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Unpacking the Fifth National Climate Assessment

Thursday, January 18, 2024

About EESI



Non-partisan Educational Resources for Policymakers

A bipartisan Congressional caucus founded EESI in 1984 to provide non-partisan information on environmental, energy, and climate policies



Direct Assistance for Equitable and Inclusive Financing Program

In addition to a full portfolio of federal policy work, EESI provides direct assistance to utilities to develop “on-bill financing” programs



Commitment to Diversity, Equity, Inclusion, and Justice

We recognize that systemic barriers impede fair environmental, energy, and climate policies and limit the full participation of Black, Indigenous, people of color, and legacy and frontline communities in decision-making



Sustainable Solutions

Our mission is to advance science-based solutions for climate change, energy, and environmental challenges in order to achieve our vision of a sustainable, resilient, and equitable world.

Polymaker Education

Briefings and Webcasts



Live, in-person and online public briefings, archived webcasts, and written summaries

Climate Change Solutions



Bi-weekly newsletter with everything policymakers and concerned citizens need to know, including a legislation and hearings tracker

Fact Sheets and Issue Briefs



Timely, objective coverage of environmental, clean energy, and climate change topics

Social Media (@EESIOnline)



Active engagement on Twitter, Facebook, LinkedIn, and YouTube





FIFTH NATIONAL CLIMATE ASSESSMENT

Allison Crimmins, Director, National Climate Assessment

Environmental and Energy Study Institute briefing for Congressional Staff | January 18, 2024



National Climate Assessment Basics

- Evaluates a wide range of scientific and technical inputs from diverse and authoritative sources. Applies best expert judgment to characterize certainty.
- **Relevant for policy and decision-making but does not prescribe specific policy interventions or advocate for a particular viewpoint.**
- **Assesses a range of potential impacts, helping decision-makers better identify risks that could be avoided or reduced**
- Fully compliant with the Global Change Research Act (GCRA) and other applicable laws and policies
- Provides multiple opportunities for public engagement
- Employs an extensive review process

NCA5 Table of Contents

- Overview
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* New chapters or features highlighted in blue

Key Takeaways from NCA5

1. The United States is taking action on climate change
2. People in the United States are experiencing increased risks from extreme events
3. Climate change exacerbates social inequities
4. Available mitigation strategies can deliver substantial emissions reductions, but additional options are needed to reach net zero
5. Climate action is an opportunity to create a more resilient and just nation

KEY TAKEAWAY

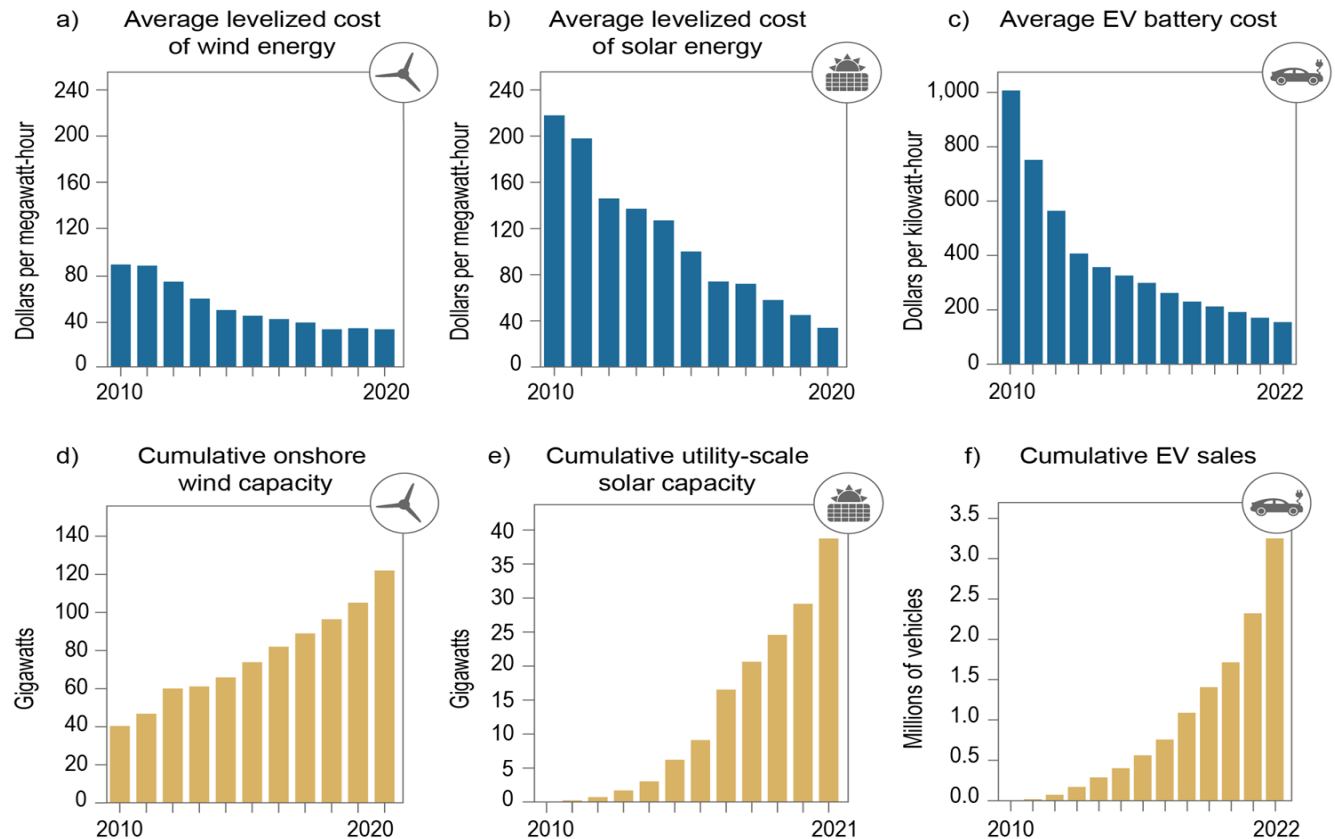
1

The United States is Taking Action on Climate Change

Recent growth in renewable capacities is supported by rapidly falling costs of zero- and low-carbon energy technologies, which can support even deeper emissions reductions

Recent legislation is expected to increase deployment of low- and zero-carbon technology

Historical Trends in the Unit Costs and Deployment of Low-Carbon Energy Technologies in the United States



KEY TAKEAWAY

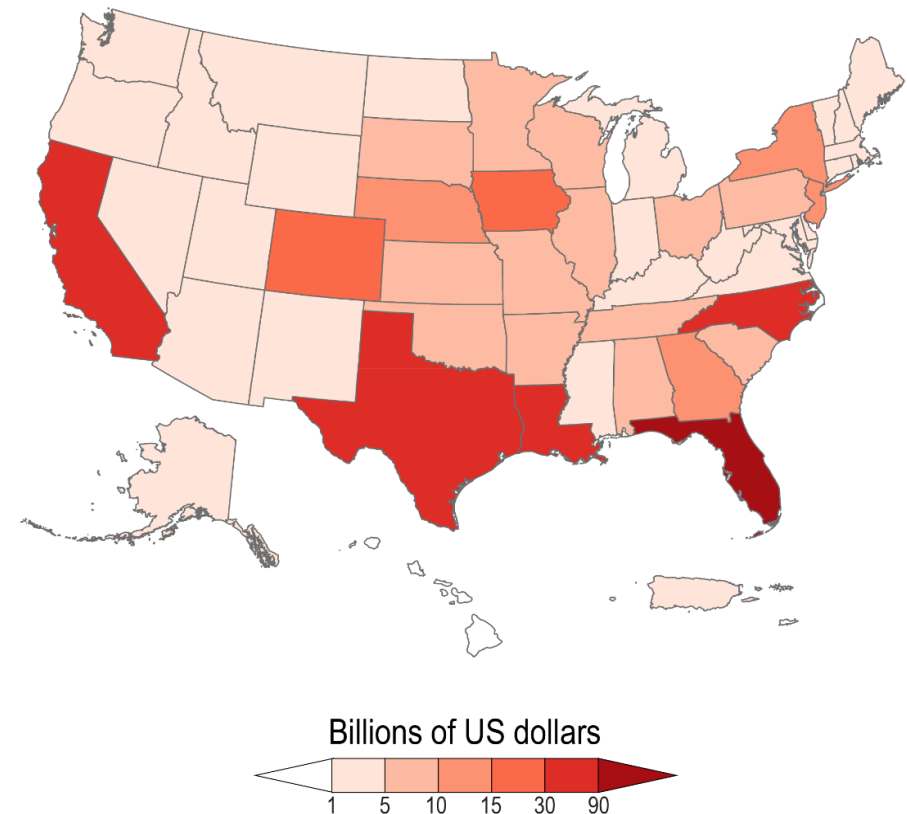
2

People in the U.S. Are Experiencing Increased Risks from Extreme Events

In the 1980s, the United States experienced one (inflation-adjusted) billion-dollar disaster every four months, on average; now, there is one every three weeks

Each additional increment of global warming is expected to lead to more damage and greater economic losses; at the same time, each avoided increment of warming will reduce risks and harmful impacts

Damages by State from Billion-Dollar Disasters in the United States (2018–2022)



