

Understanding and Assessing Climate Change: Preparing for Nebraska's Future

2024 Climate Change Impact Assessment Report

Chapter 15 - Next Steps and Future Work



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Next Steps and Future Work

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Key messages

1. Climate change is happening now and is accelerating rapidly.
2. Impacts extend far beyond temperature.
3. Nebraska faces rising risks from more frequent and intense extreme weather.
4. Urgent, coordinated action is essential for resilience and sustainability.
5. Next steps require coordinated collaboration with state, tribal, federal, university, and local partners to set priorities and align resources.

Summary of key findings

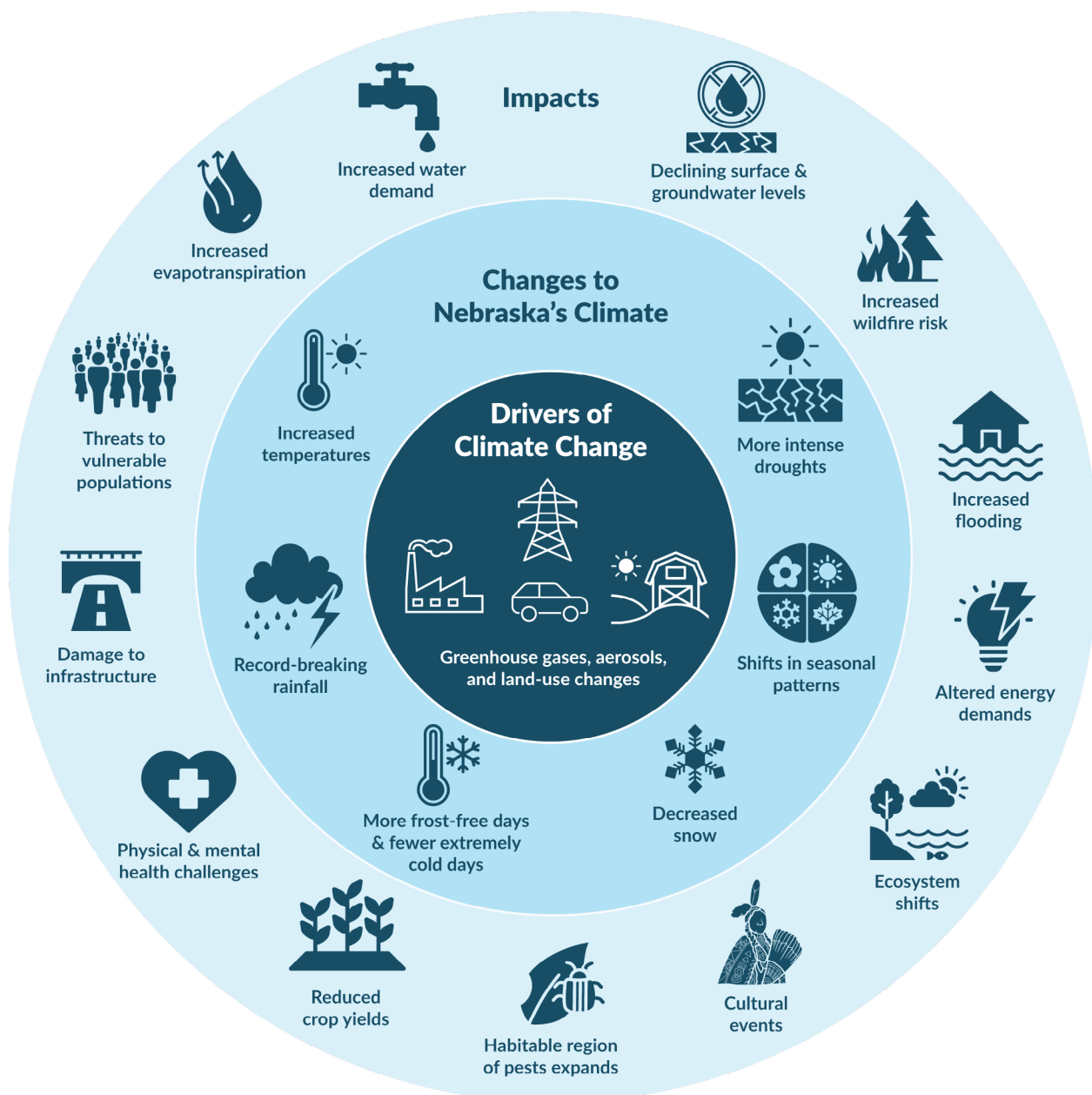
Human-caused warming is disrupting natural and human systems worldwide at an unprecedented pace—approximately ten times faster than the warming that followed the last ice age. The past decade (2015–2024) contains the ten warmest years in the 175-year global record, highlighting the accelerating trend.

