

Climate-Related Challenges and Resiliency in Tribal Communities throughout the United States



Native American and Indigenous communities across the United States face disproportionate and severe impacts from climate change that threaten their health, livelihoods, and cultural survival. With their deep ties to the land and reliance on fishing, hunting, and gathering, indigenous tribes are especially vulnerable to the impacts of climate change (Yale e360, 2020). Many Indigenous households rely on private water systems such as wells, springs, and small community sources that lack federal protections. These systems are highly vulnerable to drought, flooding, and contamination, threatening health, food security, and cultural practices. Historical injustices have compounded these vulnerabilities, as tribes' current lands face more extreme heat and less precipitation, with some tribes like the Mojave experiencing "an average 62 more days of extreme heat per year than it did on its historical lands" (NPR, 2021). Climate change directly threatens human health, with substantial impacts on Indigenous peoples, who are uniquely vulnerable as climate-related events affect their practices, lifeways, self-determination, and physical and cultural health (Health Affairs, 2020). Despite these challenges, Native communities are demonstrating remarkable resilience and leadership in climate adaptation, drawing on traditional ecological knowledge and innovative approaches to protect their communities and preserve their cultural heritage for future generations.

ALASKAN & ARTIC REGION

Effects: Thawing permafrost destabilizes well infrastructure and sanitation systems. Coastal erosion and rising sea-level also threatens groundwater and freshwater. Reduction of sea ice increases storm surges that may damage water systems.

Resilience Strategies: Collaborative vulnerability assessments, hazard mitigation planning and tailored adaptation planning such as elevating well heads to withstand permafrost or relocating water infrastructure away from eroding coastlines, using thermosiphons and insulation to stabilize permafrost under facilities.

NORTHWEST & PACIFIC COASTAL REGION

Effects: Erosion, sea-level rise, and saltwater intrusion compromise freshwater wells. Decreased snowpack reduces freshwater availability and shifts in precipitation patterns create seasonal weather shortages.

Resilience Strategies: Collaborative vulnerability assessments, hazard mitigation planning and tailored adaptation planning such as restoring riparian buffers to improve groundwater recharge and installing rainwater harvesting systems.

SOUTHWEST

Effects: Persistent and prolonged drought, and extreme heat accelerates aquifer depletion and evaporative losses. Water scarcity stresses private wells and higher temperatures increases risk of contamination.

Resilience Strategies: Implementing water conservation and recycling systems, adopting solar-powered water pumps for reliability and building community cisterns to store rainwater.

GREAT PLAINS & MIDWEST

Effects: Intense flooding and heavy rainfall events threaten private wells with sedimentation and contamination from agricultural runoff.

Resilience Strategies: Collaborative vulnerability assessments, hazard mitigation planning and tailored adaptation planning. Flood-proofing wellheads and critical equipment, implementing land management to reduce runoff and expanding community water testing.

NORTHEAST & SOUTHEAST COASTAL REGION

Effects: Coastal storm surges and rising sea-level increases groundwater salinity. Hurricanes and extreme weather events damage distribution systems and can cause contamination via flooding.

Resilience Strategies: Constructing elevated platforms for water systems, installing backflow prevention and developing stormwater management systems to protect wells.

SOURCES

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