KEY TAKEAWAY

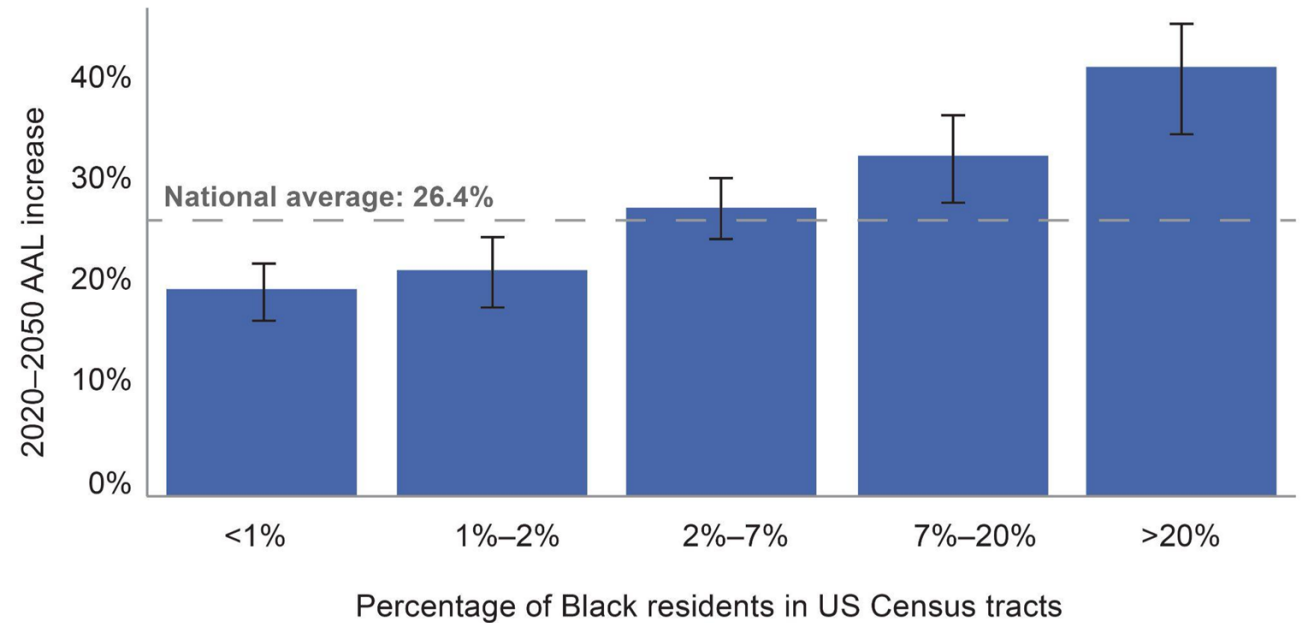
3

Climate Change Exacerbates Social Inequities

Neighborhoods that are home to racial minorities and low-income residents have the highest inland (riverine) flood exposures in the South

Black communities nationwide are expected to experience a disproportionate share of future flood damages

Projected Increases in Average Annual Losses (AALs) from Floods by 2050



KEY
TAKEAWAY




4

Additional Mitigation and Adaptation Strategies are Needed to Power Our Transition

Limiting global warming to 1.5°C (2.7°F) above preindustrial levels requires a path to net-zero GHG emissions in the US by 2050

In many cases, transformative adaptation will be necessary to adequately address the risks of current and future climate change

Table 1.3. Incremental Versus Transformative Adaptation Approaches

	Examples of incremental adaptation	Examples of transformative adaptation
	Using air-conditioning during heatwaves	Redesigning cities and buildings to address heat
	Reducing water consumption during droughts	Shifting water-intensive industry to match projected rainfall patterns
	Elevating homes above flood waters	Directing new housing development to less flood-prone areas

KEY TAKEAWAY

5

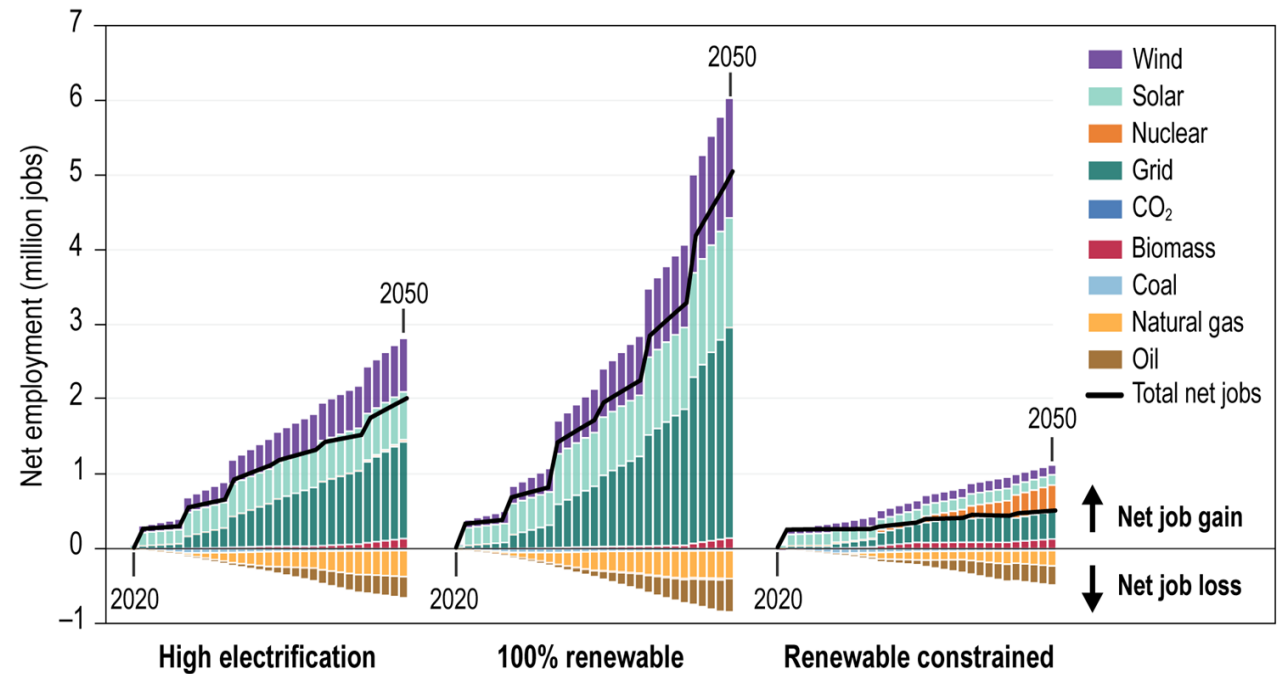
Climate Action is an Opportunity to Create a More Resilient and Just Nation

Actions taken now to accelerate net emissions reductions and adapt to ongoing changes can reduce risks to current and future generations

A “just transition” ensures equitable access to:

- jobs;
- affordable, low-carbon energy;
- environmental benefits such as reduced air pollution; and
- quality of life for all

Energy Employment (2020–2050) for Alternative Net-Zero Pathways



Creative Communication

Improved accessibility and functionality
(e.g., alternate text for all figures, Spanish translation)

Inclusion of artworks from NCA's first-ever call for visual art and the poem "Startlement," written for the Assessment by the 24th US Poet Laureate Ada Limón

Six podcast episodes featuring interviews with authors

Recorded "audiobook" of the Overview chapter

TAMMY WEST
KEEP IT TOGETHER
(2021, site-specific installation)



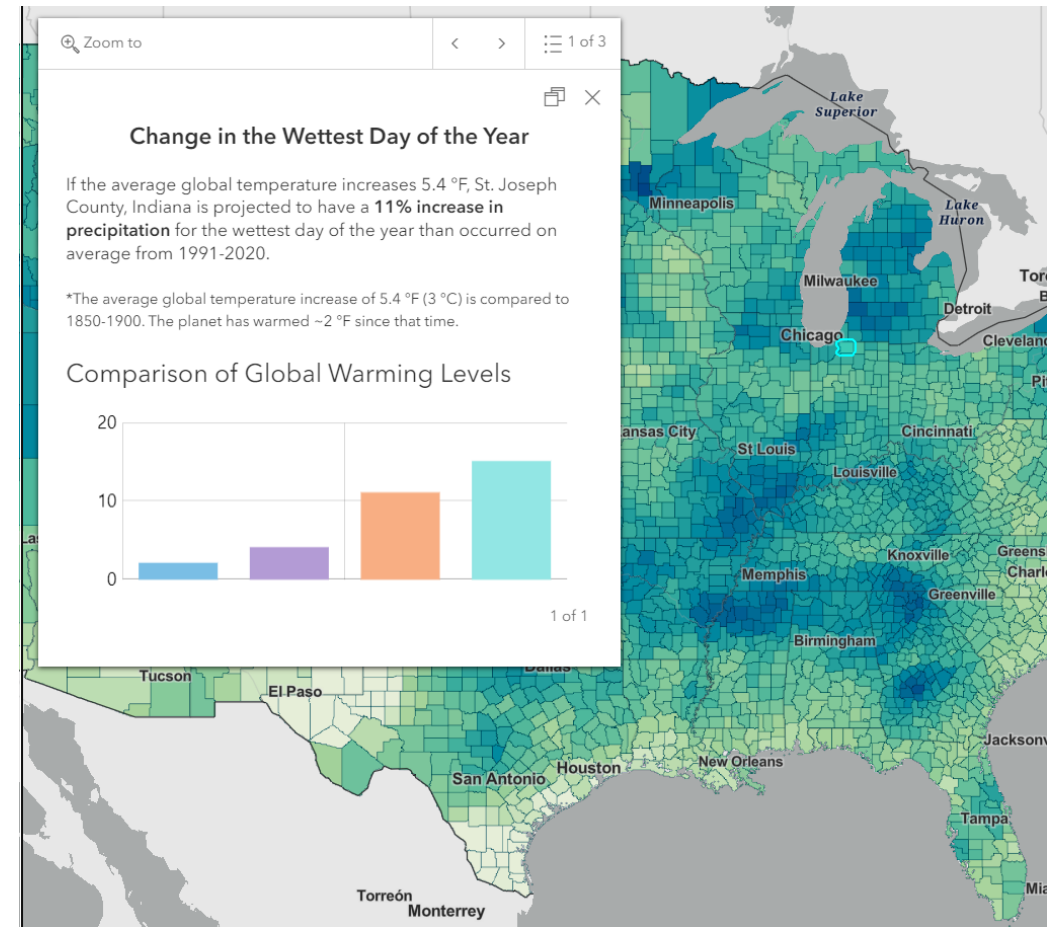
NCA Atlas (atlas.globalchange.gov)

