

INTEGRATED RESEARCH TO INFORM GREATER RESILIENCE IN LAKE TAHOE BASIN UPLANDS

TSAC Upland Team

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CONTRIBUTORS



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▶ TSAC members

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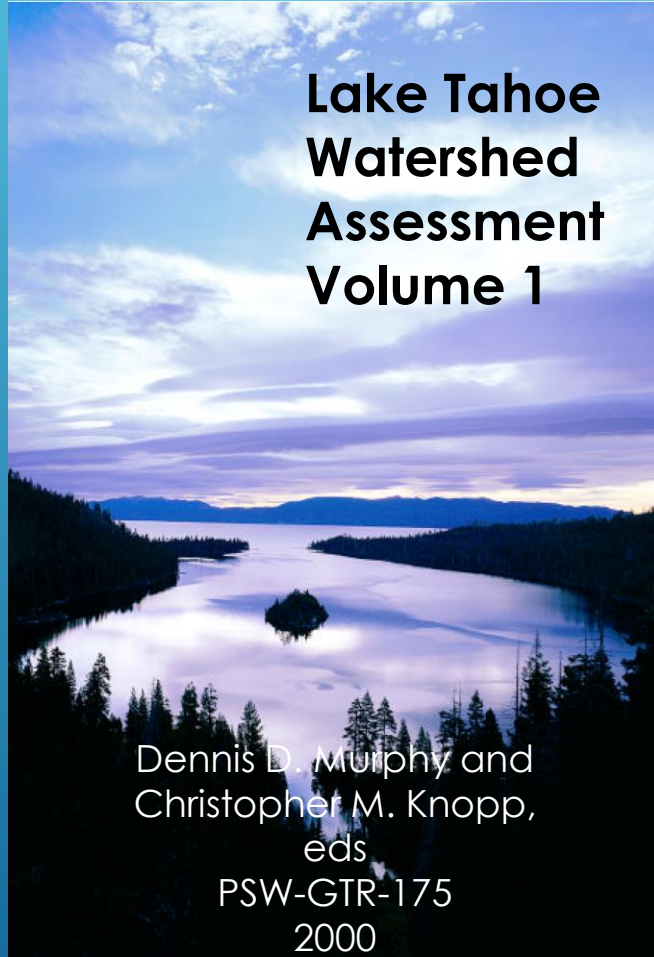
- ▶ Shana Gross, US Forest Service, Region 5
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TAHOE SCIENCE ADVISORY COUNCIL PREVIOUS INVESTMENTS

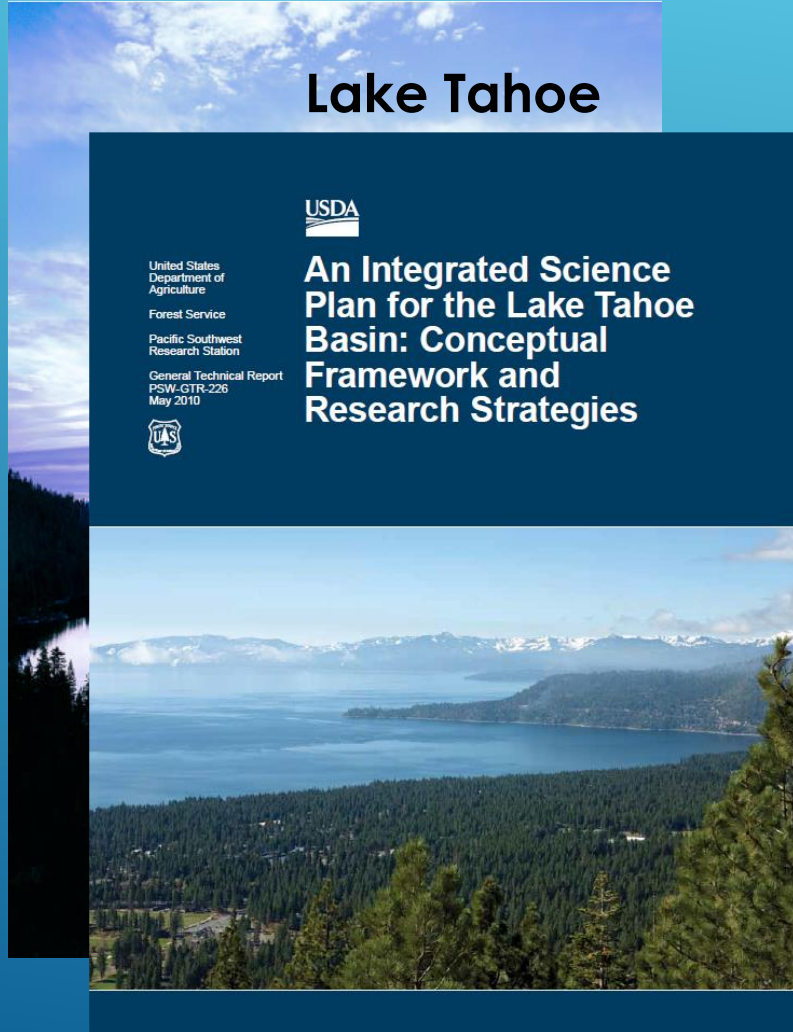
- ▶ Previous Council investments focused primarily on Lake Tahoe
- ▶ Upland ecosystems affect every aspect of resilience across the basin and Lake Tahoe
- ▶ Council identified the need for science focused on
 - ▶ forest and fire dynamics
 - ▶ biodiversity and carbon conservation
 - ▶ climate trends and impacts
 - ▶ planning tools



