



The Transformation Network (TN)

Transforming Rural-Urban Systems: Trajectories for Sustainability in
the Intermountain West Research Network
NSF SRS Meeting June 7-8, 2023



Grant# 2115169



“I believe that we have the opportunity of a lifetime to protect our environment and our way of life to give our children opportunities and to build economies for generations to come.”

Deb Haaland
Secretary of the Interior

Workshop-to-Network



The TN represents a partnership between eight Western U.S. universities with over 50 partner organizations representing Tribal partners, governmental and non-governmental organizations, public utilities, conservation districts, irrigation districts, and municipalities.



Why the TN?

Our team design—and
lessons learned!

Key elements of the TN:
Convergent Research
Guided Transformation



**INTERMOUNTAIN WEST
TRANSFORMATION
NETWORK**

Why focus on transformations research in the IMW?



We are experiencing increased exposure to natural hazards including wildfires and floods.



We have lacked and continue to lack participatory approaches to research, education, and governance.


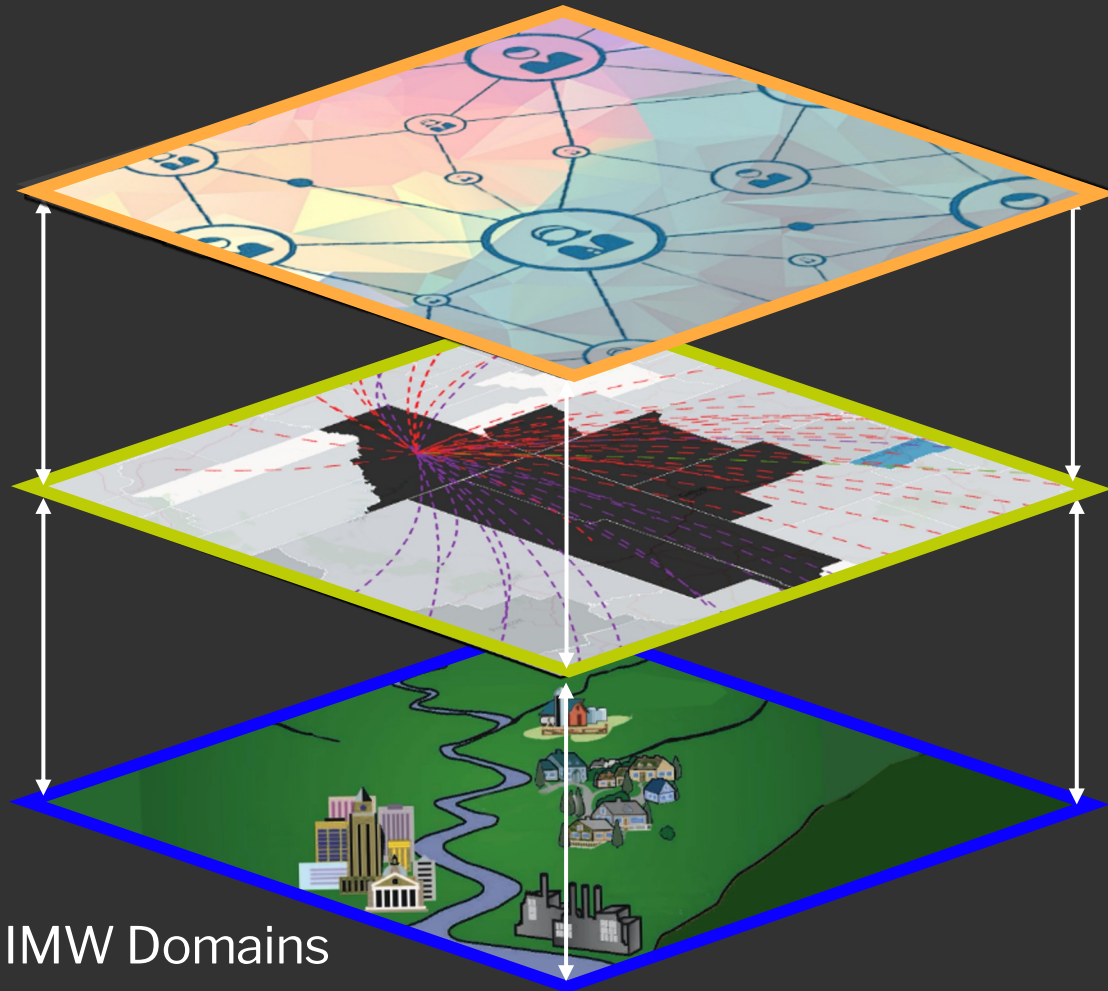


Tensions continue to grow along the gradient of urban to rural communities and landscapes.




Water & food insecurity increase, pressured by climate change and population growth.


Aim is convergent research and community partnerships to set SRSs on resilient trajectories through guided transformations.