A digital data viewer developed as an extension of the NCA5 text and figures

Atlas variables were produced with the same methodology as downscaled data in NCA5

Interactive features allow users to generate and download their own regional and local maps

Users can select from a range of global warming levels and impact-relevant climate variables (e.g., “days over 95°F”)



NCA5 Resources

NCA5 website: nca2023.globalchange.gov

- Downloadable and shareable figures
- Downloadable slides for each chapter
- 2-3 page chapter summaries
- Art x Climate gallery
- Ada Limón's poem, "Startlement"
- NCA5 Glossary

USGCRP website: globalchange.gov

- Six podcast episodes
- Audiobook recording of NCA5 Overview
- List of webinar series dates, times, and links

NCA5 Atlas: atlas.globalchange.gov

Interactive online tool that allows users to explore different scenarios and climate variables to highlight local climate projections

WEBINARS

FIFTH NATIONAL
CLIMATE ASSESSMENT

NOVEMBER 2023

MARCH 2024



[GLOBALCHANGE.GOV/NCA5](https://globalchange.gov/nca5)



U.S. Global Change Research Program

Thank you

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FIFTH NATIONAL CLIMATE ASSESSMENT

Chapter 32 | Mitigation



KEY
MESSAGE

1

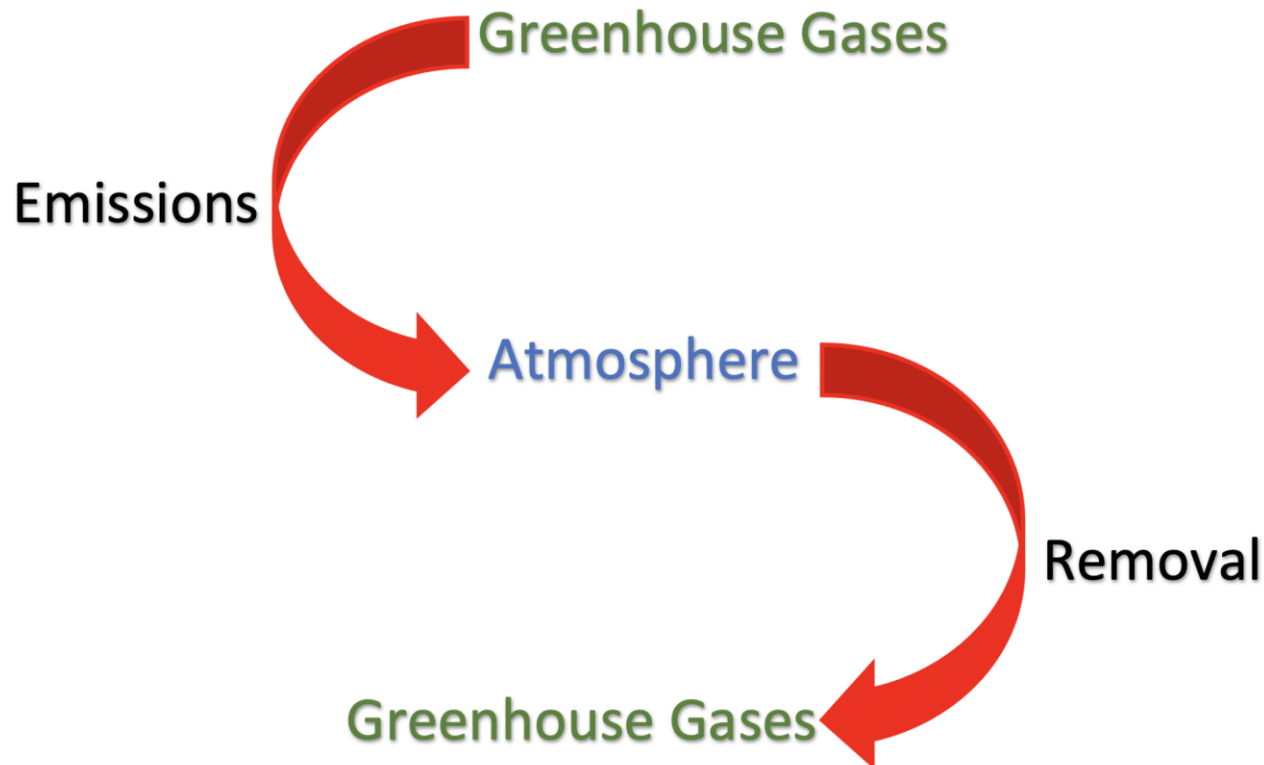
Successful Mitigation Means Reaching Net-Zero Emissions

Greenhouse gas emissions in the United States decreased by 12% between 2005 and 2019, mostly due to replacing coal-fired electricity generation with natural gas-fired and renewable generation (*very high confidence*).

However, US net greenhouse gas emissions remain substantial and would have to decline by more than 6% per year on average, reaching net zero around midcentury, to meet current national climate targets and international temperature goals (*very high confidence*).

What is Net Zero?

Net Zero emissions describe the condition when the greenhouse gases going into the atmosphere is balanced by the greenhouse gases removed from the atmosphere. (netzeroclimate.org)



US Greenhouse Gas Emissions by Sector with 2030 and 2050 Goals Added

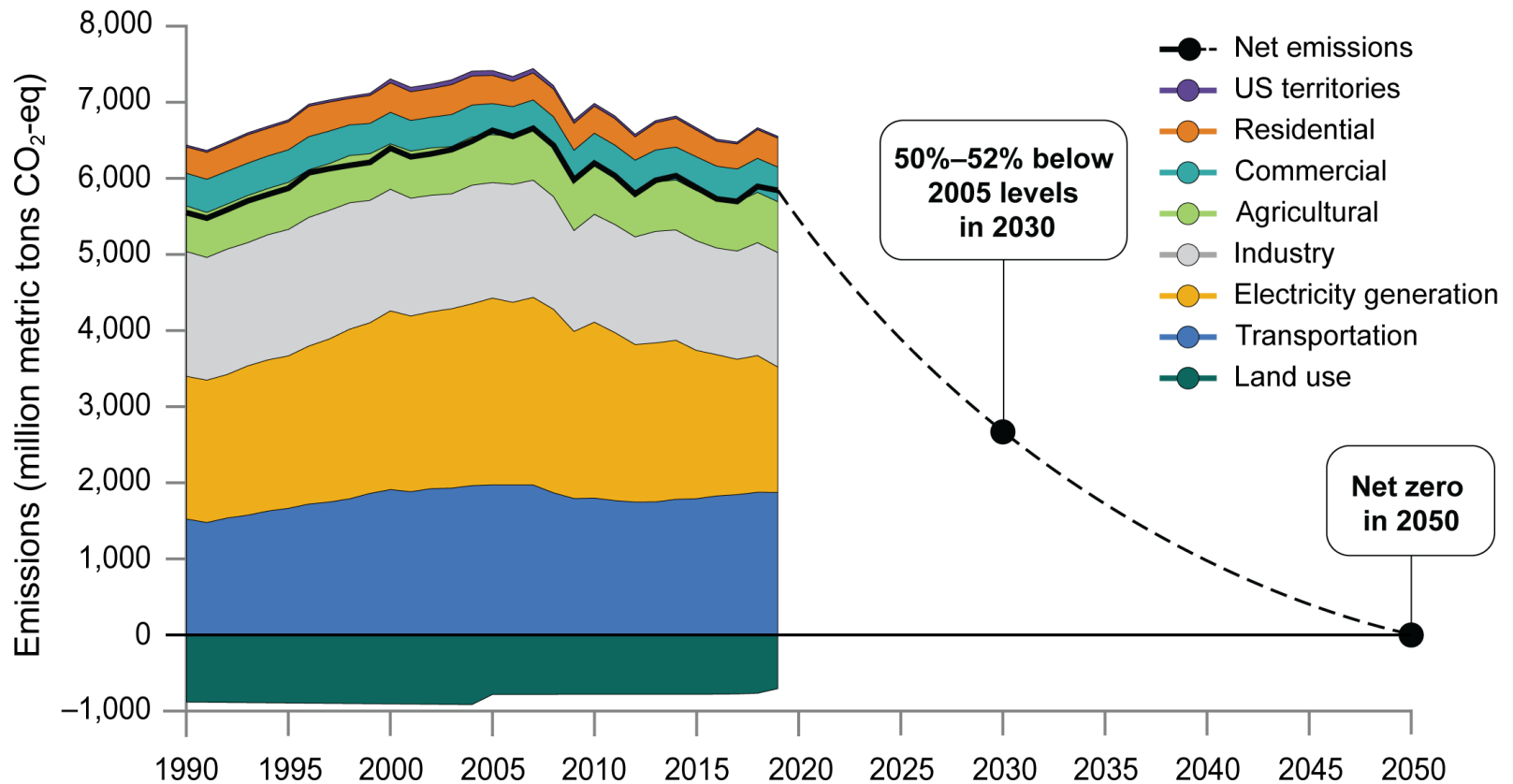


Figure 32.1. US emissions will need to decrease rapidly to reach levels consistent with international climate targets.

