



Protecting Colorado's Economy, Communities and Environment from Global Warming

Global warming is already affecting Colorado, and will continue to do so for decades to come. In the absence of national policy that jumpstarts the clean energy economy by ramping down dangerous carbon emissions, our economy and wildlands are at an even greater risk. As a result, additional resources are even more necessary for protecting our natural heritage, jobs, and communities from climate disruption. Given the scale of the threat, there is no time to waste.

Critical Issues for Colorado:

- Decreasing water availability
- Damage to the local economy
- Increasing temperatures
- Changes in wildfire patterns

Is Global Warming Affecting Natural Resources in Colorado?

Yes. Colorado is warming. Since mid-century, temperatures across the state have **risen approximately 1°F**, and areas at higher altitudes in the state have been warming faster than the U.S. average.¹ Parts of Colorado can expect **an additional 7.5°F temperature increase by 2060**.² Precipitation in many areas of Colorado has been increasing in the form of large downpours, interspersed with longer drought periods, creating more flash floods and habitat destruction.³ These changes are significant, and the impacts are already being felt.

Across the U.S., more than 80% of plant and animal species studied are shifting their ranges in reaction to less than 1°F of average nationwide warming in the last century.⁴ The Intergovernmental Panel on Climate Change predicts additional warming could result in **up to 30% of known species becoming extinct**, and the disappearance of more than one-fifth of the world's ecosystems.⁵

With temperatures rising, Colorado receives less snow throughout the fall and winter, which in turn means less water in the spring and summer months for agriculture, forest fire prevention, and ecosystem health. With approximately **75 percent of Colorado's annual water flow stemming from snowmelt**, water supplies are likely to decrease significantly, affecting communities and businesses dependent on this water source.⁶

Natural Resources Adaptation Funding Will:

- Create and protect jobs
- Preserve treasured landscapes
- Revive the rural economy
- Provide clean air and water for future generations



Funding for climate-smart conservation will help landscapes and species cope with decreased water levels and other effects of global warming.

What is at Stake?

Changes brought on by global warming are disrupting the balance of natural resources and having significant impacts on communities and businesses across the state.

- **Forest Fires:** Decreased snowmelt, reduced water supplies, and favorable conditions for destructive insects are complicating the region's ability to anticipate and manage forest fires. Forest insects like the mountain pine beetle thrive in warmer, drier conditions and have propagated significantly in recent years, affecting 2 million acres of pine trees since 1996.⁷
- **Water Availability and Agriculture:** Droughts and changing landscapes in the southwestern U.S. have depleted Colorado's freshwater reservoirs by half. This freshwater shortage is forecast to decrease grain productivity on both the eastern plains and western slope of the Rocky Mountains by as much as 33 percent.⁸ A 3-4°F temperature increase in Colorado's eastern plains may render the area unsuitable for livestock grazing, causing industry losses of up to \$28 million annually.⁹
- **Local Businesses:** As the nation's most popular ski and snowboard destination, Colorado's tourism sector could see significant economic losses from climate change, as winter seasons become shortened and snow packs become less reliable. Additionally, businesses that support fishing, hiking, biking, rock climbing, and camping are threatened by the effects of global warming, in turn threatening the stability of Colorado's \$10 billion outdoor recreation economy.¹⁰
- **Health:** Rising temperatures are likely to place urban populations in cities such as Denver at higher risk of heat-related illnesses and death.¹¹ In 2000, the World Health Organization estimated that 150,000 deaths per year were linked to climate change and its related health risks¹², and predicted that number could double by the year 2030.¹³



Land management agencies need additional resources to protect ecosystems like the lodgepole pine forests from the effects of the mountain pine beetle, forest fires and climate change.

Economy at Risk:

\$10 Billion

Annual contribution of outdoor recreation to the state's economy

Protecting Natural Resources, Creating Jobs

Restoring ecosystem health helps ensure species have the best possible chance to adapt to the effects of global warming. Ecosystem adaptation projects, such as establishing wildlife corridors for animals migrating in search of needed habitat, are critical to the survival of many species and create long-term American jobs. **Investing now in natural resources is the most cost-effective way to protect our treasured landscapes and the clean water, clean air and jobs they provide.**

Proper climate-smart conservation funding will allow Colorado's wildlife and land management agencies, as well as the Land and Water Conservation Fund and the Forest Legacy Program, to ramp up important conservation projects.

Climate-smart conservation funding will allow scientists, engineers, construction crews, and others to be employed across Colorado:

- Repairing damaged watersheds to ensure clean water for communities by removing impediments and deteriorating structures, restoring eroding river banks, and repairing in-stream habitat.
- Acquiring land and establishing migration corridors to increase species' survival as climates change.
- Monitoring wildlife, habitats, and local climate, and developing appropriate adaptation responses.
- Restoring native landscapes to increase resiliency in a warming world by removing unnecessary roads and barriers, constructing buffer strips along river corridors, and removing invasive species.

