



NATIONAL CONGRESS OF AMERICAN INDIANS



Research Policy Update

Environmental Sustainability and Climate Change Research Needs

June 2022

The National Congress of American Indians (NCAI) established the Environmental Sustainability Initiative in 2021 to advocate, advance, and support Indian Country's leading policy discussions on issues related to climate change, conservation, food sovereignty, environmental protection, and other related environmental concerns. NCAI identified three approaches to supporting tribal environmental work: 1) Advancing domestic and international policy through educational materials and campaigns; 2) Highlighting tribal governments and their innovative solutions to leading environmental concerns; and 3) Developing data and research resources for Tribal Nations to use in policy recommendations and their own educational purposes.

The NCAI Environmental Sustainability Initiative, in partnership with the NCAI Policy Research Center, commissioned a literature review of the latest research and data on environmental sustainability issues in February 2022. This update provides a broad overview of the findings of this literature review, and more information and resources will be shared in the near future.

Literature Review Strategy

The literature review was conducted by an external consultant and focused on a review of the available recent literature and data sources on climate change monitoring, adaptation, and/or mitigation focused on American Indian and Alaska Native (AI/AN) Tribal Nations. The literature review deliverables consisted of an annotated bibliography, a summary of existing data sources, and a short summary report with recommendations for future data needs.

The literature review process included systematic searches of the academic literature with snowballing methods to review references, and a broad review of gray literature, including adaptation plans and government documents especially in U.S. regions where academic literature was sparse. Upon initial review, the Initiative staff determined that the focus should be on more recent research and data since some documents as recent as 2018 were outdated. Due to the large volume of information available, the review was organized by NCAI region and focused only on initiatives and the needs of Tribal Nations.

Overview of Findings

The overall findings of the literature review confirm what Tribal Nations know: Tribal Nations are more vulnerable than other Americans to the impacts of climate change; current challenges in tribal communities such as food and water insecurities are exacerbated by climate change; and many Tribal Nations have initiated climate adaptation planning and strategies with greater urgency than the U.S. federal, state, and local governments. However, the level of climate preparedness and the capacity to monitor and address climate impacts varies among Tribal Nations. They have demonstrated resilience, ingenuity, and a willingness to use a wide range of means, including partnerships with universities, government agencies, non-profit organizations, and to use legal, research, and organizational strategies to adapt to climate impacts.

The literature review also finds that there is an urgent need to increase adaptive capacity among Tribal Nations, including staffing/capacity, funding, and equipment. Many Tribal Nations have implemented renewable energy strategies, but technical and legal assistance are needed. The literature review found that there is a wide range of data gaps and data needs related to adaptation, monitoring, and mitigation of climate change among Tribal Nations. These data needs are summarized below in four broad regions of the United States.

Alaska

The impacts of climate change in Alaska include rising temperatures, coastal erosion causing relocation, thawing of permafrost, droughts, flooding, and wildfires, which impact water and food security, cultural and spiritual practices and sites, loss of traditional hunting and fishing, changes to biodiversity, damage to critical infrastructure, pollution, and health impacts. Adaptation planning and implementation has occurred on the local level with a lack of coordination on state and government efforts.

Data needs related to climate change adaptation, monitoring, and mitigation efforts include the following:

- A more thorough review of climate adaptation planning and implementation efforts by Tribal Nations, including planning processes, vulnerability assessments, and climate and mitigation plans;
- Research on barriers to climate adaptation planning;
- Research on the impact of climate change on food and water security;
- A review of state and regional efforts that support adaptation for Tribal Nations;
- Research on commercial sector adaptations in which Tribal Nations participate;
- Research on carbon storage, banking, and trading;

- Research to update data on relocation and a reallocation framework for coastal erosion threats; and
- Research on barriers and capacity building needs.

Western (Northwest and California)

The impacts of climate change in the Northwest and California include drought, wildfires, flooding, water pollution and rising water temperatures, algal blooms, coastal erosion, and decreased Salmon, shellfish, and changes in species are occurring. Tribal Nations in this region have the largest number of initiatives and adaptation plans, have built capacity for sophisticated data monitoring and adaptation through state, federal, and university partnerships. Salmon restoration is a priority goal, along with addressing the increasing severity of fires, which are causing significant damage to the environment and issues with poor air quality. Cultural land stewardship, utilization of indigenous knowledge, and other climate change adaptations are in progress to preserve important natural and cultural resources. Participation in community renewable energy generation and carbon banking opportunities are expanding.