We Know How to Drastically Reduce Emissions

A US energy system with net-zero emissions would rely on widespread improvements in energy efficiency, substantial electricity generation from solar and wind energy, and widespread electrification of transportation and heating (*high confidence*).

Low-carbon fuels would still be needed for some transport and industry applications that are difficult to electrify (*high confidence*).

Land-related emissions in the US could be reduced by increasing the efficiency of food systems and improving agricultural practices and by protecting and restoring natural lands (*high confidence*).

Across all sectors, many of these options are economically feasible now (*high confidence*).

Established Opportunities to Reduce Energy-Related Emissions

- Improve Energy Efficiency
- Decarbonize the Electricity Sector, including wind and solar generation
- Electrify Energy End Uses

Established Opportunities to Reduce Land-Related Emissions

- Use Most Productive Land for Agriculture
- Reduce Food Waste
- Shift Diets
- Avoid Conversion and Monitor Carbon Fluxes on Unmanaged Land

KEY
MESSAGE

3

To Reach Net-Zero Emissions, Additional Mitigation Options Need to Be Explored

Although many mitigation options are currently available and cost-effective, the level and types of energy technologies and carbon management in net-zero-emissions energy systems depend on still-uncertain technological progress, public acceptance, consumer choice, and future developments in institutions, markets, and policies (*high confidence*).

Attractive targets for further research, development and demonstration include carbon capture, utilization and storage; long-duration energy storage, low-carbon fuels and feedstocks; demand management; next generation electricity transmission; carbon dioxide removal; modern foods; and interventions to reduce industry and agricultural emissions.

KEY
MESSAGE

4

Mitigation Can Be Sustainable, Healthy, and Fair

Large reductions in US greenhouse gas emissions could have substantial benefits for human health and well-being (*high confidence*).

Mitigation is expected to affect pollution, the use of land and water resources, the labor force, and the affordability, reliability, and security of energy and food (*high confidence*).

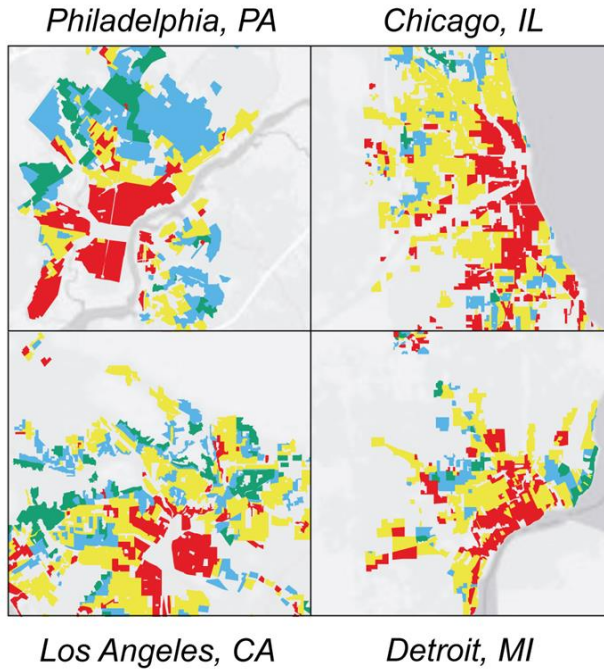
An equitable and sustainable transition to net-zero-emissions energy and food systems in the United States could help redress legacies of inequity, racism, and injustice while maximizing overall benefits to our economy and environment (*high confidence*).

Rarely Represented But Important Issues in Mitigation Scenarios

- Air Pollution
- Siting and Land Use
- Water Use
- Labor
- Supply Chains, Energy Security, and Geopolitics
- Energy Equity and Environmental Justice

Inequitable Air Quality Within Historically Redlined Neighborhoods

a) Redlining maps drawn in the 1930s



b) Air pollution in 2010 by redlining grade

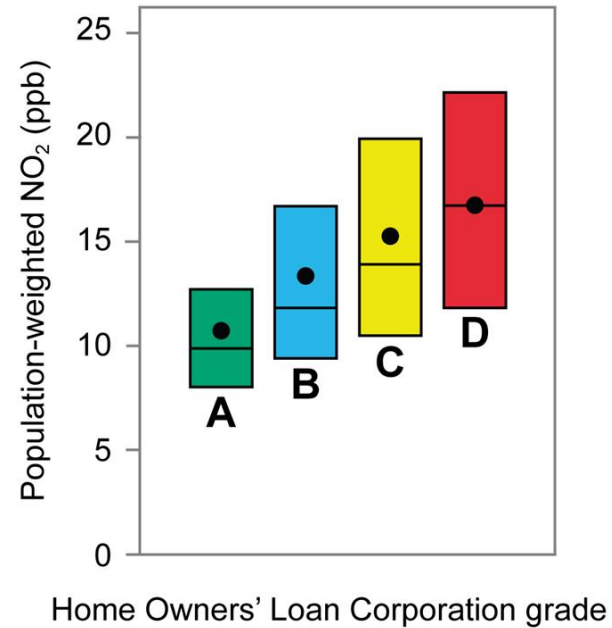


Figure 32.18. Communities redlined in the 1930s experience more air pollution today.

Health Co-benefits of Strategic Power Plant Retirements

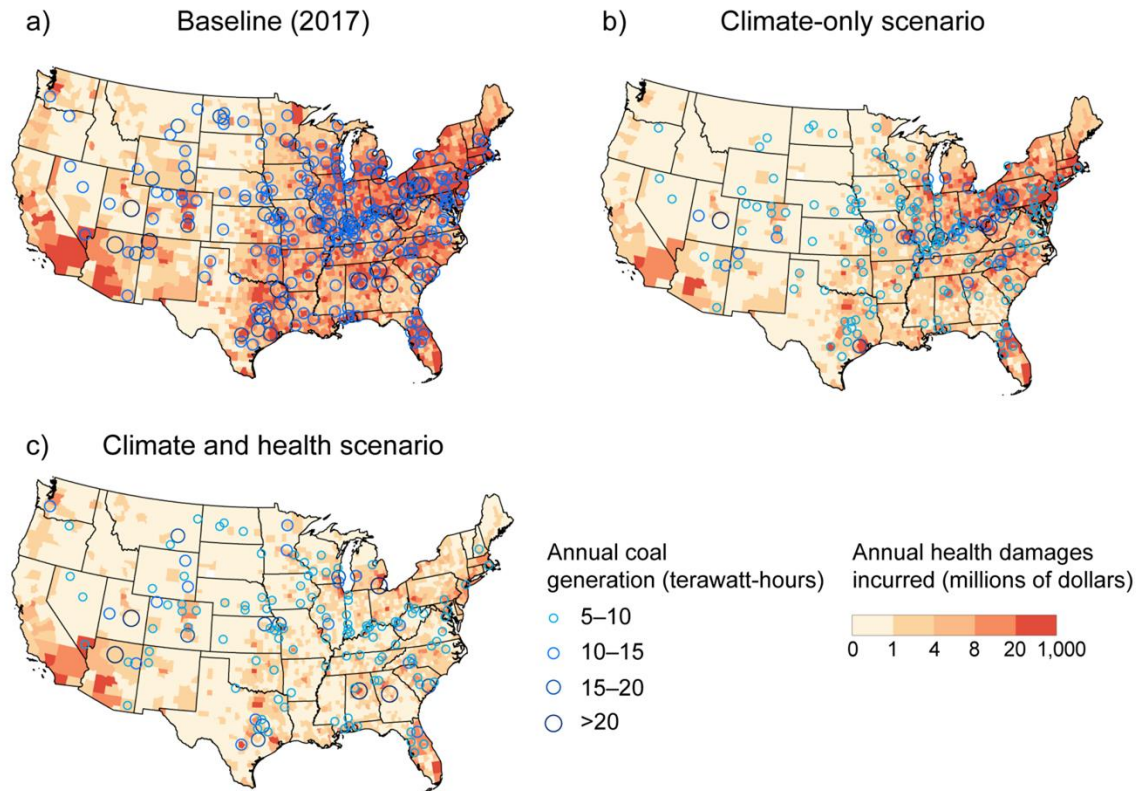


Figure 32.15. Shutting down coal-fired power plants would produce both health and climate benefits.