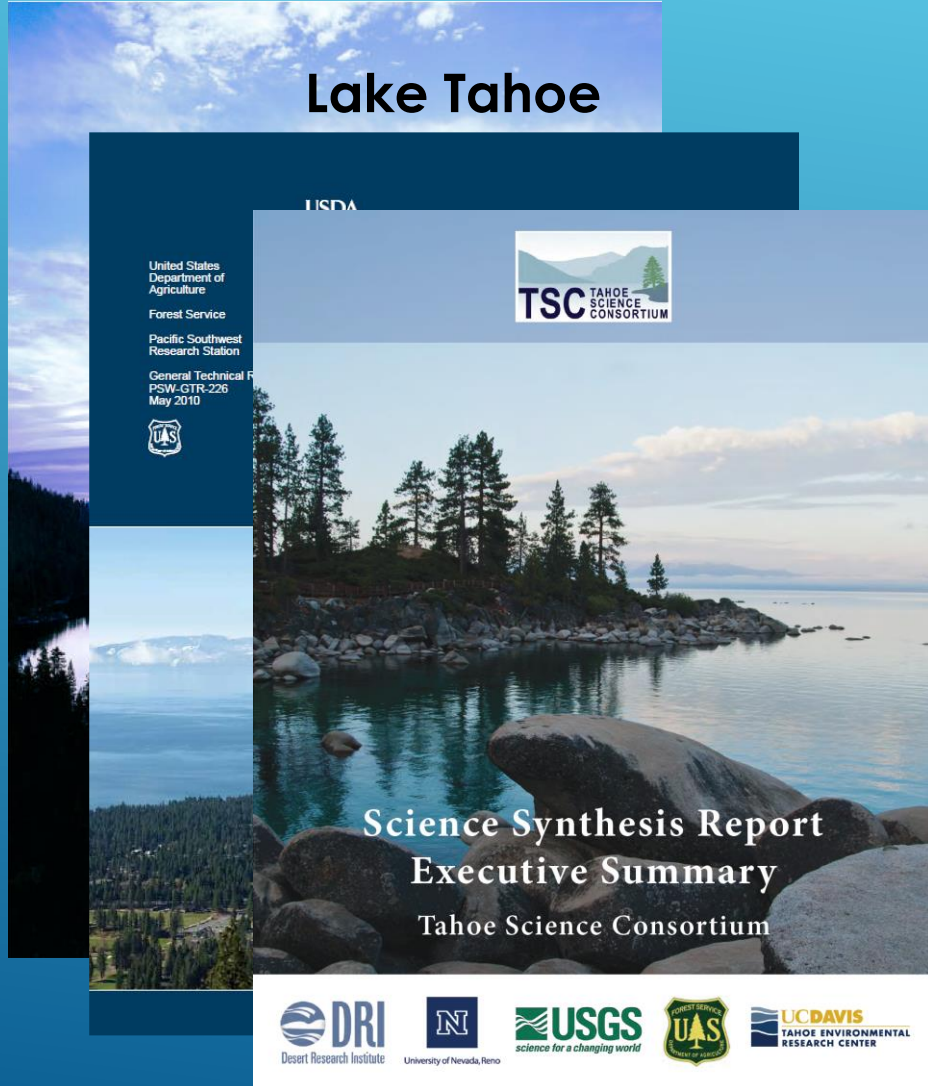
PROGRESS OVER THE PAST 20 YEARS



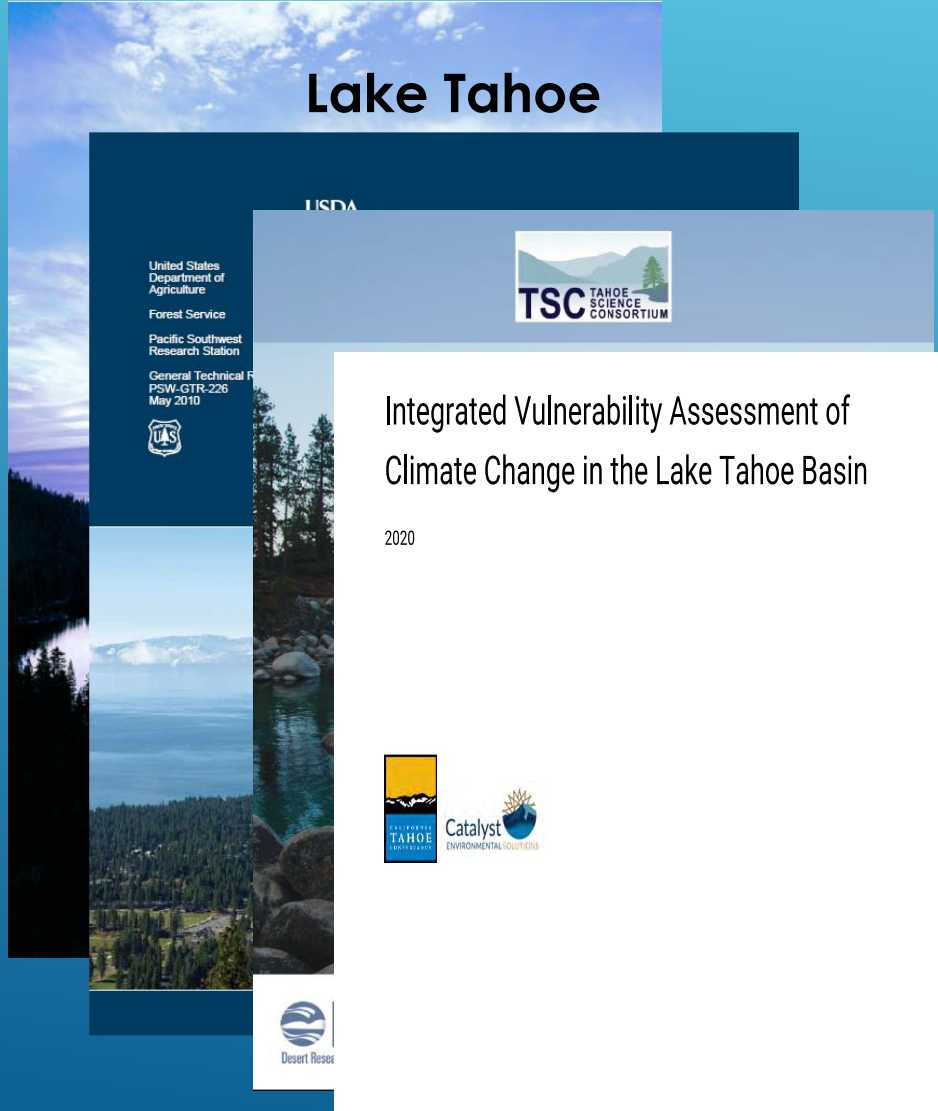
PROGRESS OVER THE PAST 20 YEARS



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PROGRESS OVER THE PAST 20 YEARS

- ▶ Many unanswered research questions about climate change impacts and effective mitigation
- ▶ Target conditions that will be resilient remain weakly founded
- ▶ Forest management, fire, water, biota, and climate interactions remain uncertain



UPLAND SCIENCE TO ACTION PLAN - OBJECTIVE

Implement a bold vision for impactful near-term and long-term research to improve future outcomes....

