sup> See, for e.g.: NASA. Global Climate Change: Vital Signs of the Planet. <https://climate.nasa.gov/vital-signs/carbon-dioxide/>; and NASA Earth Observatory. <https://earthobservatory.nasa.gov/Features/GlobalWarming/page3.php>.  
<sup>2</sup> Hance, J. April 5, 2017, Climate change impacting 'most' species on Earth, even down to their genomes. The Guardian. <https://www.theguardian.com/environment/radical-conservation/2017/apr/05/climate-change-life-wildlife-animals-biodiversity-ecosystems-genetics>.  
<sup>3</sup> U.S. Global Change Research Program (USGCRP), 2014. National Climate Assessment. <http://nca2014.globalchange.gov/report#intro-section>; and EPA. 2016. Climate Change Indicators in the United States. <https://www.epa.gov/climate-indicators#explore>.  
<sup>4</sup> USGCRP, 2016: The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment. Crimmins, A., et al, Eds. <http://dx.doi.org/10.7930/J0R49NQX>  
<sup>5</sup> Larsen, K., et al. May 24, 2017. Taking Stock 2017: Adjusting Expectations for US GHG Emissions. Rhodium Group. <http://rhg.com/reports/taking-stock-2017-adjusting-expectations-for-us-ghg-emissions>.  
<sup>6</sup> Chen, Y. and M.A.C. Hafstead. November 2016. Using a Carbon Tax to Meet US International Climate Pledges. Resources for the Future. <http://www.rff.org/files/document/file/RFF-DP-16-48.pdf>.  
<sup>7</sup> Komanoff, C. December 17, 2015. British Columbia's Carbon Tax: By the Numbers. Carbon Tax Center. <https://www.carbontax.org/blog/2015/12/17/british-columbias-carbon-tax-by-the-numbers/>.  
<sup>8</sup> Rabson, Mia. Federal Liberals to reveal carbon-pricing scheme for provinces today. May 18, 2017. The Canadian Press. <http://globalnews.ca/news/3460582/carbon-tax-canadian-provinces/>  
<sup>9</sup> Governor Brown Establishes Most Ambitious Greenhouse Gas Reduction Target in North America. April 29, 2015. <https://www.gov.ca.gov/news.php?id=18938>.  
<sup>10</sup> Hibbard, P., et al. July 14, 2015. The Economic Impacts of the Regional Greenhouse Gas Initiative on Nine Northeast and Mid-Atlantic States: Review of RGGI's Second Three-Year Compliance Period (2012-2014). Analysis Group. [http://www.analysisgroup.com/uploadedfiles/content/insights/publishing/analysis\\_group\\_rggi\\_report\\_july\\_2015.pdf](http://www.analysisgroup.com/uploadedfiles/content/insights/publishing/analysis_group_rggi_report_july_2015.pdf)  
<sup>11</sup> Marcacci, Silvio. April 22, 2015. RGGI Carbon Market Invests \$1 Billion In Clean Energy. <https://cleantechnica.com/2015/04/22/rggi-carbon-market-invests-1-billion-clean-energy/>  
<sup>12</sup> U.S. EPA. Sources of Greenhouse Gas Emissions. <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>.