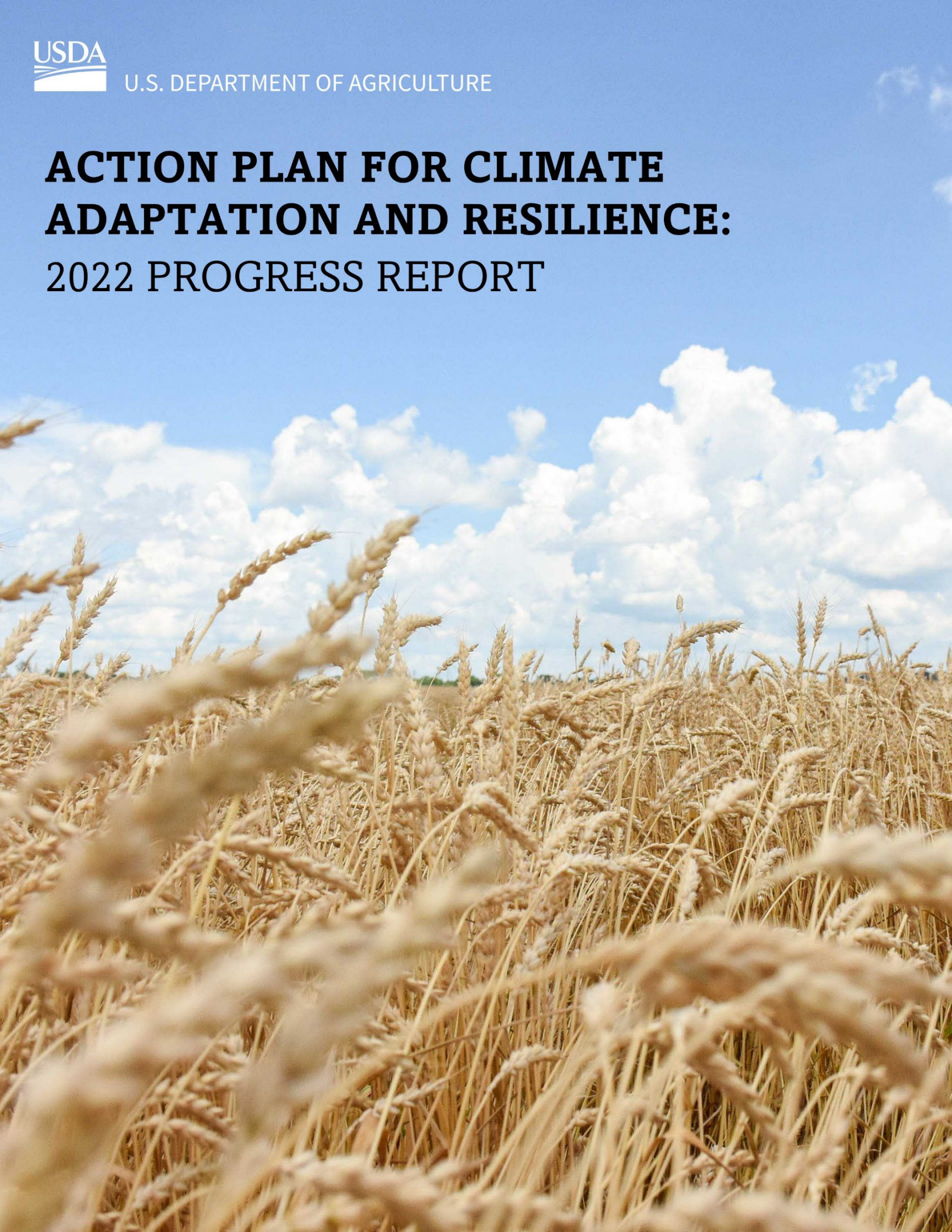
USDA

U.S. DEPARTMENT OF AGRICULTURE

ACTION PLAN FOR CLIMATE ADAPTATION AND RESILIENCE:

2022 PROGRESS REPORT



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August 2022

A Message From Secretary Vilsack

Dear Reader,

Last year, in USDA's Action Plan for Climate Adaptation and Resilience, we laid out the Department's approach to helping producers, ranchers, rural communities, and our diverse stakeholders and partners address the impacts of climate change. USDA's role in this effort is critical to maintaining their competitiveness, resilience, and to sustainably managing our natural resources for future generations.

As USDA prepares to release this 2022 Progress Report on Climate Adaptation, hot and dry conditions are prevalent across most of the Western States. According to the U.S. Drought Monitor report, 50 percent of the contiguous United States is in moderate to exceptional drought. Wildfire has already burned over 5.9 million acres of our forestland, 1.6 million acres more than at the same time in 2021. Once again, we are bracing ourselves for above-average hurricane activity, and communities across the country are dealing with the impacts of severe flooding exacerbated by climate change.

