

Threat and Inaction:

Key Findings from the U.S. Global Change Research Program's Report on Climate Change – and the Trump Administration's Failure to Protect Our Health

The U.S. Global Change Research Program (USGCRP) today released Volume II of the Fourth National Climate Assessment, which assesses the science of climate change and variability and its impacts across the United States. It reviews the impact of climate change across 15 key sectors, as well as its impact on 10 regions.

The Trump Administration's radical neglect will threaten the health of every American by making climate change worse. The Administration is working to roll back or weaken common-sense safeguards that include the emissions standards for coal-burning power plants, clean car standards, and methane waste rules – as well as imposing restrictions on the use of scientific research in setting environmental safeguards, and seeking significant cuts in climate change and clean energy programs.

Key Quotes From the Assessment's Overview

- “Earth’s climate is now ***changing faster*** than at any point in the history of modern civilization, primarily as a result of human activities.”
- “***The impacts of climate change are intensifying across the country***...how much they intensify will depend on actions taken to reduce global greenhouse gas emissions and to adapt to the risks from climate change now and in the coming decades.”

Key Findings: Topic Areas

- **Water:** “Water security in the United States is increasingly in jeopardy....***Groundwater depletion is exacerbating drought risk***. Surface water quality is declining as water temperature increases, and ***more frequent high-intensity rainfall events mobilize pollutants*** such as sediments and nutrients.”
- **Land Cover & Land Use Change:** “Climate change can also influence land cover, resulting in a ***loss of forest cover*** from climate-related increases in disturbances, the expansion of woody vegetation into grasslands and the loss of coastal wetlands and beaches due to increased inundation and coastal erosion amplified by rises in sea level.”
- **Forests:** “It is very likely that ***more frequent extreme weather events*** will increase the frequency and magnitude of severe ecological disturbances...***the ability of U.S.***

forests to continue to provide goods and services is threatened by climate and environmental change and associated increases in extreme events and disturbances.”

- **Ecosystems, Ecosystem Services, & Biodiversity:** “The resources and services that people depend on for their **livelihoods, sustenance, protection, and well-being are jeopardized by the impacts of climate change**...local extinctions and range shifts of marine species have already been documented.”
- **Coastal Effects:** “America’s trillion-dollar coastal property market and public infrastructure are threatened by the ongoing increase in the frequency, depth, and extent of tidal flooding due to sea level rise, with **cascading impacts to the larger economy**...fisheries, tourism, human health, and public safety depend upon healthy coastal ecosystems...”
- **Oceans & Marine Resources:** “**Marine fisheries and fishing communities are at high risk from climate-driven changes** in the distribution, timing, and productivity of fishery-related species.... Marine ecosystems and the coastal communities that depend on them are at risk of significant impacts from **extreme events** with combinations of very high temperatures, very low oxygen levels, or very acidified conditions. These **unusual events are projected to become more common and more severe in the future**...”
- **Agriculture & Rural Communities:** “Climate change has the potential to adversely impact agricultural productivity...through alterations in rainfall patterns, more frequent occurrences of climate extremes (including high temperatures or drought), and altered patterns of pest pressure.”
- **Built Environment, Urban Systems, & Cities:** “**Urban areas are already experiencing the effects of climate change**...cities are already subject to higher surface temperatures because of the urban heat island effect, which is projected to get stronger...**infrastructure designed for historical climate trends is vulnerable to future weather extremes** and climate change.”
- **Transportation:** “**A reliable, safe, and efficient U.S. transportation system is at risk** from increases in heavy precipitation, coastal flooding, heat, wildfires, and other extreme events, as well as changes to average temperature...these impacts threaten the performance...of the entire network, with **critical ramifications for safety...economic vitality and mobility...particularly for vulnerable populations and urban infrastructure**.”
- **Air Quality:** “Unless counteracting efforts to improve air quality are implemented, climate change will worsen existing air pollution levels...**increas[ing] the incidence of**

adverse respiratory and cardiovascular health effects, including premature death...the frequency and severity of allergic illnesses...are likely to increase as a result of a changing climate.”