- ▶ *Promote resilience*
- ▶ *Protect resources*
- ▶ *Adapt to change*
- ▶ *Enhance sustainability*



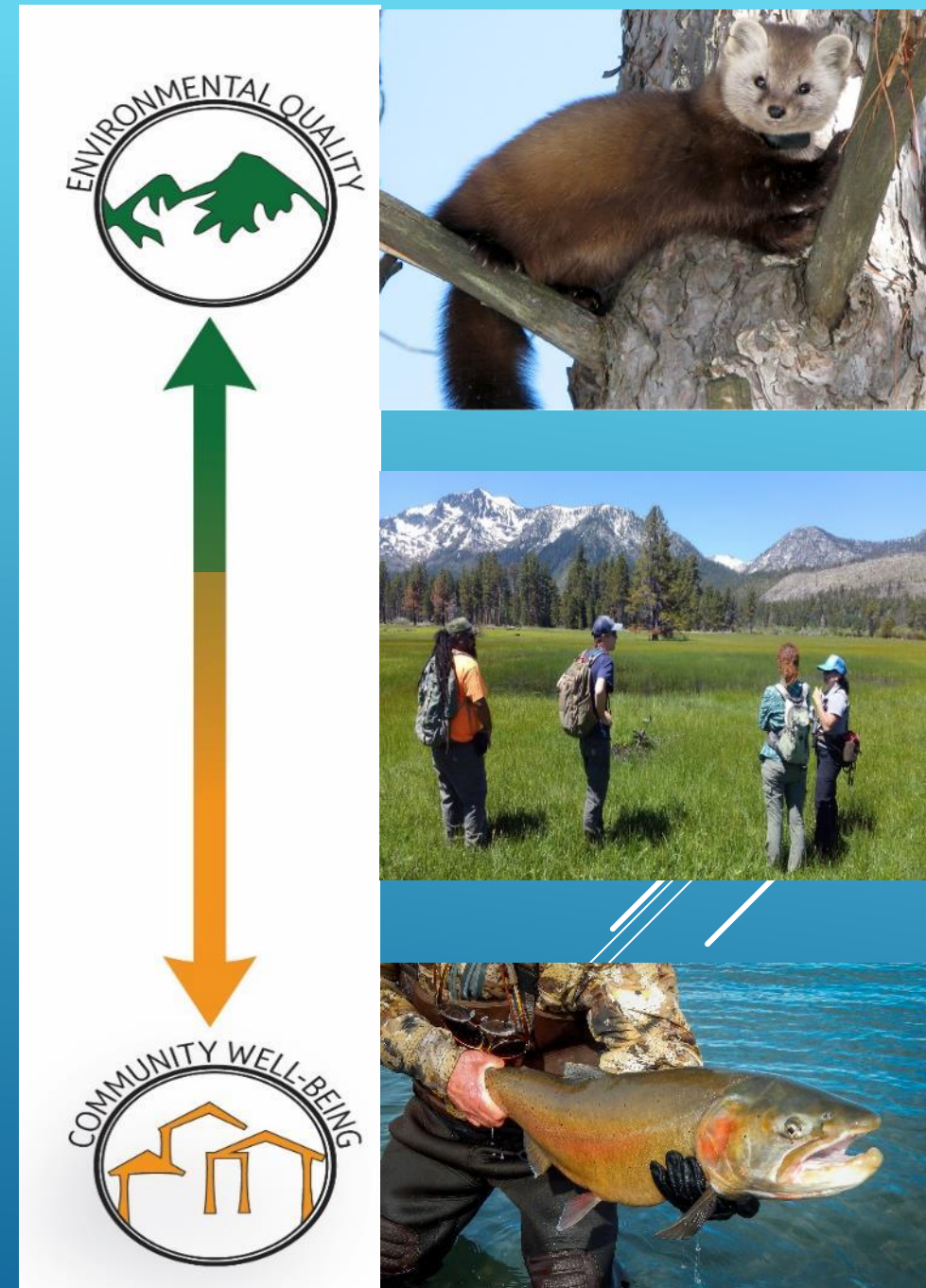
UPLAND SCIENCE TO ACTION – FOUNDATIONAL CONCEPTS

High degree of interdependence

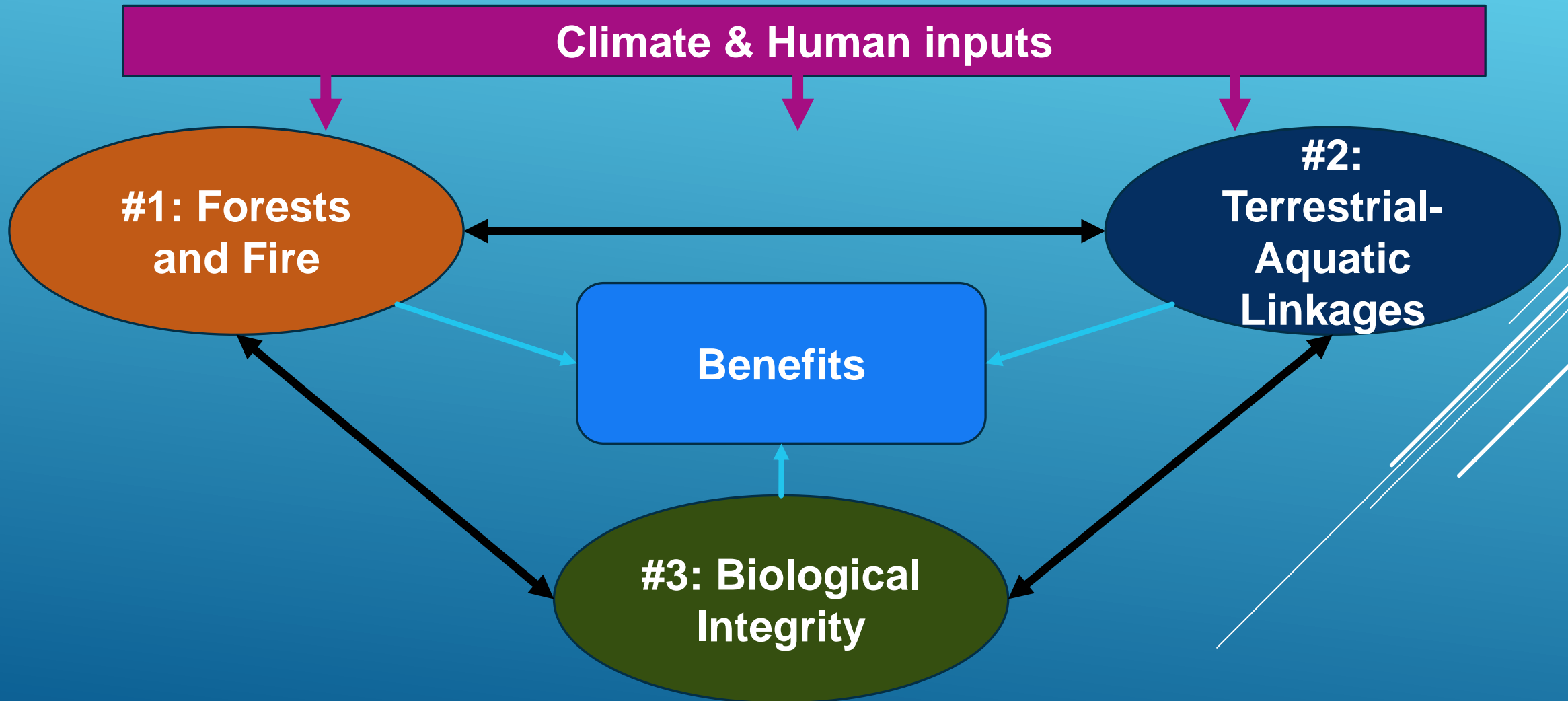
- ▶ Upland terrestrial and aquatic ecosystems
- ▶ Uplands and Lake Tahoe
- ▶ Environmental quality and community well being

Socio-ecological resilience outcomes

- ▶ Integrated interdisciplinary research to benefit socio-ecological resilience
- ▶ Science/management co-development
- ▶ Broad stakeholder engagement



UPLAND RESEARCH FOCAL TOPIC AREAS



UPLAND SCIENCE TO ACTION TASKS

Task 1: Near term research



Broad
stakeholder
engagement

FOCAL AREA #1: Forests and Fire

- ▶ Improve understanding of forest responses to climate change and disturbance
- ▶ Improve foundation for target conditions for resilient forests
- ▶ Enhance the ability to use fire as a tool to reduce the threat of high intensity fire
- ▶ Improve existing forest growth and fire models



FOCAL AREA #2: Terrestrial-Aquatic Linkages

- ▶ Improve understanding of treatment effects on multiple benefits - forest health, fire, water, carbon, nutrients, biodiversity
- ▶ Translate basin-scale management objectives to integrated watershed-scale restoration objectives
- ▶ Determine how future climates will affect watershed-scale restoration approaches to enhance mutual benefits to terrestrial and aquatic ecosystems



FOCAL AREA #3: Biological Integrity

- ▶ Describe the distributions of native and nonnative species in forests, lakes, streams, and meadows
- ▶ Determine how changing climate will affect species distributions and persistence over time
- ▶ Describe how water quality and quantity affect current and future species distributions
- ▶ Understand how changes in species distributions may affect ecological functions