KEY
MESSAGE

5

Governments, Organizations, and Individuals Can Act to Reduce Emissions

Mitigation efforts can be supported by a range of actors and actions, from choices made by individuals to decisions made by businesses and local, Tribal, state, and national governments (*high confidence*).

Actions with significant near-term potential include sector-based policies accelerating deployment of low-carbon technologies, city-level efforts to promote public transportation and improve building efficiency, and individual behavioral changes to reduce energy demand and meat consumption (*high confidence*).

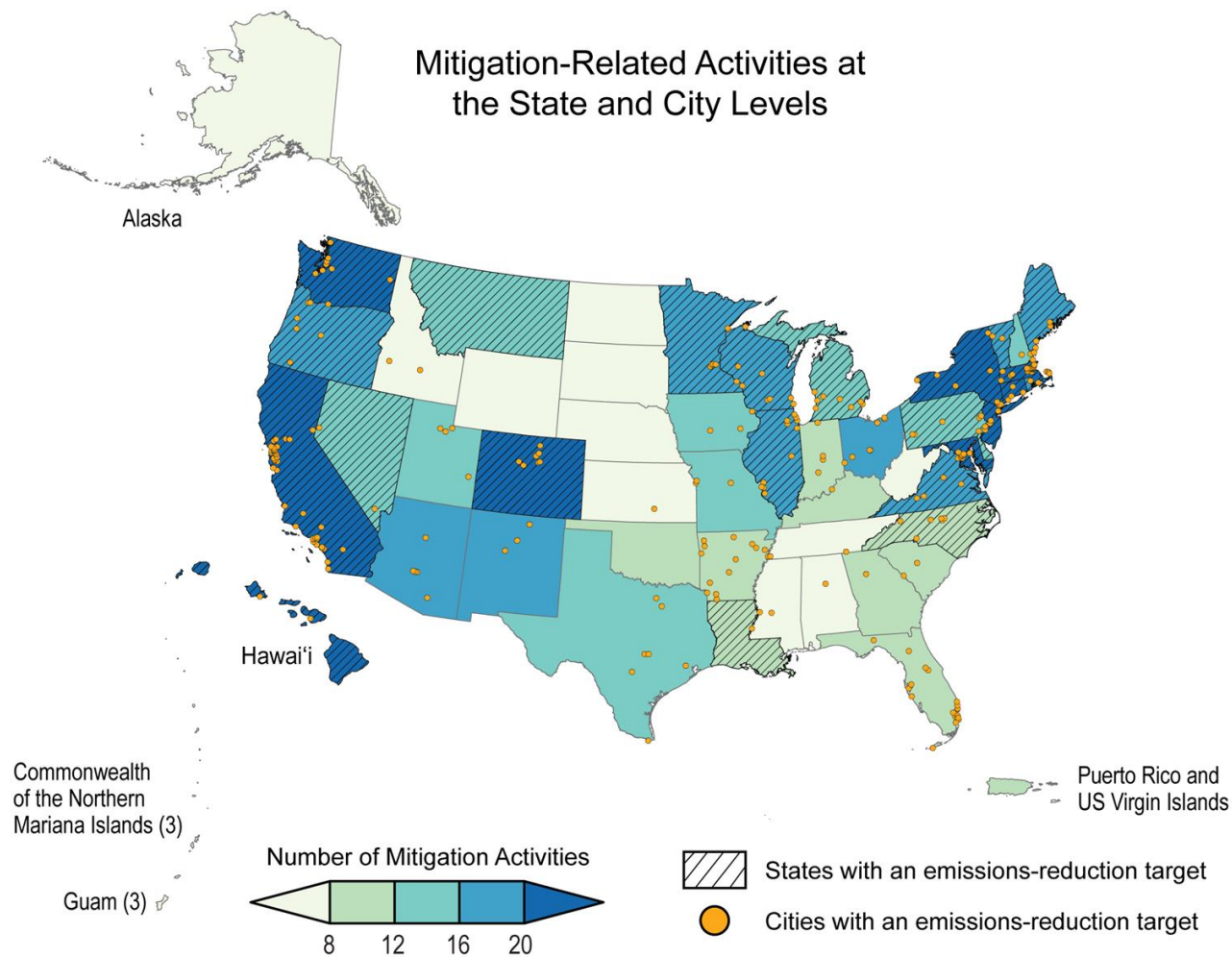


Figure 32.20. Many states and cities have taken action to reduce greenhouse gas emissions.

Let's Summarize!

US GHG emissions have declined in recent decades, but must decrease at a faster pace to meet mitigation targets and goals.

Reaching net-zero emissions will involve improvements in energy efficiency, greater reliance on solar and wind energy, widespread electrification, and reliance on emerging technologies.

Large reductions in emissions could improve human health and redress legacies of inequity. in energy efficiency, greater reliance on solar and wind energy, widespread electrification, and reliance on emerging technologies. Large reductions in emissions could improve human health and redress legacies of inequity.

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U.S. Global Change
Research Program

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Read the full chapter

<https://nca2023.globalchange.gov/chapter/32>

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NCA5 Adaptation Chapter

**EESI Congressional Briefing
January 18, 2024**

**Presented by Caitlin Simpson
NOAA Climate Adaptation Partnerships
Chapter Agency Lead**

Adaptation

Definition: *The process of adjusting to an actual or expected environmental change and its effects in a way that seeks to moderate harm or exploit beneficial opportunities.*

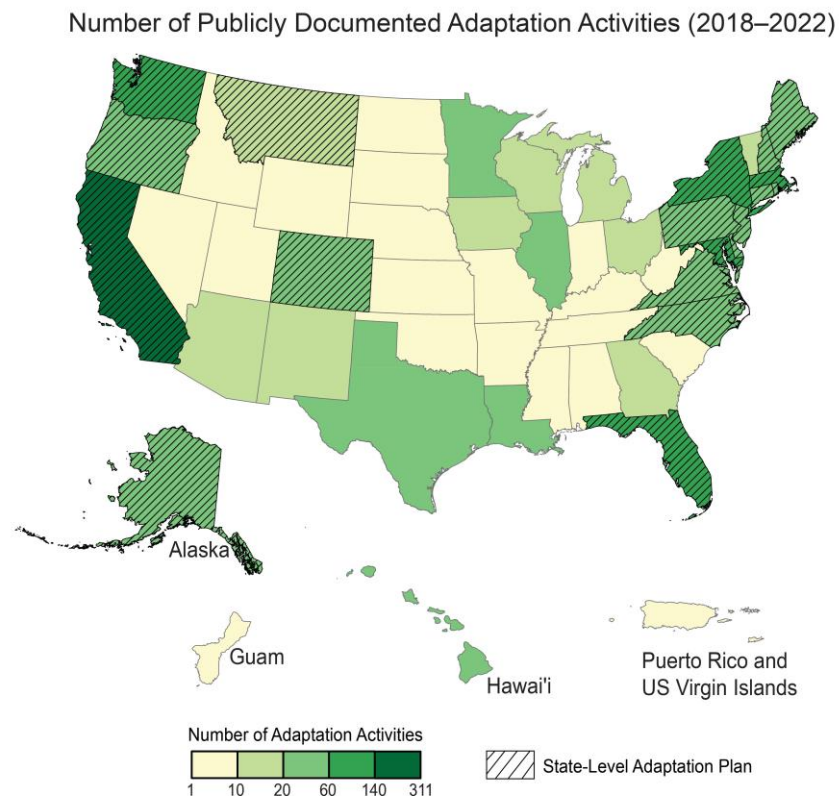
Adaptation activities are occurring across the US but have been small in scale, incremental in approach, and lacking in sufficient investment. Transformative approaches will be necessary to adequately address current and future risks. To improve capacity and promote an equitable future, adaptation activities must address the uneven distribution of climate harms and incorporate collaboration with local communities.

KEY
MESSAGE

1

Adaptation Is Occurring but Is Insufficient in Relation to the Pace of Climate Change

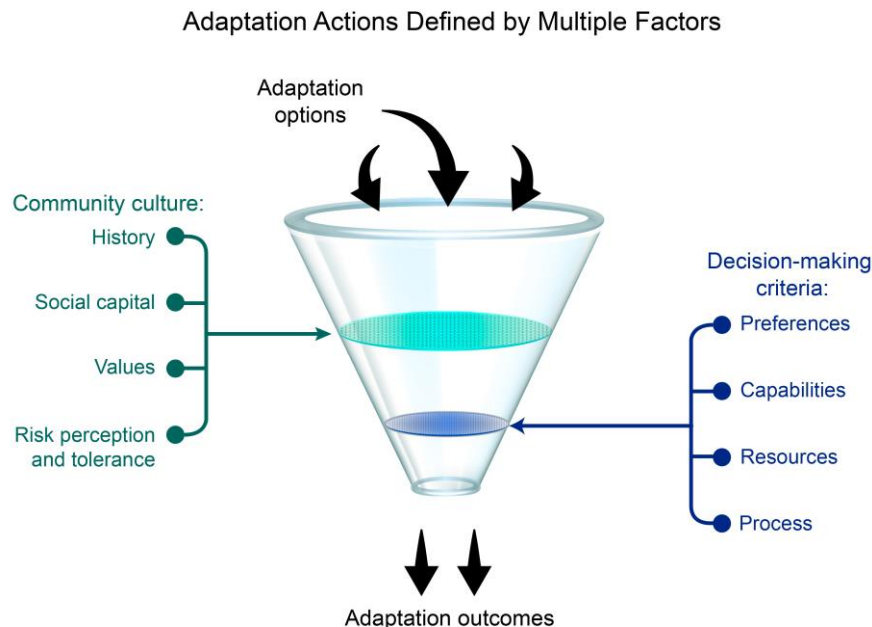
- Since 2018, city- and state-level adaptation plans and actions increased by 32%.
- There is also evidence of barriers to adaptation
 - Differences between government, private industry, and civil society as well as regionally and culturally



Effective Adaptation Requires Centering Equity

Effective adaptations are just and equitable.

