

Applied Research Topics for Hazard Mitigation and Resilience*Background*

In 2012, the National Research Council released the report, [*Disaster Resilience: A National Imperative*](#), which outlined critical issues and strategic steps the United States can take to reduce impacts on the nation's communities from natural and human-induced disasters. The 2012 report defines resilience as “the ability to prepare and plan for, absorb, recover from, or more successfully adapt to actual or potential adverse events.” The National Academies’ Resilient America Program was established in 2014, to implement recommendations from the 2012 report.

The Resilient America’s objective is to harness the power of science, information, and community knowledge for an adaptive and resilient nation. The program aims to reduce damage and suffering from natural and human-induced hazards and enable robust recovery from current and future threats and disruptions. To achieve this aim, Resilient America engages with the academic, public, and private sectors, at the national and local levels, to:

- increase understanding of *complex risks and extreme events* in a changing environment, and the exposure of communities, infrastructure, and natural systems to these threats;
- investigate and strengthen attributes of *equitable, resilient systems and communities*, their interconnections and interdependencies;
- test, communicate, and strengthen implementation of *equitable strategies for adapting to changing risks and robust recovery* from disruptions;
- *share accessible science and data for strengthening resilience and adaptive action*, including policies, tools, best practices, and metrics; and
- *connect and facilitate partnerships* among scientists, data providers, practitioners, and decision makers.

An ad hoc committee and Resilient America staff will conduct this project, which is sponsored by the Federal Emergency Management Agency (FEMA) through the Federal Insurance and Mitigation Administration, Risk Management Directorate. This activity’s intended impact is to spur applied research that advances natural hazard mitigation efforts across all levels of government and society.

Statement of Task

A committee of the National Academies of Sciences, Engineering, and Medicine will identify applied research topics, information, and expertise to inform action and collaborative opportunities within the natural hazard mitigation and resilience fields. The committee will host two public Workshops as the primary source of information gathering for its work. Background materials collected at public sessions of the Resilient America Roundtable, held shortly before each Workshop, will supplement the Workshops.

Each of the two Workshops will focus on one of two distinct hazard mitigation and resilience themes. These themes could include, for example, compound and cascading hazard incidents; risk communication and decision making in a changing risk landscape; nature-based solutions, buyouts, and managed retreat options for coastal risks; and equity and social vulnerability considerations in risk and decision metrics. Following each Workshop, the committee will prepare a brief consensus report that identifies and summarizes each research theme and subsequent topics and discussions from the

Workshop. Each report will contain findings but no recommendations and will be limited to the themes and topics covered at that Workshop.

Committee Composition

The committee will include approximately six members and consist of experts in various scientific disciplines, including earth sciences, social and behavioral sciences, engineering, natural hazard mitigation, and resilience.

Project Audiences and Impact

The direct audience for the priority research topics to be identified through this work is the applied research community in the natural hazard mitigation and resilience fields. The intended impact is to spur applied research that advances natural hazard mitigation efforts across all levels of government and society. Broader audiences are institutions seeking to reduce impacts, losses, and suffering across the US from disasters due to natural hazards, which includes public, private, non-governmental, philanthropic, and academic organizations at the local, regional, state, and federal levels.

Work plan

The committee will select presenters knowledgeable about each of the two Workshops' identified themes. Workshop presenters will identify emerging research related to each theme that can advance hazard mitigation and resilience policy, efficacy, implementation, funding, or communication. The committee will gather additional evidence through existing research provided by Workshop participants and others before each Workshop and during meetings of the Resilient America Roundtable, held shortly prior to each Workshop. Workshop participants will include individuals from the public and private sectors, the research, communications, behavioral/social science, and policy communities, and elected officials.

The committee will meet before and after each Workshop to plan and then reach consensus about Workshop presentations meeting discussions, and additional evidence collected. The committee will issue a brief report after each Workshop that identifies the primary research topics identified. Each report will be subject to standard National Academies report review procedures.

The work plan for each Workshop will include the following activities:

- Meeting: Committee Planning, in advance of the Workshop (Closed)
- Meeting: Resilient America Roundtable (Public session)
- Meeting: Workshop (Public)
- Meeting: Committee Consensus (Closed)
- Deliverable: Report on Topic (two months after Workshop)

The same sequence will be used for both workshops, which are planned for winter and spring 2021.

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