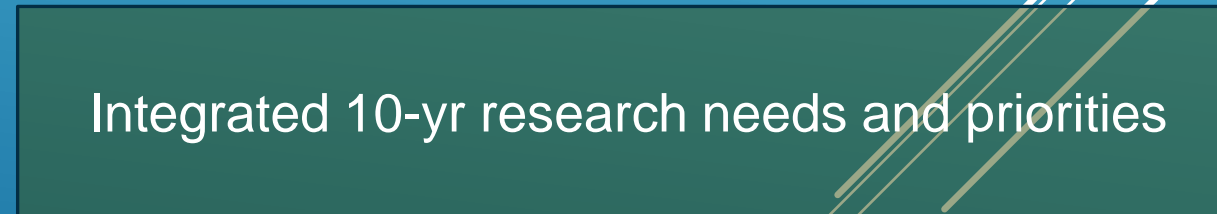


UPLAND SCIENCE TO ACTION TASKS

**Task 1:
Near-term
research**

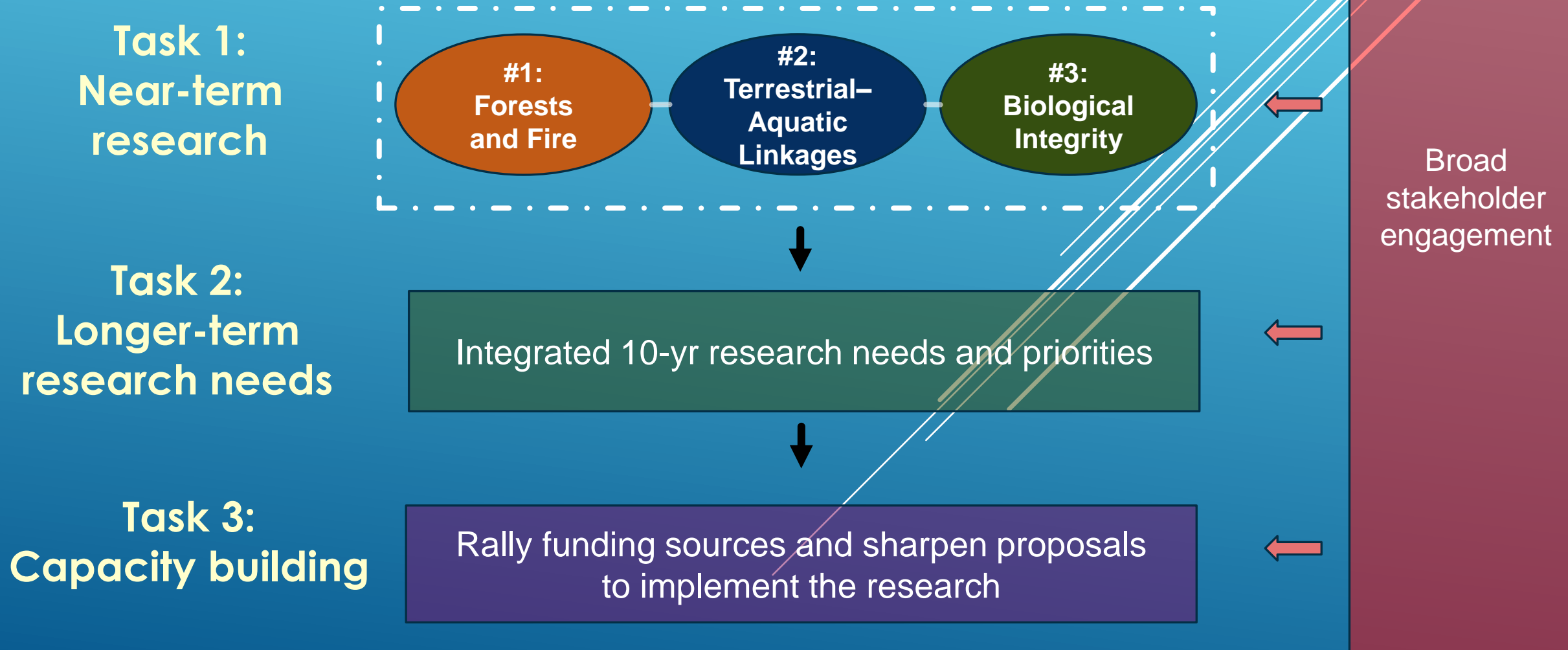


**Task 2:
Longer-term
research needs**



Broad
stakeholder
engagement

UPLAND SCIENCE TO ACTION TASKS



UPLAND SCIENCE TO ACTION NEXT STEPS

- ▶ TSAC final review of the plan in September
- ▶ TSAC to prioritize projects this winter
- ▶ Work begins 2021