In this Progress Report, USDA demonstrates how it has taken a Department- and mission-wide approach to addressing the effects of climate change on our operations, programs, and management. Staff across the Department have been engaged in preparing Agency-level Climate Adaptation Plans and participating in monthly climate science seminars to enhance their knowledge so they can better serve our customers. This Progress Report also describes how these efforts on climate adaptation intersect with our important work to address environmental justice and engage with Tribal communities.

USDA's Climate Hubs continue to play an outsized role working both inwards to support USDA Mission Areas in their climate adaptation efforts and outwards, providing resources to everyone from school children to producers and land managers to help them address climate change in their own ways.

This Progress Report helps us see how far we have come in the past year while also revealing the potential of the "People's Department" to help communities and the agriculture and forestry sectors adapt to a changing climate.

Sincerely,

Thomas J. Vilsack
Secretary

I. Introduction

The U.S. Department of Agriculture's (USDA) Action Plan for Climate Adaptation and Resilience, released in October 2021, demonstrates the Department's understanding of the climate risks facing farmers, ranchers, forest landowners, and communities across the country. In 2021, USDA also revised its Departmental Regulation 1070-001 Policy Statement on Climate Adaptation, which directs the Office of Energy and Environmental Policy (OEEP) within the Office of the Chief Economist to issue guidance to USDA Mission Areas, agencies, and staff offices to complete or update their own climate adaptation plans. Initiated in September 2021 and released in July 2022, the following 16 USDA entities prepared their own organization-specific climate adaptation plans:

- **Farm Production and Conservation:** Farm Service Agency (FSA), Natural Resources Conservation Service (NRCS), and Risk Management Agency (RMA)
- **Natural Resources and Environment:** Forest Service (FS)
- **Research, Education, and Economics:** Agricultural Research Service (ARS), National Institute of Food and Agriculture (NIFA), Economic Research Service (ERS), and the National Agricultural Statistics Service (NASS)
- **Marketing and Regulatory Programs:** Agricultural Marketing Service (AMS) and Animal and Plant Health Inspection Service (APHIS)
- **Rural Development (RD)**
- **Trade and Foreign Agricultural Affairs:** Foreign Agricultural Service (FAS)
- **Select Departmental offices:** Office of the Chief Economist (OCE), Office of Budget and Program Analysis (OBPA), Office of Homeland Security (OHS), and Office of Property and Environmental Management (OPEM)

Through the climate adaptation planning process and using the Department's plan as an overarching framework, each organization considered the impacts of climate change to their mission delivery and developed adaptation actions that address and integrate these risks into their planning, programs, operations, and management. Each plan also highlights the climate-related professional development needs of USDA staff, how to enhance collaboration with USDA's Climate Hubs, and the alignment of these climate adaptation efforts to the Departmental priorities of equity and environmental justice.

In this Climate Adaptation Progress Report, we provide examples and draw on the Agency-level adaptation plans to demonstrate progress towards the actions in USDA's Action Plan for Climate Adaptation and Resilience.