- For example, housing discrimination played a large role in putting people in hazardous areas.
- To adapt equitably, we have to ask questions like - Who can afford flood insurance or elevate their homes above floodwaters? Who can pay more for air conditioning during a heat wave, and who is working outside?



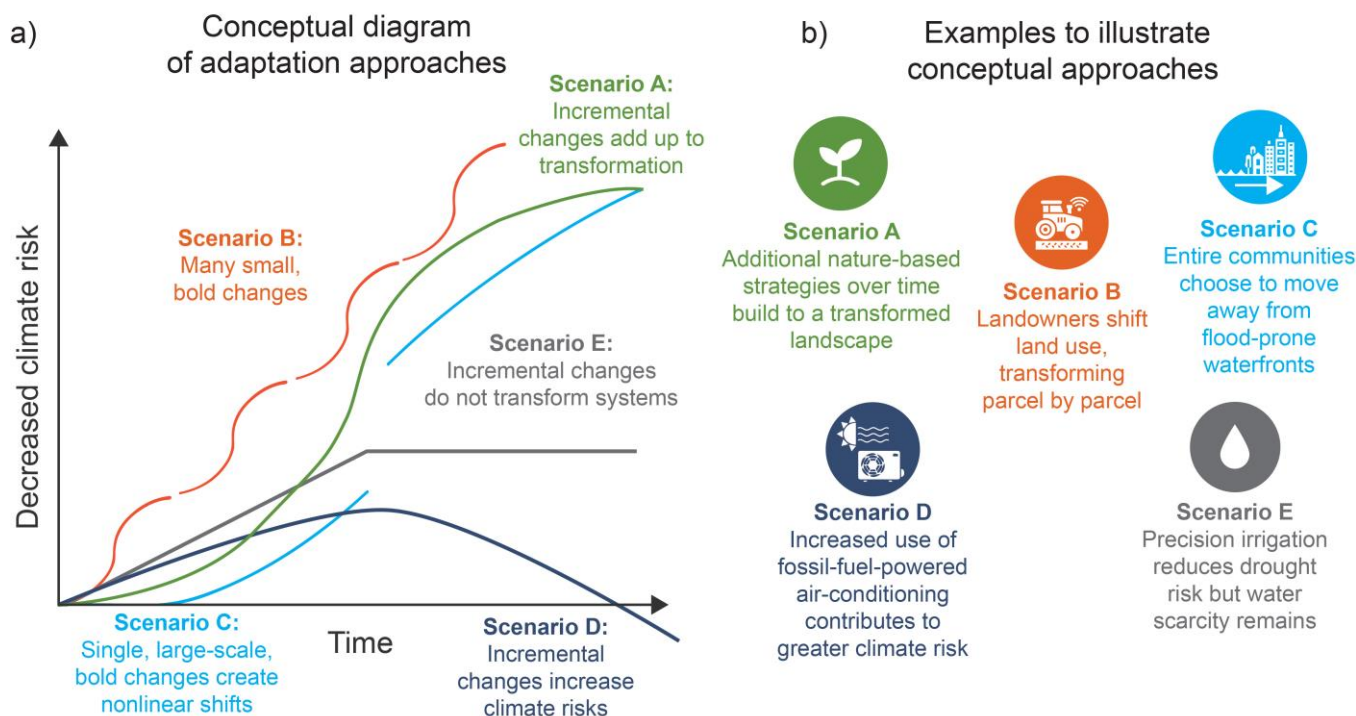
KEY
MESSAGE

3

Transformative Adaptation Will Be Needed to Adequately Address Climate-Related Risks

Transformative adaptations change the fundamental attributes of a social–ecological system.

Incremental and Transformative Adaptation Approaches



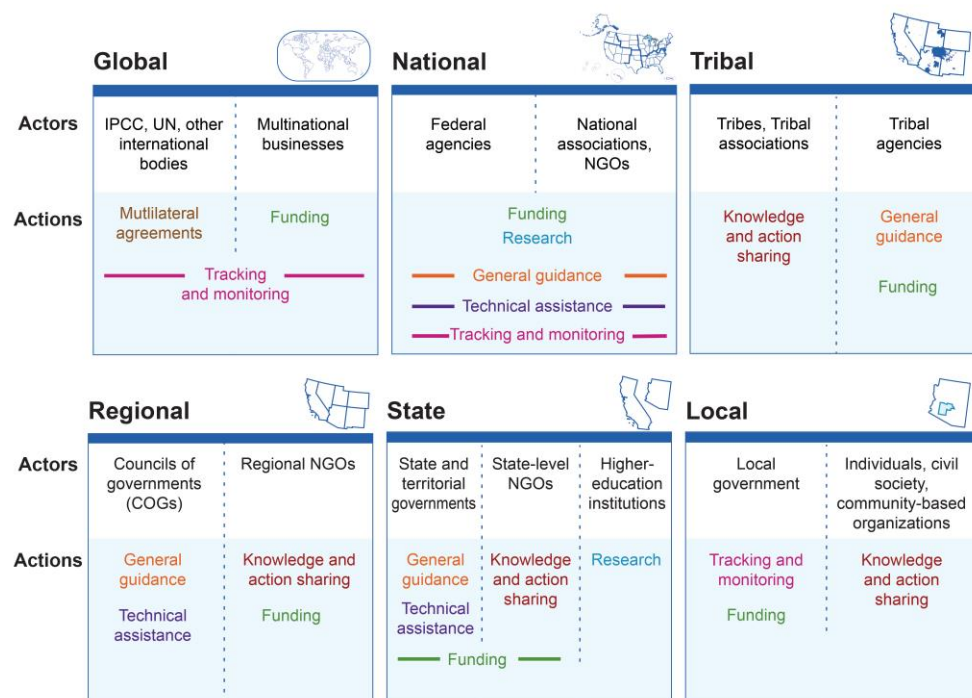
KEY
MESSAGE

4

Effective Adaptation Governance Empowers Multiple Voices to Navigate Competing Goals

- Governance is structures and processes used by governments and other decision-makers to develop and implement policies, programs, and institutions
- Adaptation governance has tended to occur in a bottom-up fashion with minimal coordination

Organizations and Actors in Adaptation Governance



Adaptation Requires More than Scientific Information and Understanding

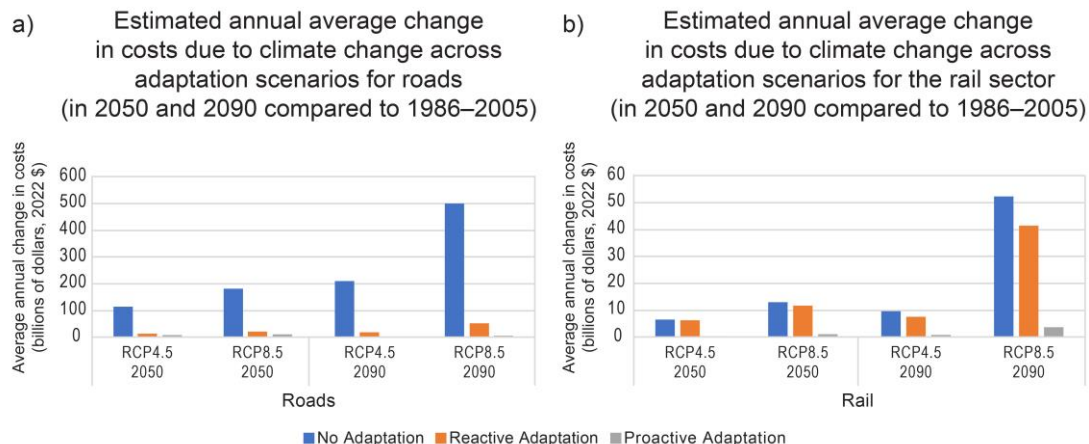
- Climate services (information and products that assist in decision-making and actions) are needed for effective adaptation
- These need to be coupled with intentional collaboration with communities.
- Climate services can be improved by ensuring broad access for historically disinvested communities.

Level of Community Engagement in Climate Services	Approaches to Adaptation	
	Incremental	Transformative
Low	Are services enabling maladaptation?	Are services supporting equity?
	Consider services that assess vulnerability and adaptive capacity to account for injustices.	Consider services that remove barriers to participation in climate adaptation, including knowledge generation.
High	Are services operationalized?	Are services sustained and mainstreamed?
	Consider services that provide decision tools to reduce engagement fatigue.	Consider institutional arrangements that maintain trust, credibility, and saliency and embed services into decision processes.

Adaptation Investments and Financing Are Difficult to Track and May Be Inadequate

- More and different funding is needed for adaptation.
 - We are confident that investing in adaptation now will reduce the cost later.
 - We need better financial and evaluation data to determine what adaptation is occurring, how well it is distributed, and the effectiveness of the adaptation solutions.