- **Human Health:** “The health and well-being of Americans are already affected by climate change, with the adverse health consequences projected to worsen with additional climate change...changes in extreme hot and extreme cold temperatures are projected to result in **more than 9,000 additional premature deaths per year** under a higher scenario by the end of the century...**more frequent and/or more intense extreme events, including drought, wildfires, heavy rainfall, floods, storms, and storm surge, are expected** to adversely affect population healthby the end of this century, **thousands of American lives could be saved and hundreds of billions of dollars in health-related economic benefits gained each year under a pathway of lower greenhouse gas emissions.”**
- **Tribes & Indigenous Peoples:** “Climate change **threatens Indigenous peoples’ livelihoods and economies**, including agriculture, hunting and gathering, fishing, forestry, energy, recreation and tourism enterprises...institutional barriers exist in the United States that severely limit their adaptive capacities.”
- **Climate Effects on U.S. International Interests:** “The impacts of climate change, variability, and extreme events outside the United States are affecting and are **virtually certain to increasingly affect U.S. trade and economy...climate change...can slow or reverse social and economic progress in developing countries, thus undermining international aid and investments made by the United States** and increasing the need for humanitarian assistance and disaster relief...**climate change and extremes increase risks to national security** through direct impacts on U.S. military infrastructure and by affecting factors, including food and water availability, that can exacerbate conflict outside U.S. borders.”
- **Sector Interactions, Multiple Stressors, and Complex Systems:** “Hurricane Harvey...provides a clear example of how impacts from extreme weather events can cascade...Harvey knocked out power to 300,000 customers in Texas, with **cascading effects on critical infrastructure facilities such as hospitals, water and wastewater treatment plants, and refineries...actual and anticipated gasoline shortages caused price spikes regionally and nationally...floodwaters carried toxins and pathogens. Flooding inundated a total of 43 EPA Superfund toxic sites...widespread power outages forced evacuation that exceeded the emergency shelter capacity...roadways clogged with debris, and floodwater hampered the ability to get supplies and evacuate vulnerable patients.”**

Key Findings: Regions

- **Northeast – (DE, MA, MD, ME, NH, NJ, NY, PA, RI, VT, WV)**
 - "The Northeast's coast and ocean support commerce, tourism, and recreation that are important to the region's economy and way of life. Warmer ocean temperatures, sea level rise, and ocean acidification threaten those services."
 - **"Major negative impacts on critical infrastructure, urban economies, and nationally significant historic sites are already occurring and will become more common with a changing climate."**
 - **"Changing climate threatens the health and well-being of people in the Northeast** through more extreme weather, warmer temperatures, degradation of air and water quality, and sea level rise. These environmental changes are expected to lead to...**additional deaths, emergency room visits and hospitalizations, and a lower quality of life.**"
 - "The seasonality of the Northeast is central to the region's sense of place and is an important driver of rural economies. Less distinct seasons with milder winter and earlier spring conditions are already altering ecosystems and environments in ways that adversely impact tourism, farming, and forestry. **The region's rural industries and livelihoods are at risk from further changes** to forests, wildlife, snowpack, and streamflow."

- **Southeast – (VA, KY, AR, TN, NC, LA, MS, AL, GA, SC, FL)**
 - "Many southeastern cities are particularly vulnerable to climate change compared to cities in other regions...**the vibrancy and viability of these metropolitan areas, including the people and critical regional resources located in them, are increasingly at risk due to heat, flooding, and vector-borne disease brought about by a changing climate.**"
 - "The Southeast's coastal plain and inland low-lying regions...are highly vulnerable to climate change impacts. The combined effects of changing extreme rainfall events and sea level rise are already increasing flood frequencies...**without significant adaptation measures, these regions are projected to experience daily high tide flooding by the end of the century.**"
 - "The Southeast's diverse natural systems...will be transformed by climate change...**the ecological resources that people depend on for livelihood, protection, and well-being are increasingly at risk**, and future generations can expect to experience and interact with natural systems that are much different...by the end of the century, **over one-half billion labor hours could be lost from extreme heat-related impacts.**"

- **US Caribbean –**
 - "Continued increases in average temperatures will likely lead to decreases in agricultural productivity, changes in habitats and wildlife distributions, and **risks to human health, especially in vulnerable populations.**"
 - "The high percentage of coastal area relative to the total land area in the U.S. Caribbean means that a large proportion of the region's people, infrastructure, and economic activity are vulnerable to sea level rise, more frequent intense

rainfall events and associated coastal flooding, and saltwater intrusion...**disruptions from extreme climate-related events, such as droughts and hurricanes, can devastate large portions of local economies and cause widespread damage...**"

- **Midwest – (MN, WI, MI, IA, IL, IN, OH, MO)**
 - "By mid-century, the region is projected to experience substantial, yet avoidable, **loss of life, worsened health conditions, and economic impacts estimated in the billions...**"
 - "...the Midwest is projected to have the largest increase in extreme temperature-related premature deaths under the higher scenario: by 2090, **2,000 additional premature deaths per year**, compared to the base period of 1989-2000, are projected due to heat alone without adaption efforts...by 2050, increased temperatures under the higher scenario are **estimated to cost around \$10 billion...**due to premature deaths and lost work hours."
 - "...the EPA has estimated that **the Midwest is among the regions with the largest expected damages to infrastructure.**"

- **Northern Great Plains – (MT, NE, ND, SD, WY)**
 - "Ecosystems across the Northern Great Plains provide recreational opportunities and other valuable goods and services that are at risk in a changing climate. Rising temperatures have already resulted in...important **consequences for local economies that depend on winter or river-based recreational activities.**"
 - "**Climate-induced land-use changes in agriculture** can have cascading effects on closely entwined natural ecosystems, such as wetlands and the diverse species and recreational amenities they support."
 - "**Indigenous peoples of the Northern Great Plains are at high risk** from a variety of climate change impacts, especially those resulting from hydrological changes."