II. Updates on Priority Actions

Progress Summary

Action *(Status)*	Summary
1: Build resilience across landscapes with investments in soil and forest health *(In progress, ongoing)*	The Natural Resources Conservation Service (NRCS) has continuously worked with landowners and managers to promote soil and forest health through its various conservation programs. Since the 2018 Farm Bill, NRCS has invested $1.4 billion in activities that promote soil health, such as cover crops, nutrient management, pest management, prescribed grazing, and pasture and hay planting, and $850 million in forest health activities including brush management, herbaceous weed treatment, forest stand improvement, tree/shrub establishment, and tree/shrub site preparation. In 2021, USDA's Forest Service treated approximately 3.4 million acres to reduce wildfire risk and more than 1.3 million acres for native and invasive forest pests, while investing $92 million in projects for cross-boundary forest health and wildfire risk reduction on more than 225,000 acres of Federal, State, and private land.
2: Increase outreach and education to promote adoption and application of climate-smart strategies *(In progress, ongoing)*	In the first half of FY 2022, USDA's 10 Climate Hubs hosted 61 workshops and technical demonstrations with approximately 4,229 participants. Through these and other activities, the Hubs continue to broaden their reach to serve communities across the United States, including in Hawaii, Alaska, and U.S. Insular Areas. USDA's National Institute of Food and Agriculture (NIFA) is integrating opportunities to address climate vulnerabilities into its support for the Cooperative Extension Service; for example, NIFA's Agriculture and Food Research Initiative (AFRI) Program 1721 funds Cooperative Extension for climate change science outreach.
3: Broaden access to and availability of climate data at regional and local scales for USDA Mission Areas, producers, land managers, and other stakeholders *(In progress, ongoing)*	USDA's ongoing efforts to develop new tools, maintain and enhance existing tools, and curate and disseminate climate-related data span the Department. Examples of this work include the Office of the Chief Information Officer (OCIO) developing a hub for geospatial, including climate-related, data; the Animal and Plant Health Inspection Service (APHIS) developing habitat suitability maps for pests under future climate conditions; and the work of the Climate Hubs on co-development of tools to support on-the-ground decision making.
4: Increase support for research and development of climate-smart practices and technologies to inform USDA and help producers and land managers adapt to a changing climate *(In progress, ongoing)*	USDA research agencies are prioritizing the understanding of and response to the impacts of climate change on the agriculture and forestry sectors, including via climate adaptation planning and agency- and mission area-level science planning efforts. The Agricultural Innovation Mission (AIM) for Climate, an international initiative launched at COP 26 and co-led by the United States and United Arab Emirates, aims to increase and accelerate agriculture and food systems innovation in support of climate action, including climate adaptation.
5: Leverage the USDA Climate Hubs as a framework to support USDA Mission Areas in delivering adaptation science, technology, and tools *(In progress, ongoing)*	USDA agencies continue to be key partners of the Climate Hubs, including by generating opportunities within their own programs to advance the mission of the Hubs. Examples include detailees from NRCS to the Hubs and NIFA's establishment of an "Extension, Education, and USDA Climate Hubs Partnership" grant program. In their climate adaptation plans, USDA agencies each describe how to strengthen their working relationships with the Climate Hubs, and this information will be used to support development of the Climate Hubs FY 2023 priorities.

Progress Examples

In addition, to those described above, the following detailed examples demonstrate USDA's progress towards achieving its climate adaptation goals.

ACTION 1: Build resilience across landscapes with investments in soil and forest health

Action 1 encompasses a breadth of USDA activities to enhance soil and forest health nationwide that will help producers and forest landowners be resilient and adaptive in a changing climate. NRCS's Soil Health Demonstration Trial projects (SHD), a component of On-Farm Conservation Innovation Trials within the Conservation Innovation Grants Program, are currently in their fourth annual cycle. Climate adaptation was one of the priorities included in the FY 2021 SHD funding announcement and is included again in the forthcoming FY 2022 announcement. Since 2019, NRCS has awarded $38 million for 24 projects with more than $23 million in partner matching contributions in 40 States and U.S. Territories. The goal of these projects is to incentivize producers to implement conservation practices that build soil health while employing soil health and economic metrics to quantify their success. Data collected from each of these projects will provide the initial data for a national soil health database. Nine projects were selected in the most recent funding cycle, examples of which include:

- Building soil heath and increasing the resilience of dryland cropping systems by the Palouse Conservation District in Washington, Idaho, and Oregon.
- Engaging Tribal communities by the Piikani Lodge Health Institute to enhance adoption and implementation of regenerative grazing practices on Montana's rangeland and irrigated pastures.
- Trials led by the University of Arizona to promote climate-smart and soil health practices among small-scale farmers in Arizona using participatory research.

The Forest Service's forest health management activities support ecological resilience through an all-lands approach, working with partners nationwide to provide technical and financial assistance to monitor, assess, and mitigate forest health threats and respond to emerging forest health needs. In 2021, Forest Health Protection (FHP) invested $40 million in over 100 projects, including surveying 423 million forested acres, insect, disease, and invasive plant treatment projects, and special project investments that promote forest resilience and restoration and provide valuable resource and management data to stakeholders. Examples of FHP's activities in 2021 include:

- FHP treated over 1.3 million acres to address native and invasive pests across all lands (over 767,000 on Federal lands and over 609,000 on cooperative lands).
- FHP continued its annual pest detection surveys with State partners, surveying about 500 million acres through ground survey, manned aerial flights, aerial photography, and satellite imagery and other remote sensing technology.
- Shared Stewardship throughout the Southwestern Region to determine high priority landscapes across landownership types for restoration and watershed stewardship activities.

- Evaluation Monitoring for changes in forest structure and composition, fuel loads, pollinator communities and invasive plant communities following severe drought in the Central and Southern Sierra Nevada.
- Development of new technologies and methods through the Special Technology Development Program, examples of which include methods to forecast how disturbances, drought, and pollution combine to amplify disease and insect risks to forests as well as forest canopy health monitoring protocols for unmanned aircraft (UAS)/multi-sensor systems for mixed-hardwood forests damaged by invasive insects.