Data needs related to climate change adaptation, monitoring, and mitigation efforts include the following:

- More research on food and water security issues and strategies at the community level;
- Review of adaptations and capacity needs;
- Research on high severity fire impacts on the environment;
- Review of tribal collaboration on cultural burns, prescribed fires;
- Research on climate impacts of tribal infrastructure;
- Research on actionable data.

Southwest

The impacts of climate change in the Southwestern United States are similar to those faced by other Tribal Nations, but drought, dry conditions, and dust storms disproportionately impact in this region causing decreased water supply, less groundwater, and negative impacts on plants and animals needed for food, commercial, agricultural, and cultural purposes. Tribal Nations in the region need more reservation-specific weather and drought data, and more studies on adaptation planning and implementation. The lack of sufficient energy and water infrastructure and impacts on the power grid make this region more vulnerable to the effects of climate change. Tribal lands in the Southwest have significant potential for renewable energy generation, including solar and wind, but startup costs are high, and technical and legal expertise are needed.

Data needs related to climate change adaptation, monitoring, and mitigation efforts include the following:

- Research on tribal decision making on changing environmental conditions and severe weather events;
- Data on local and regional weather and drought information;
- Continued efforts to improve tribal access to federal drought-related data;
- Research on climate adaptation preferences and needs of Tribal Nations in the same region;
- Research on tribal food security, water security, and health impacts of climate change
- Research on how insufficient and outdated infrastructure impacts Tribal Nations and their response to climate change; and
- Research on current development and barriers to renewable energy develop on tribal lands.

Northeast, Midwest, Southeast

The impacts of climate change in the Northeast, Midwest, and Southeast include impacts on natural resources, declining fish populations, sea level rise and coastal inundation of water infrastructure, culturally significant sites, and relocation. Tribal Nations in this region have lower numbers of adaptation plans and less capacity for monitoring and implementation compared to other regions. Midwestern Tribal Nations do have some adaptation plans and partnerships, but they note the need for more data and monitoring. Concerns in the Midwest include concerns about mercury accumulation in fish, viability of wild rice, and more frequent floods and droughts. Tribal Nations in the Northeast are pursuing renewable energy development.

Data needs related to climate change adaptation, monitoring, and mitigation efforts include the following:

- Review the status of adaptation planning and implementation progress in this region;
- Research on water and food insecurity;
- Increase capacity for biophysical monitoring, especially mercury concentrations in fish;
- Review the potential for carbon banking;
- Research and data on Tribal Nations facing relocation.

Data Needs and Recommendations

The literature review highlighted the wide range of impacts on Tribal Nations and the current state of research and data needs in each of these areas. Fortunately, many Tribal Nations are taking action by developing adaptation and action plans, but the scope of these efforts is not well-documented. Access to information on tribal climate change data, research, and actions is

not centralized, and existing databases or websites provide an incomplete picture. The research literature included a number of qualitative studies that are more descriptive in nature, and more quantitative research is needed. More research is also needed at the regional and local levels, since the impacts of climate change are often unique to these areas and depend on local and regional collaborations and partnerships. Capacity building in the areas of monitoring, data collection, and actionable data are needed. Monitoring often requires expensive technology and instruments that could be better accessed through partnerships with universities and governmental agencies.

The literature review resulted in some additional recommendations for climate change research and data collection:

- Overall more research and data on the impacts of climate change on Tribal Nations and effective strategies for monitoring, adaptation, and mitigation;
- Research on climate change data monitoring strategies for Tribal Nations at the local and regional levels;
- More sharing of best practices by Tribal Nations on climate change adaptation, mitigation, and implementation efforts, and more expansive documentation of these efforts;
- Research on barriers to climate change response by Tribal Nations, including capacity cost, infrastructure and data needs;
- Research on the benefits and challenges of collaborations with universities and government agencies in climate change efforts;
- Research on benefits and challenges of collaborations with the private sector and on commercial solutions;
- More current and accurate data on Tribal Nations that face relocation due to climate impacts, and development of a relocation resettlement framework;
- Research on the creation fire resilient landscapes and reform of fire management policies;
- More research on food and water security adaptation planning and implementation;
- More research that includes mixed methods (qualitative and quantitative approaches used together to study the issue); and
- More research and data on building capacity in Indian Country to address climate change.

The NCAI Environmental Sustainability Initiative will include these recommendations in their strategic planning and future work in partnership with Tribal Nations to advance, advocate, and support Indian Country efforts in these areas.

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