Estimated Annual Change in Costs Due to Climate Change



NOAA's Special Role in NCA5

Administrative lead agency

- Legal/strategic advice, FRNs
- Continuity

Technical Support Unit

- Editorial, production, scientific oversight
- Massive scientific input (observations, modeling, understanding)

NCA5 Table of Contents

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| | • Social Systems and Justice | | |

Chapters with NOAA leadership in **bold dark blue**

Chapters with NOAA involvement in **bold light blue**

Thank you

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FIFTH NATIONAL CLIMATE ASSESSMENT

Chapter 22 | Southeast

Louie Rivers III, Environmental Protection Agency, Office of Research and Development, Immediate Office of the Assistant Administrator

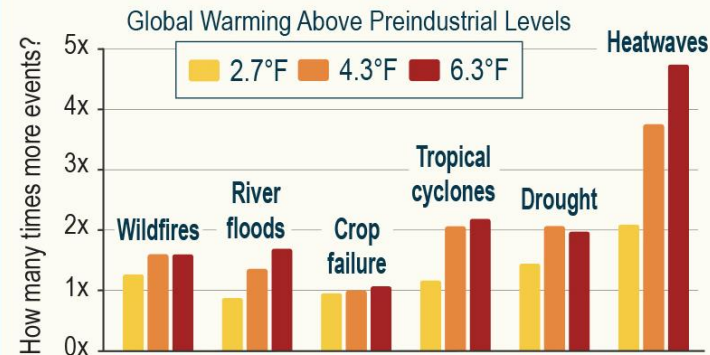




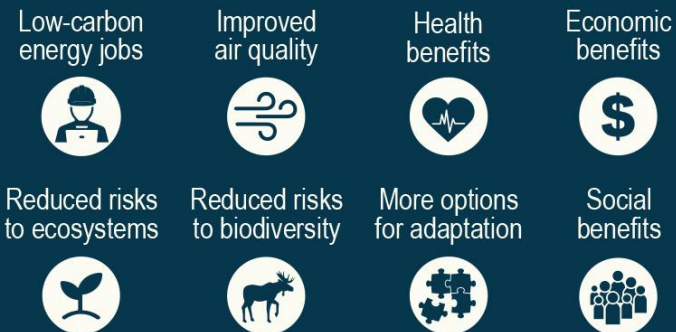
Introduction: History shapes present & future risks in SE

Without deeper cuts in global net emissions, climate risks to the US will continue to grow

- ▶ A person born in North America in 2020 will experience more climate hazards during their lifetime, on average, than a person born in 1965.



Action to limit future warming and reduce risks can have near-term benefits and opportunities



KEY
MESSAGE

1

Regional Growth Increases Climate Risks

Population Change in the Southeast

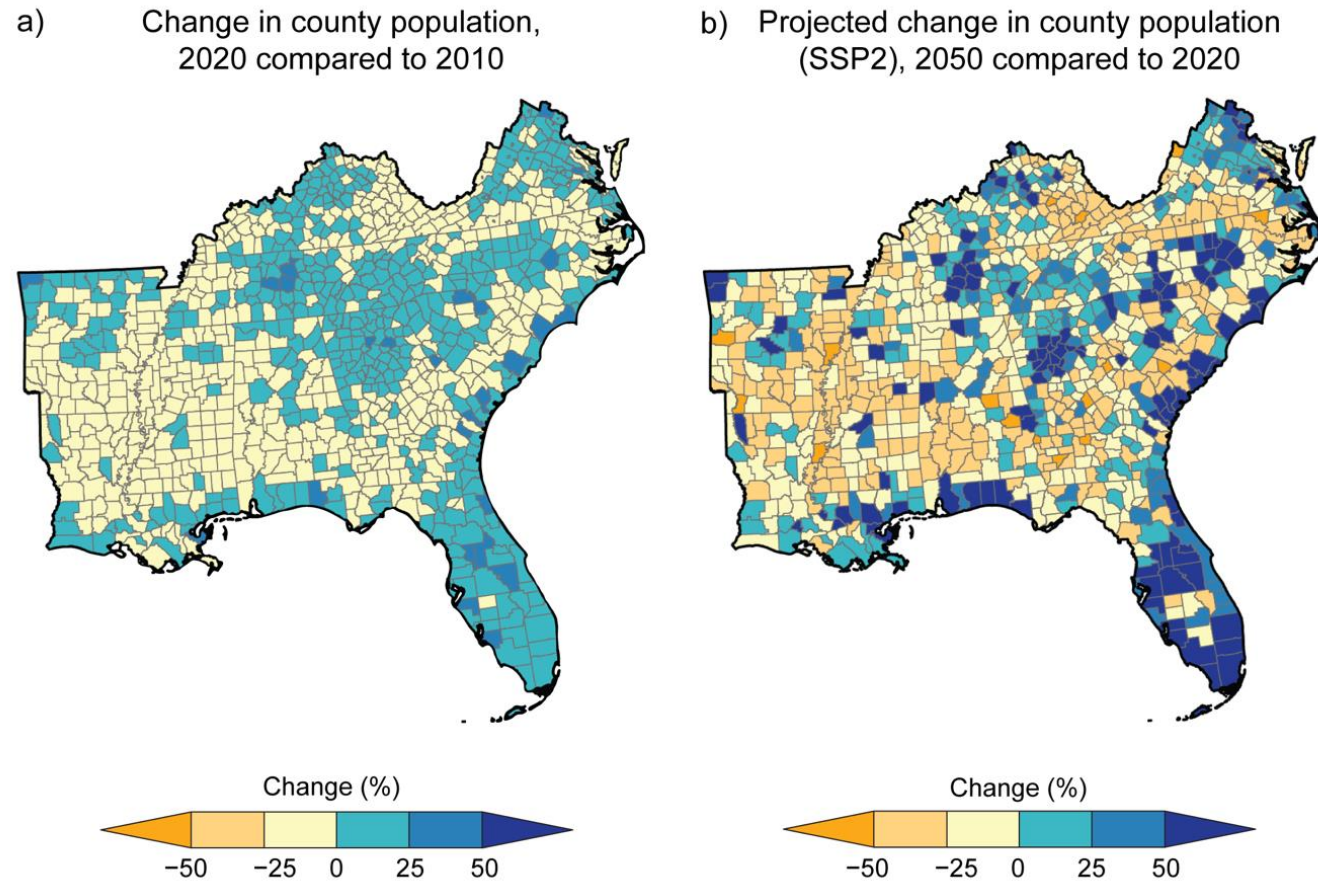


Figure 22.1. Population change in the Southeast exposes more people to climate threats along the coast and in cities while leaving rural areas with limited capacity.