ACTION 2: Increase outreach and education to promote adoption and application of climate-smart strategies

The goal of Action 2 is to engage with USDA's diverse stakeholders, including those who are historically underserved, and leverage programs, such as USDA's Climate Hubs and the Cooperative Extension Service, to encourage adoption and application of climate-smart strategies. In Spring 2022, the Northeast Climate Hub released a full-length documentary film, *Delmarva and the Ground for Change*, that highlights three farmers around the Chesapeake and Delaware Bays who have adopted practices that protect and promote soil health and build climate resilience. The farms highlighted in this film were chosen for the diversity of their operations and their extensive use of cover-cropping and no-till farming; one aim was to demonstrate that these agricultural practices are possible to implement on farms of different sizes. The film was first made available and viewed by over 1,500 USDA employees and paired with a one-hour panel discussion with the film's director, USDA soil scientists, and some of the featured farmers. The film was then publicly released at the University of Delaware's College of Agriculture and Natural Resources and featured a panel discussion with the NRCS Delaware State Conservationist, a horticultural specialist from the University of Delaware, and the filmmaker. The Northeast Climate Hub will continue to promote the film online and through on-the-ground events across the region with the aim to educate and inspire audiences to promote the adoption of climate-smart agricultural practices.

ACTION 3: Broaden access to and availability of climate data at regional and local scales for USDA Mission Areas, producers, land managers, and other stakeholders

Action 3 aims to increase availability of and access to reliable and relevant climate data to support producers and forest landowners in their decision making in a changing climate. An example of this is USDA's ongoing partnership with the University of Florida and Cornell University on the development of AgroClimate, a decision support tool that uses Applied Climate Information System (ACIS) data sub-infrastructure, to help producers in the Southeastern United States make real-time decisions and place meteorological conditions in a historical context. One component of this tool allows a user to input a location to obtain

information to support operational decisions related to winter chill units, a critical indicator of bloom dates and yield of certain perennial crops, like fruit and nut trees. AgroClimate also allows growers to see trends in annual chill unit accumulation and bloom dates over time, which can help inform longer term planning, such as changing varietals in replanted areas to better reflect current and anticipated future climatic conditions. USDA is working with AgroClimate to expand the types and geographic scope of indicators available, such as degree-days, crop and livestock heat stress, leaf wetness duration, and disease risk, that will be useful to producers of a range of commodities.

ACTION 4: Increase support for research and development of climate-smart practices and technologies to inform USDA and help producers and land managers adapt to a changing climate

Action 4 leverages USDA's research enterprise and partnerships to advance innovation of climate-smart technologies and practices to ensure that producers and forest landowners are best equipped to deal with the current and future challenges that climate change poses to their operations. In fall 2021, USDA's National Institute of Food and Agriculture (NIFA) invested more than $146 million in 15 sustainable agricultural research projects via AFRI's Sustainable Agricultural Systems program. Examples of the work supported by these grants that will advance climate adaptation include:

- **University of California** researchers and their partners are developing innovative education programs and novel Extension programming to support sustainable groundwater and irrigated agricultural systems, create models (geophysical, hydrology, biophysical, and socioeconomics), develop climate change adaptation management strategies, and produce decision support tools.
- **Purdue University** aims to diversify the dominant corn-soybean system of farms, landscapes, and markets in the Midwest through a combination of stakeholder engagement; modeling of air, water, and economic outcomes; identifying institutional barriers to diversification; generating evidence-based policy guidance; and educational modules and learning experiences.
- **Texas A&M University** will investigate the integration of regenerative practices into cotton and wheat cropping systems in the Southern Great Plains, with activities that range from evaluating the effects of practices across soil textures and climate gradients to creating education materials that enhance confidence in and uptake of these practices.

A priority action in NIFA's Climate Adaptation and Resilience Plan is continued identification and creation of opportunities within AFRI that advance innovation in climate-smart agriculture and forestry.

ACTION 5: Leverage the USDA Climate Hubs as a framework to support USDA Mission Areas in delivering adaptation science, technology, and tools

Action 5 takes advantage of the Climate Hubs' unique capabilities to strengthen relationships between USDA agencies and support them in implementing their climate adaptation plans. A recent example of this work is a series of "Climate Conversations" led by an NRCS detailee to the Southwest Climate Hub. In the first quarter of FY 2022, the detailee led 9 conversations across States in the Midwest, Northern Plains, and Southwest Climate Hub regions with over 862 NRCS employees. These conversations brought NRCS State office and field staff together with the Climate Hubs to better understand NRCS staff needs and priorities, increase climate literacy of staff, and share place-based climate adaptation options. Through these conversations, which leveraged the Climate Hubs' network of trusted advisors, NRCS and other USDA staff will be better equipped to address climate change challenges in their work.

Sections III and IV are topical areas of priority identified by the White House Council on Environmental Quality (CEQ) and in Executive Order (EO) 14057 and descriptions of how USDA is addressing these issues in its climate adaptation work.