- **Southern Great Plains – (KS, OK, TX)**
 - "**Climate change is expected to lead to an increase in average temperatures as well as frequency, duration, and intensity of extreme heat events...**with higher levels of greenhouse gas emissions leading to greater and faster temperature increases. Extreme heat will become more common...by late in the 21st century, if no reductions in emissions take place, the region is projected to experience an additional 30-60 days per year above 100°F than it does now."
 - "Studies that have attempted to simulate the consequences of future precipitation patterns consistently project less future soil moisture, with future conditions possibly **drier than anything experienced by the region during at least the past 1,000 years.**"
 - "**Health threats, including heat illness and diseases transmitted through food, water, and insects, will increase as temperature rises.** Weather

conditions supporting these health threats are projected to be of longer duration or occur at times of the year when these threats are not normally experienced.

Extreme weather events with resultant physical injury and population displacement are also a threat. These threats are likely to increase in frequency and distribution and are likely to create **significant economic burdens.**"

- **Northwest (ID, OR, WA)**

- "Existing water, transportation, and energy infrastructure already face challenges from flooding, landslides, drought, wildfire, and heat waves. Climate change is projected to increase the risks from many of these extreme events, **potentially compromising the reliability of water supplies, hydropower, and transportation across the region.**"
- "**Climate change is already affecting the Northwest's diverse natural resources**, which support sustainable livelihoods; provide a robust foundation for rural, tribal, and Indigenous communities; and strengthen local economies."
- "Organizations and volunteers that make up the Northwest's social safety net are already stretched thin with current demands. Healthcare and social systems will likely be further challenged with the increasing frequency of acute events, or when cascading events occur."
- "**Climate change and extreme events are already endangering the well-being of a wide range of wildlife, fish, and plants**, which are intimately tied to tribal subsistence culture and popular outdoor recreation activities."
- "Years of abnormally low precipitation and **extended drought conditions** are expected to occur throughout the century, and extreme events, like heavy rainfall associated with atmospheric rivers, are also anticipated to occur more often. Along the coast, **severe winter storms** are also projected to occur more often, such as occurred in 2015 during one of the strongest El Niño events on record. El Niño winter storms contributed to **storm surge, large waves, coastal erosion, and flooding...**"

- **Southwest – (AZ, CA, CO, NM, NV, UT, CO)**

- "**Heat-associated deaths and illnesses, vulnerabilities to chronic disease**, and other health risks to people in the Southwest result from increases in extreme heat, poor air quality, and conditions that foster pathogen growth and spread.
- "**Water for people and nature in the Southwest has declined during droughts, due in part to human-caused climate change.** Intensifying droughts and occasional large floods, combined with critical water demands from a growing population, deteriorating infrastructure, and groundwater depletion, suggest the need for flexible water management techniques..."
- "Many coastal resources in the Southwest have been affected by sea level rise, ocean warming, and reduced ocean oxygen – all impacts of human-caused climate change – and ocean acidification...homes and other coastal

infrastructure, marine flora and fauna, and **people who depend on coastal resources face increased risks under continued climate change.**"

- **"Climate change has altered factors fundamental to food production and rural livelihoods in the Southwest, particularly the shortage of water...the California drought led to losses of more than 10,000 jobs and the fallowing of 540,000 acres (220,000 hectares), at a cost of \$900 million..."**

- **Alaska**

- "Climate change...brings a wide range of human health threats to Alaskans due to **increased injuries, smoke inhalation, damage to vital infrastructure, decreased food and water security, and new infectious diseases.**"
- "Climate warming is causing damage to infrastructure that will be costly to repair or replace, especially in remote Alaska."
- "Alaska residents, communities, and their infrastructure continue to be affected by permafrost thaw, coastal and river erosion, increasing wildfire, and glacier melt. These changes are expected to continue into the future with increasing temperatures..."
- "Offshore and landfast sea ice is forming later in the season, which allows coastal storm waves to build while leaving beaches unprotected from wave action."

- **Hawai'i & U.S.- Affiliated Pacific Islands**

- "Climate change impacts in the Pacific Islands are expected to amplify existing risks and lead to compounding economic, environmental, social, and cultural costs. In some locations, climate change impacts on ecological and social systems are projected to result in **severe disruptions to livelihoods that increase the risk of human conflict or compel the need for migration.**"
- "**Dependable and safe water supplies** for Pacific island communities and ecosystems are threatened by rising temperatures, changing rainfall patterns, sea level rise, and increased risk of extreme drought and flooding."
- "**Fisheries, coral reefs, and the livelihoods they support** are threatened by higher ocean temperatures and ocean acidification."
- "**Indigenous peoples of the Pacific are threatened** by rising sea levels, diminishing freshwater availability, and shifting ecosystem services. These changes imperil communities' health, well-being, and modern livelihoods, as well as their familial relationships with lands, territories, and resources."
- "**Some species are expected to become extinct** and others to decline to the point of requiring protection and costly management."