Rising greenhouse gases, declining snow and ice, sea level rise, shifting precipitation patterns, and more frequent extreme events are among the more than 50 indicators of climate change. Local and regional experiences are shaped by natural variability, geography, land cover, and the vulnerability and

adaptive capacity of people and ecosystems.

Nebraska's climate has already become warmer and wetter, with greater variability and distinct seasonal shifts. Communities are experiencing record-breaking heat, more extreme wet and dry conditions, and declining snow cover (Figure 15.1). Without major emissions reductions, these risks will intensify throughout the century.

Figure 15.1. Global warming drivers, changes, and impacts. (After: Future Learn, 2018. Contains public sector information licensed under the Open Government Licence v3.0.)



These shifts present urgent challenges for agriculture, water resources, energy, ecosystems, infrastructure, public health, and vulnerable communities. Reducing these risks, strengthening resilience, and ensuring long-term sustainability requires proactive planning, integration of scientific and Indigenous knowledge, community engagement, and solutions that also consider economic concerns.

Next steps and future work

Building on this report, the next steps require collaboration with state, tribal, federal, university, and local partners to identify needs, set priorities, and align resources to complete the activities below, as determined by the report authors and the advisory board.

1. Support clear and concise communication of scientific findings to help translate the report findings into tangible actions by:
 - Housing this report on the Nebraska State Climate Office website (<https://nsco.unl.edu>).
 - Rolling out the report to agencies, organizations, and communities via seminars, presentations, and meetings.
 - Developing an online searchable toolkit for the mitigation, adaptation, and resilience options presented in the supplemental report.
 - Creating infographics to simplify and help explain and summarize report findings.
 - Gathering examples of how climate change is already impacting Nebraskans.
 - Providing links to related resources, tools, and planning documents.
 - Engaging communities to address their needs and questions.
2. Partner with state, tribal, federal, university, and other organizations to secure funding to enhance data collection and infrastructure via:
 - Modernizing and expanding data collection via the Nebraska Mesonet (<https://nemesonet.unl.edu>).
 - Developing a statewide climate data portal to facilitate decision-making and the development of climate-related tools.
3. Promote planning for a climate-resilient Nebraska through:
 - Raising awareness about climate change.
 - Promoting the understanding of the scientific basis for climate change and the urgent need for action.
 - Emphasizing local impacts and the specific challenges faced by communities.
 - Highlighting the opportunities for mitigation, adaptation, and resilience identified in the supplemental report.
 - Sharing success stories of successful climate action initiatives.
4. Support evidence-based policy development and decision-making by:
 - Disseminating research findings via the Nebraska State Climate Office website (<https://nsco.unl.edu>).
 - Summarizing report findings with statewide and regionally relevant information.
 - Making data more accessible and visible through dashboards, infographics, and other visualizations.
 - Providing necessary resources, including data, tools, and training.

5. Integrate climate education and engagement across subjects, grade levels, and non-traditional settings by:

- Working with K–12 schools and after-school programs on curriculum and activities.
- Collaborating with artists and writers to share findings in creative ways.
- Coordinating with the Osher Lifelong Learning Institute and other senior-focused groups.
- Partnering and supporting climate-related programming with tribal colleges.
- Engaging religious institutions and nonprofits to help share the report's findings.

6. Improve future climate change assessments and adaptation efforts by addressing the uncertainties and knowledge gaps identified by the chapter authors. These include:

- Producing higher-resolution regional climate simulations to enhance Nebraskans' decision-making capabilities related to preparing for and adapting to changes in climate.
- Researching surface-groundwater interactions, modeling how large-scale climate patterns influence Nebraska's groundwater, and conducting analyses and case studies on how conservation measures impact both groundwater and surface water.
- Assessing residents' willingness to use clean energy sources, evaluating opinions on decentralizing power sources, expanding

studies on energy efficiency and storage technologies, and advancing strategies to lower greenhouse gas emissions from agriculture.

- Strengthening systems to monitor climate-related health impacts, studying how extreme heat, air pollution, and drought affect physical and mental health, the health effects of events like heat waves, floods, droughts, wildfires, and storms, and assessing the ability of local healthcare systems to respond to climate events and adapt infrastructure accordingly.
- Promoting the fusion of Indigenous Knowledge with science and advancing Indigenous climate adaptation strategies.
- Identifying climate risks faced by at-risk communities, measuring climate justice outcomes related to energy infrastructure, and evaluating how climate and environmental justice principles are applied in state policies and programs.

7. Establish a standardized process to ensure regular and consistent updates to future Nebraska climate change assessments. This includes:

- Designating an agency or working group to oversee and coordinate the update process.
- Defining a clear reporting cycle (e.g., every 5-6 years or following every national climate assessment).
- Allocating sufficient funding to support data collection and analysis.