III. Updates on Priority Adaptation Topics

Climate-Related Operating and Financial Risk Reduction

USDA's Office of Property and Environmental Management (OPEM) provides Department-wide administration, leadership, policy, and program oversight in the areas of property, fleet, and environmental management. In its recent climate adaptation plan, OPEM describes the vulnerability of energy and power supply at USDA facilities to climate change and the consequences of more frequent and severe extreme events on facility and fleet operations, supply chains, and the Department's natural and built infrastructure. To address these risks, OPEM will integrate climate considerations into its sustainability and operational policies and guidance that it issues, for example, on those related to energy and water management. USDA's Office of Budget and Program Analysis (OBPA) is developing the framework for its Enterprise Risk Management program, which will identify risks to Department strategy, mission support, and overall governance, of which climate risk will be one element. The Office of Homeland Security (OHS) will elevate the potential impacts of climate change in its coordination of emergency response and recovery, continuity of operations (COOP) planning, and policy development. OHS will work with agency COOP Coordinators to ensure that agency alternative sites account for risks posed by climate change.

Operating risk is of particular importance for the Agricultural Research Service (ARS) and the Forest Service and is addressed in detail in their climate adaptation plans. ARS has 3,170 buildings in 94 domestic locations and 1 foreign location, the National Agricultural Library, and 86 worksites; more frequent and severe weather as a result of climate change will impose significant costs for facility and resource replacement. ARS is evaluating and upgrading building design and planning to account for these risks, including by positioning facilities to have energy redundancy. ARS COOPs will integrate climate-related risks and Project Plans will continue to include contingencies for extreme weather events. Wildfire, floods, and severe storms threaten the Forest Service's transportation infrastructure as well as water, electrical, and communication systems. Damage to these systems affects the ability of employees to do their work and disrupts access for visitors and local communities to public lands. The Forest Service will assess risks to its infrastructure using vulnerability assessments and geospatial tools and reduce risks through

repair, replacement, or relocation. It will also continue to adjust agency operations to increase safety and resource protection during extreme events, wildfires, and other disturbances.

In response to *Executive Order (EO) 14030 Climate-Related Financial Risk Sec. 5(c)*, USDA has been working with the Departments of Housing and Urban Development (HUD) and Veterans Affairs (VA) to consider how to better integrate climate-related financial risk into underwriting standards, loan terms and conditions, and asset management and servicing procedures. The work of this interagency task force is initially focused on single family housing guaranteed loan programs. A preliminary risk register was created to identify risks that may arise from an increase in frequency or severity of extreme events and included risks such as outdated building codes, increased cost to build more resilient structures, increased homeowner insurance costs, reduced valuations or destruction of properties, outdated floodplain policies and procedures, and effects on programs subsidy rates. With guidance from the Office of Management and Budget (OMB), the Departments evaluated the effect of a climate-related increase of 1 percent in defaults and a 1 percent decrease in recoveries on subsidy rates; for USDA's Rural Development (RD) Single Family Guaranteed Housing Loan Program, the determined effect on the subsidy rate was minimal. This work, as well as efforts to link additional data sources to estimate the effect of weather-related events to loan portfolios, is still ongoing.

In their climate adaptation plans, USDA agencies identified climate-related financial risks and developed actions to address these risks, for example:

- The **Farm Service Agency** (FSA) will review data to determine if dates delineated in policy are still relevant in a changing climate and where feasible and appropriate, incorporate their results into program and loan processes.
- The **Risk Management Agency** (RMA) will continue to update program premium rates, yields, dates, area maps, and practice availability and procedure to reflect climate-related changes in risk and agricultural practices.
- The **Rural Development (RD)** climate adaptation plan proposes to develop a tool that will overlay climate risks, social vulnerability, and resilience measures with the RD investment portfolio to assist the organization in incorporating and prioritizing climate risk and building resilience in its housing and infrastructure portfolio.

Climate Vulnerability Assessments

The mission-wide climate vulnerabilities identified in USDA's Action Plan for Climate Adaptation and Resilience were the threat to agricultural productivity growth, to water quantity and quality, the disproportional climate impacts to vulnerable communities, resilience to extreme

climate events, and to public lands and USDA infrastructure. In their adaptation planning, agencies further assessed and prioritized climate risks to their mission, programs, operations, and stakeholders. Examples of climate vulnerabilities unique to USDA agencies that were identified and for which adaptation actions were developed in the Agency-Level Climate Adaptation Plans include:

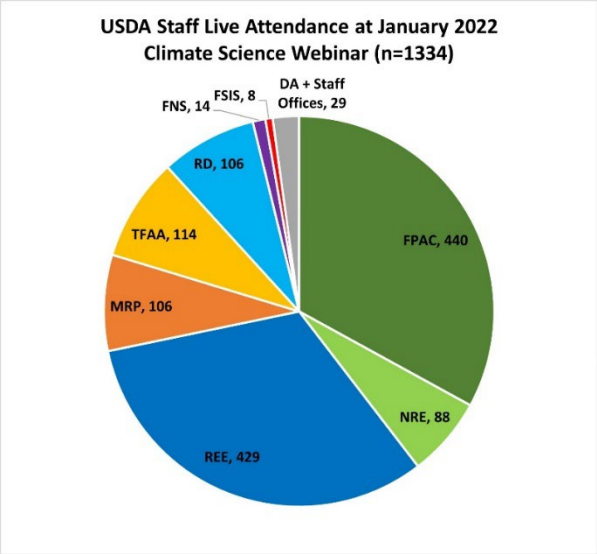
- In the **Forest Service's** plan, the physical and ecological threats to the agency's natural resources as well as the social, economic, and organizational implications of those threats, including shifting wildfire regimes, extreme events, chronic stressors to watersheds and ecosystems, disruption in provisioning of ecosystem products and services, disproportionate impacts on disadvantaged communities and Tribal Nations, and threats to agency mission, infrastructure, and operations.
- In the **APHIS** plan, shifts in the geographic distribution of wildlife, weeds, pests and diseases, the threat to U.S. agricultural production and trade, the increased demand for plants developed using genetic engineering and other APHIS services, and the risks to APHIS's role in emergency response systems and food distribution and aid.

- In the **Foreign Agricultural Service** (FAS) plan, how climate impacts global trade patterns, food security, and pests, diseases, and food safety will likely increase the demand for international capacity building while providing opportunities to engage with global partners to advance U.S. agricultural trade policy objectives.
- In the **NRCS** plan, the increased need for science and data to understand, measure, and track climate impacts and outcomes, the risk posed to conservation investments if climate change is not included in planning and decision-making, and the need to have nimble, adaptative business practices given the rapidly evolving challenges posed by climate change.
- In the **RD** plan, how climate change will impact the Rural Housing Service's portfolio of properties and community facilities and the likely need to finance climate resilient construction and improvements. The Rural Utilities Service will need to address climate-related threats to water quality and quantity and consider the pressure on their projects posed by increasingly intense or frequent extreme weather events.

USDA also prepared a supply chain assessment in response to *EO 14017 America's Supply Chains* in which climate risk to agri-food systems was identified as a key vulnerability.

Climate Literacy

USDA's OEEP, in collaboration with other USDA offices and agencies, is working to grow the climate literacy of USDA staff. In December 2021, OEEP and USDA's Agriculture, Forestry, and Climate Science Working Group, launched a 12-month 'USDA Climate Science Seminar Series' to provide USDA employees and key Cooperative Extension Service personnel with the scientific foundations of climate change and an understanding of how climate change influences USDA's mission. Following staff-only live events, recordings of the sessions are made available via USDA's YouTube page and other sites (here and here). In the first 6 seminars, attendance ranged from 650 to 1450 unique, live attendees, viewing from 23 USDA agencies and offices, in all 50 States and in at least 14 countries (Figure 1). These seminars are equipping USDA staff with knowledge to integrate climate-thinking into their work and the vocabulary to communicate climate-related information to their peers and stakeholders.



Staff from every USDA mission area attended the January 2022 USDA Climate Science Seminar (FPAC - Farm Production & Conservation, NRE - Natural Resources & Environment, REE – Research, Education, & Economics, MRP – Marketing & Regulatory Programs, TFAA – Trade & Foreign Agricultural Affairs, RD – Rural Development, FNS – Food, Nutrition, & Consumer Services, FSIS – Food Safety and Inspection Service, Departmental Administration and staff offices).

Agencies also fostered climate literacy through the development of their climate adaptation plans, and climate workforce literacy was one of the elements asked for in the adaptation planning guidance prepared by OEEP. Each agency decided on the internal processes to develop their plans, some of which included holding listening sessions, conducting staff surveys, and consulting with their leadership. In this way, agencies began integrating climate knowledge and literacy into their activities and workstreams. Examples of workforce climate literacy development from the adaptation plans include:

- The **Agricultural Marketing Service** (AMS) will draw on existing resources and events with external partners to raise employee awareness of the risks posed by climate change to AMS operations, sectors, and stakeholders and how they can be prepared to respond.
- The **National Agricultural Statistics Service** (NASS) will leverage internal resources and outreach to external groups to both improve employee understanding of climate science as well as share with these groups how NASS data can support climate adaptation initiatives.
- The **Foreign Agricultural Service** (FAS) has already held several events and webinars related to climate change in FY 2022 and will offer a minimum of six additional internal training opportunities in FY 2022.