Climate Change Worsens Human Health and Widens Health Inequities

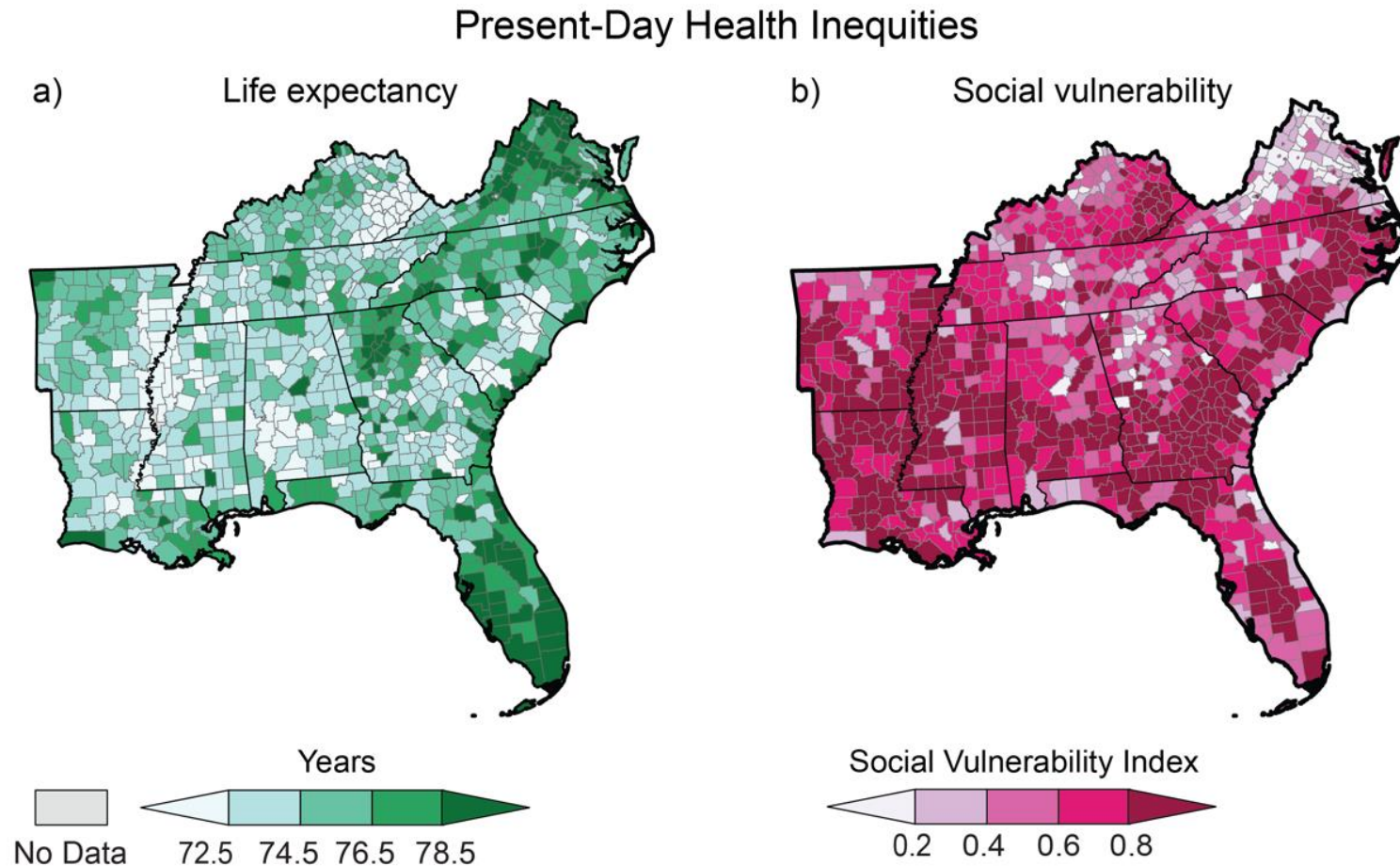


Figure 22.8. Present-day health inequities in the Southeast exacerbate climate-related risks.

KEY
MESSAGE

3

Climate Change Disproportionately Damages Southeastern Jobs, Households, and Economic Security

Household Income and Rural Capacity for Action

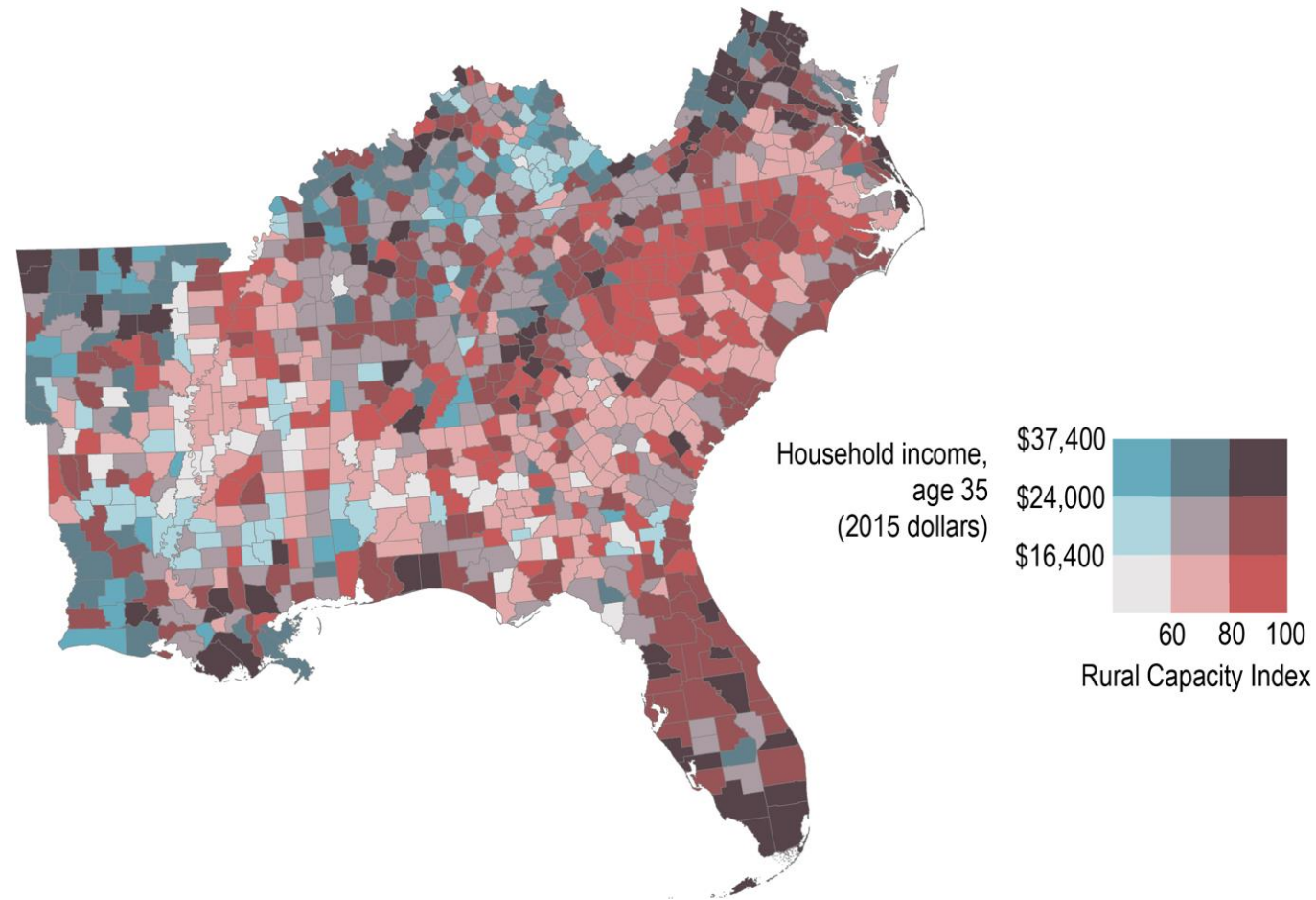


Figure 22.12. Counties where low-income households overlap with limited community capacity (shown in light gray) highlight rural climate risk challenges.

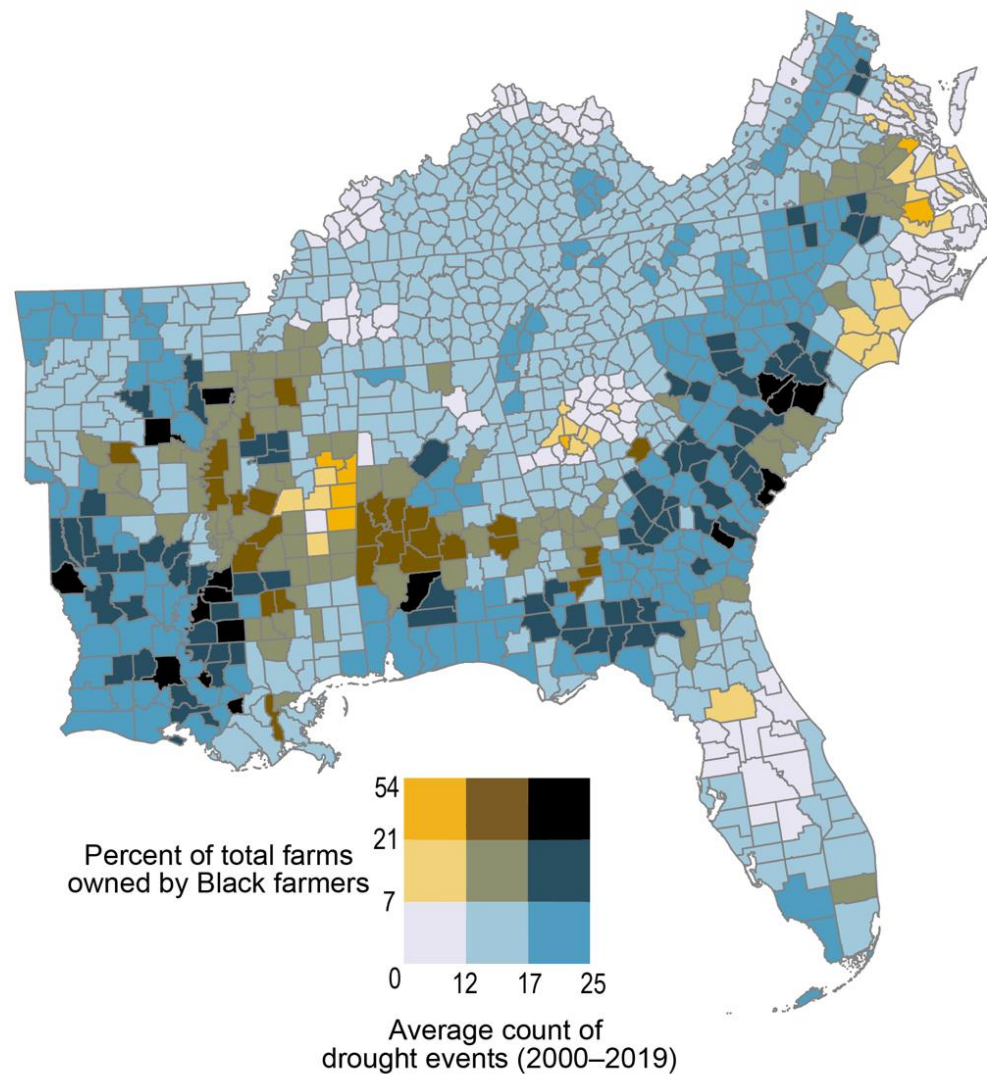
KEY
MESSAGE

4

Agriculture Faces Growing Threats, but Innovations Offer Help

Figure 22.18. The Southeast's Black farmers face disproportionate weather and climate risks.

Droughts and Black Farmers in the Southeast





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Thursday, January 18, 2024