This work will protect and create American jobs—providing new skills and income to workers and their families across the state and revitalize rural economies.



Restoring river habitats protects ecosystems, jobs, and drinking water

Investing in Solutions for Families, Businesses and the Planet

The risks to Colorado and the nation from global warming are significant—and require an extensive and sustained commitment to reducing heat-trapping pollution, and to protecting our natural resources and the communities that rely on them.

Congress must address climate disruption by:

- **Defending the authority of our public and environmental health agencies to reduce carbon pollution.**
- **Safeguarding our communities and generating new jobs by investing in projects that keep our natural resources resilient in a warming world.**
- **Steering national energy policy away from sources that make the climate crisis worse and towards renewable energy and energy efficiency that generate jobs for the future.**

Colorado and the nation need your support for reducing carbon pollution, protecting communities by investing in American Jobs on American Lands that safeguard our natural resources, and generating new jobs by steering national energy policy in the direction of non-polluting renewable energy and energy efficiency technologies.

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Photo Credits: Thanks to the National Park Service for the picture of the Colorado River, NASA Goddard Space Center for the picture of the affected forests, and the State of Massachusetts for the picture of river restoration.

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- ¹ NOAA National Climatic Data Center. 2009. "U.S. Climate at a Glance – Statewide." Available from: <http://www.ncdc.noaa.gov/oa/climate/research/cag3/state.html>; U.S. Global Change Research Program (U.S. GCRP), *Climate Change Impacts on the United States: The Potential Consequences of Climate Variability and Change*, "Chapter 8: Potential Consequences of Climate Variability and Change for the Western United States," Eds. Joel B. Smith, Richard Richels, and Barbara Miller (Washington, D.C.: U.S. GCRP, 2000), www.usgcrp.gov/usgcrp/Library/nationalassessment/08West.pdf.
- ² NOAA National Climatic Data Center. 2009. "U.S. Climate at a Glance – Statewide." Available from: <http://www.ncdc.noaa.gov/oa/climate/research/cag3/state.html>
- ³ National Conference of State Legislatures. 2008. "Colorado: Assessing the Costs of Climate Change." Available from: <http://www.ncsl.org/Portals/1/documents/enviro/ClimatechangeCO.pdf>
- ⁴ Sagarin, Raphael. 2002. "Historical Studies of Species' Responses to Climate Change." In: *Wildlife Responses to Climate Change: North American Case Studies*. Ed: Terry L. Root and Stephen H. Schneider. Island Press. Washington, DC.
- ⁵ Intergovernmental Panel on Climate Change. 2007. "Summary for Policy Makers." In: *Climate Change 2007: Impacts, Adaptation and Vulnerability: Working Group II Contribution to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Pg 792.
- ⁶ Colorado State University, "Final 2002 Drought Update: Wet Weather Brings Relief, but Drought Far From Over – State Needs to Prepare for More Years of Drought," *News and Information* (Nov. 12, 2002)
- ⁷ Colorado State Forest Service. "2008 Forest Health Aerial Survey Highlights." Available from: <http://www.fs.fed.us/r2/news/press-kits/2009/colo-aerial-survey/colo-survey-highlights.pdf>.
- ⁸ Regional Economic Studies Institute, calculations using modified IMPLAN economic model from the Regional Economic Studies Institute (RESI) of Towson University, 2008.
- ⁹ U.S. Environmental Protection Agency (U.S. EPA), *Climate Change and Colorado* (Washington, D.C.: U.S. EPA, Climate and Policy Assessment Division, 1997), Available from: [http://yosemite.epa.gov/oar/globalwarming.nsf/UniqueKeyLookup/SHSUSBPPNK/\\$File/co_impct.pdf](http://yosemite.epa.gov/oar/globalwarming.nsf/UniqueKeyLookup/SHSUSBPPNK/$File/co_impct.pdf)
- ¹⁰ Outdoor Industry Association. 2007.
- ¹¹ Patz JA, McGeehin MA, Bernard SM, et al. The Potential Health Impacts of Climate Variability and change for the United States: Executive Summary of the Report of the Health Sector of the U.S. National Assessment. *Environ Health Perspect.* 2000; 108(4): 367-376.
- ¹² World Health Organization. 2002. *The world health report 2002: reducing risks, promoting healthy life*. World Health Report, World Health Organization, Geneva, Switzerland.
- ¹³ McMichael, A., et al. 2004. Global climate change. In Ezzati, M., A. Lopez, A. Rodgers, and C. Murray. (eds.) *Comparative quantification of health risks: Global and regional burden of disease attributable to selected major risk factors*. pp. 1543-1649. World Health Organization, Geneva.