Drawing on the agency adaptation plans and activities like the Climate Hubs' Climate Conversations with NRCS (described in Action 5, above), OEEP, in consultation with USDA agencies, will develop a workforce climate literacy workplan with short- and long-term goals.

Examples of short-term goals might include renewing resources previously available on USDA's AgLearn platform and developing a survey to understand the success and additional knowledge needs of the climate science seminar series.

Tribal Engagement

Consideration of Tribal Treaty Rights and the climate risks to Tribal communities were woven throughout USDA's Action Plan for Climate Adaptation and Resilience. In November 2021, the Secretaries of Agriculture and the Interior signed a Joint Secretarial Order to ensure both Departments are managing public land and waters in a way that fulfills the United States' unique trust obligation to Federally recognized Indian Tribes. USDA also supported a new memorandum committing Federal agencies to elevating Indigenous Traditional Ecological Knowledge (ITEK) in Federal scientific and policy processes, including climate adaptation strategies. OEEP will aim to enhance collaboration on climate adaptation with USDA's Office of Tribal Relations (OTR). Consideration of Tribal Treaty Rights and ITEK were included in the Agency-level climate adaptation plans, most notably:

- **NRCS** addresses these issues in their adaptation actions that commit to assessing and addressing disproportionate impacts to vulnerable communities and to strengthening partnerships and collaboration to address climate change. NRCS will learn from ITEK and approaches unique to Tribes and integrate these lessons into NRCS's work.
- Through its partnership with Tribal Colleges and Universities (TCUs), **NIFA** will enhance its outreach and support including via webinars and grant-writing workshops. NIFA will develop new opportunities to elevate ITEK as a resource for natural resource management and climate-smart agriculture and forestry practices; the agency has already incorporated ITEK language into an existing AFRI Request for Applications (RFA) and will work closely with TCUs to develop new programming opportunities around ITEK.
- The **Forest Service** will continue to strengthen relationships with Tribal Nations through government-to-government consultation to co-create management activities and programs that reduce the adverse impacts of climate change. The agency will learn from and build off of existing approaches, like the Dibaginjigaadeg Anishinaabe Ezhitwaad – Tribal Climate Adaptation Menu tool, that integrate ITEK into climate adaptation.

Environmental Justice

Environmental justice (EJ) is integrated into USDA's Action Plan for Climate Adaptation and Resilience, and the disproportionate climate impacts to vulnerable communities are highlighted as a climate vulnerability. OEEP will continue to work closely with OBPA and the Office of the Assistant Secretary of Civil Rights on EJ at the Department-level. The Agency-level plans describe in great detail how USDA is aligning its climate adaptation efforts with EJ priorities; recent EJ accomplishments include:

- The June 2022 USDA Climate Science Seminar focused in part on the scientific foundation of climate justice and provided examples of how data-driven tools can be used to support EJ work. The **Forest Service** Office of Sustainability and Climate has hosted a series of 11 webinars on EJ and its place in Forest Service's mission.
- **RMA** is investing nearly $1 million in nine projects led by universities and non-profits to develop risk management training and educational tools designed specifically for historically underserved farmers and ranchers.
- **NRCS** is investing $50 million in 118 partnerships to expand access to conservation assistance for climate-smart agriculture and forestry via its Equity Conservation Cooperative Agreements. These 2-year projects will expand the delivery of conservation assistance to farmers who are new to farming, low income, historically underserved, or military veterans.
- **Economic Research Service** (ERS) is collaborating with external partners to investigate how individuals respond to impaired water quality and how the damages may fall disproportionately on low-income communities. As described in their climate adaptation plan, ERS anticipates funding a climate equity workshop to advance the science around the intersection of climate, agriculture, and equity.

Partnerships

The need to strengthen and build partnerships to advance climate adaptation is a common thread through USDA's Adaptation Plan and the Agency-level plans. Each Agency's Adaptation Plan describes how it can better partner with USDA's Climate Hubs to advance their own climate adaptation efforts and strengthen ties with other USDA Agencies. Recent examples of partnerships on climate adaptation include:

- **NIFA** announced $9 million in FY 2021 for six new partnerships between the Cooperative Extension Service and USDA Climate Hubs to enhance the links between climate science, information dissemination, and support for agricultural communities which address the causes and consequences of climate change.
- The Directors of the Southwest and Northern Plains Climate Hubs spoke to an audience of Federal, State, local, and Tribal organizations at the Federal Emergency Management Agency's (FEMA) Region 8 Climate Adaptation Seminar, part of FEMA's National Exercise Program.
- **FAS** has been leading USDA's efforts to collaborate with the State Department, U.S. Agency for International Development, and other Federal agencies on implementation of the President's Emergency Plan for Adaptation and Resilience (PREPARE), the U.S. Government's effort to support developing countries in adapting and managing the effects of climate change.

