Climate Adaptation and Resilience Project Area

Science and Technology

CLIMATE CHANGE: A GLOBAL ISSUE

Populations across the nation and around the globe face increased loss of life, infrastructure damage, and economic cost due to natural disasters driven by climate change. Climate change is driving sea level rise and changing weather patterns, resulting in increased droughts, floods, hurricanes, and wildfires. New science-driven technologies are required to respond to the impacts of climate change, and these new technologies will create the opportunity for new job markets, stronger economies, and a more secure and stable United States.

APPLYING SCIENTIFIC SOLUTIONS

Climate change is a major mission priority for the Department of Homeland Security (DHS) Science and Technology Directorate (S&T), which performs the research, development, innovation, standards development, and operational experimentation required to adapt and transition climate science research performed by other agencies into operational use. S&T applies this research to the long-term changes in risk from multiple hazards, such as flooding and hurricanes.

In collaboration with the entire DHS, S&T is leading coordination efforts to formulate requirements for research and development of new insurance and economic risk-sharing solutions, smart materials for more resilient buildings and infrastructure, prototype alternative energy vehicles for disaster response, and carbon sequestration technologies for debris removal and risk reduction, such as thinning forest undergrowth.

BOOSTING CLIMATE RESILIENCE ACROSS SECTORS

S&T plans to foster affordable, innovative technologies and sensors for climate adaptation and resilience optimization. The Directorate will also encourage innovations that help protect the American people from the impacts of climate change, including droughts and flooding, frequent wildfires, stronger hurricanes, and other extreme weather conditions. With the help of S&T, communities will be able to reduce disruptions and mitigate risks to critical infrastructure. S&T innovations also aim to improve sustainability operations for DHS and critical infrastructure facilities, improve the resilience and security of critical information and communication technology,

and promote eco-friendly solutions for strengthening climate resilience.

PROJECT IMPACT

- This project will support the development of affordable and innovative technologies, Internet Of Things (IOT) sensors solutions, and climate reduction technologies to assist in overall climate resilience optimization.
- With a $20 million initial investment, this project will assist in the reduction of future climate related losses across the country, while also expanding community resiliency.

ACCOMPLISHMENTS

- Launched the Climate Resilience Prize Competition Series
- Developed capability to model cascading dam failures to enhance the accuracy of dam and levee failure simulations

UPCOMING MILESTONES

- Prize Challenge Award (Energy Storage for Critical Facilities) (Q4 FY23)
- Exploitation of Mesonets for emergency Preparedness and respOnse in Weather ExtRemes (EMPOWER) Activity Kickoff (Q4 FY23)
- Wildfire Sensors Demo in Quebec, Canada (Q3 FY24)
- Develop capability to model cascading dam failures to enhance accuracy of dam and levee failure simulation (Q4 FY24)

PERFORMERS & PARTNERS

- Federal Emergency Management Agency
- Cybersecurity and Infrastructure Security Agency
- U.S. Army Corps of Engineers' Research and Development Center, Champaign, IL
- National Science Foundation, Alexandria, VA
- State University of New York - Albany, NY