- **NRCS** announced a new partnership with Farmers for Soil Health, an initiative of the United Soybean Board, National Corn Growers Association, and National Pork Board to advance use of soil health practices, especially cover crops, on corn and soybean farms. The initiative has a goal of doubling the number of corn and soybean acres using cover crops to 30 million acres by 2030.
- The Caribbean Climate Hub, in collaboration with the National Drought Mitigation Center (NDMC) and the National Integrated Drought Information System (NIDIS), launched the Caribbean Drought Learning Network, a peer-to-peer network designed to share information, experiences, and needs in preparing for, responding to, and recovering from drought.

IV. Updates on Adaptation Topics From Executive Order 14057

Policy Review

USDA's approach to reviewing agency policies to ensure climate resilient investment and to removing maladaptive policies and programs is embedded at the Department level in OBPA's approach to climate adaptation. OBPA is assisting Mission Areas in identifying existing regulations, orders, guidance documents, and policies that are inconsistent with the Department's objectives, including those related to climate change. Further, Departmental Regulation 1070-001 Policy Statement on Climate Adaptation affirms that:

> "USDA Mission Areas, agencies, and staff offices will integrate information that reflects the current understanding of global climate change and its projected impacts when undertaking long-term planning exercises, setting priorities for scientific research and investigations, developing performance metrics, and making decisions affecting Mission Area, agency, or staff office resources, programs, operations."

Policy review to reduce climate risk and to avoid maladaptation is embedded in the Agency-level climate adaptation plans, including as described above in Section 2 on 'Climate-Related Operating and Financial Risk Reduction' for FSA, RMA, and RD. Enhancing climate literacy, including education on environmental justice, at all levels of the Department will improve the ability of staff to view their workstreams and decision-making with a climate adaptation lens.

Climate Scenario Analysis

When possible, USDA relies on the climate scenarios prioritized in the Fourth National Climate Assessment, specifically, Representative Concentration Pathways (RCPs) 4.5 and 8.5, and associated model results from the Climate Model Intercomparison Project Phase 5 (CMIP5). For example:

- **APHIS** is creating maps that predict the changing suitability of an area for pest or disease occurrence using the Multivariate Adaptative Constructed Analogs (MACA) which downscale CMIP5 data to 4 and 6 km resolution. These maps will guide pest survey efforts and increase the efficient use of resources for surveys by eliminating the need to survey areas for high-risk pests if suitable environmental conditions do not exist there.
- **ARS** scientists are using models to evaluate future climate impacts and improve short-term (seasonal to annual) decision-making and long-term (multi-year) planning for crop production and soil and water conservation.

- **Forest Service's** Resources Planning Act (RPA) Assessment uses the RCP 4.5 and 8.5 scenarios together with projections that capture a range of climate conditions (e.g., least warm, hottest, driest, and wettest) in its decadal report on the status and trends of the Nation's renewable resources on all forests and rangelands.
- **ERS** regularly uses RCP climate projections as part of its engagement with the Stanford Energy Modeling Forum (EMF) and the Agricultural Modeling Intercomparison and Improvement Project (AgMIP). These efforts seek to improve the ability of agricultural, energy, and environmental models to capture and represent the impacts of climate change, to convey the strengths and limitations of different approaches relevant to research and policymaking, and to provide guidance for future research.

Agency-level adaptation planning is a further step towards integrating the use of climate projections into decision-making and policy development at USDA. As described in 'Climate-Related Operating and Financial Risk Reduction' and 'Policy Review' above, furthering these efforts is a priority for the Department. USDA would like to work with CEQ and the U.S. Global Change Research Program (USGCRP) to assist USDA technical experts and decision-makers in applying climate projections in their work. The Climate Resilience Information System (CRIS) under development by USGCRP, to which USDA OCIO is contributing via its role in the Federal Geographic Data Committee, will enhance USDA capabilities in the long run. In their adaptation plans, agencies describe how they will use climate projections in their work; specifically, Forest Service will use projections in their landscape planning, ERS will explore integration of different climate conditions into their 'baseline' agricultural projections, and NRCS will explore appropriate ways to integrate climate projections into its conservation planning process and business tools.

V. Conclusion

In continuing USDA's Department-wide efforts on climate adaptation, OEEP will support agencies in implementing their climate adaptation plans by:

- Addressing common or urgent climate adaptation knowledge and data gaps,
- Strengthening existing and forging new connections to better leverage information and resources, and
- Ensuring that agencies are monitoring, and where possible, evaluating, their progress as outlined by the metrics in their adaptation plans.

USDA, through its action on climate adaptation, is positioning itself to best support producers, ranchers, forest landowners, and communities across the country who are already feeling the impacts of climate change.