1. Headwaters
Water security
Shared stewardship
Ecosystem services

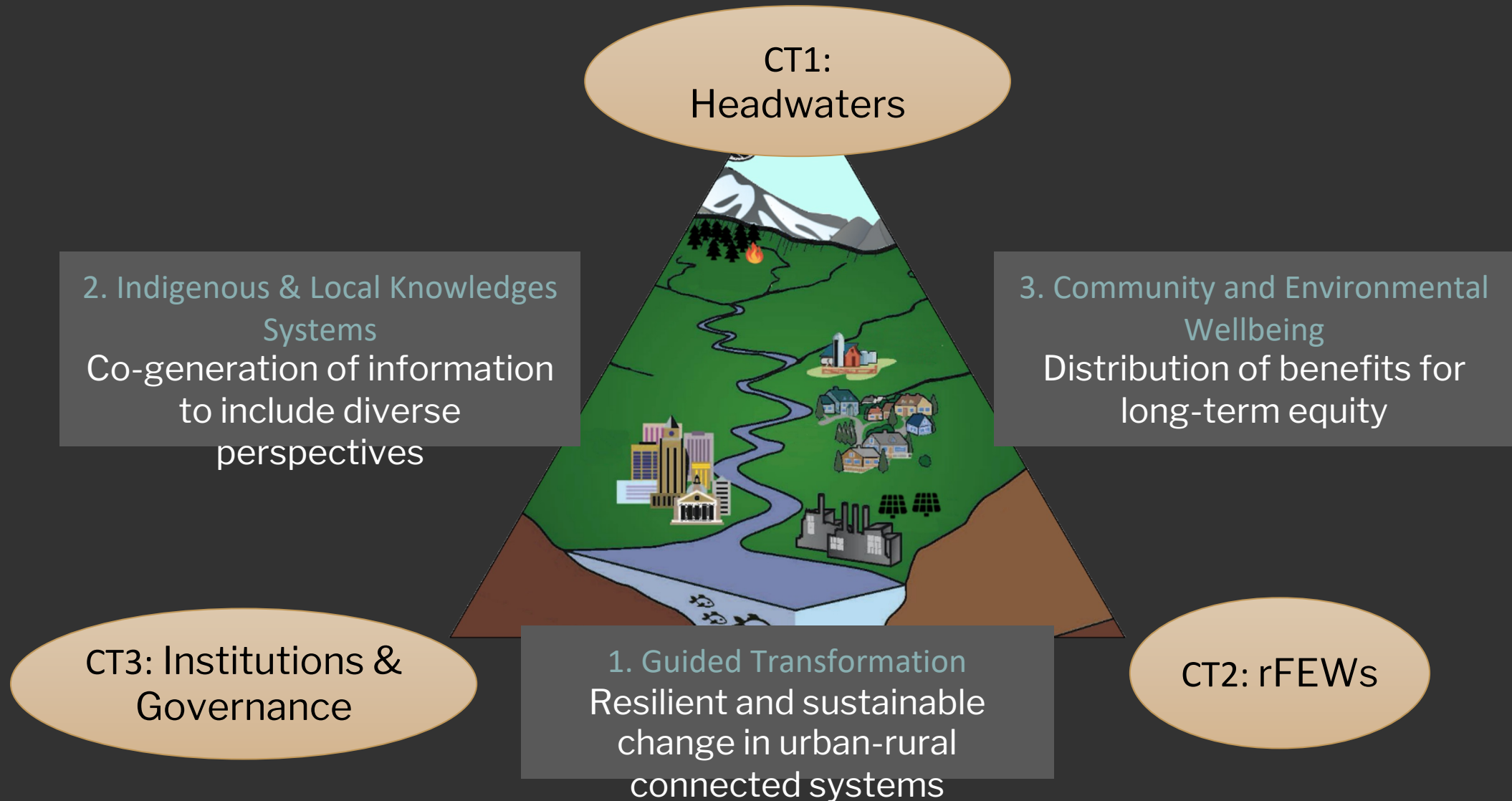


2. rFEWS
Network
connectivity
Regenerative ag
FEW sovereignty



3. Governance
Participatory
approach
Collective action
Adaptation strategies

Cross-cutting threads integrate our core themes



Engagement: Our Transformation Network Partners



8
**Tribal Nations,
Colleges, and NGOS**

The logo for Diné College is circular, featuring a black silhouette of a mountain peak in the center. The words "Diné College" are written in a blue, curved font above the mountain. Below the mountain is a yellow banner with the year "1980" and a yellow arrow pointing to the right.

4
Private Companies

The logo for ISET International consists of a stylized infinity symbol in green and blue above the text "ISET International" in a blue, sans-serif font.

6
**National Labs and
Research Institutes**

The logo for Sandia National Laboratories features a blue square icon with a white stylized building or structure inside, followed by the text "Sandia National Laboratories" in a blue, sans-serif font.

5
**State and Federal
Agencies**

The logo for FEMA (Federal Emergency Management Agency) features a circular seal with an eagle and the text "U.S. DEPARTMENT OF HOMELAND SECURITY" around the perimeter. Below the seal, the word "FEMA" is written in a large, blue, serif font.

3
Utility Districts

The logo for Avista is a blue rectangular box with the word "AVISTA" in white, bold, sans-serif capital letters.

14
**Conservation or
Community NGOs**

The logo for the Coalition for the Poudre River Watershed features a circular design with three blue water droplets in the center. The text "COALITION FOR THE BOUDRE RIVER WATERSHED" is written around the perimeter of the circle.

10
Extension Services

The logo for the Western Center for Metropolitan Extension & Research is circular, featuring a stylized building with three colored sections (red, blue, green) and a yellow banner below it. The text "Western Center for Metropolitan Extension & Research" is written around the perimeter.

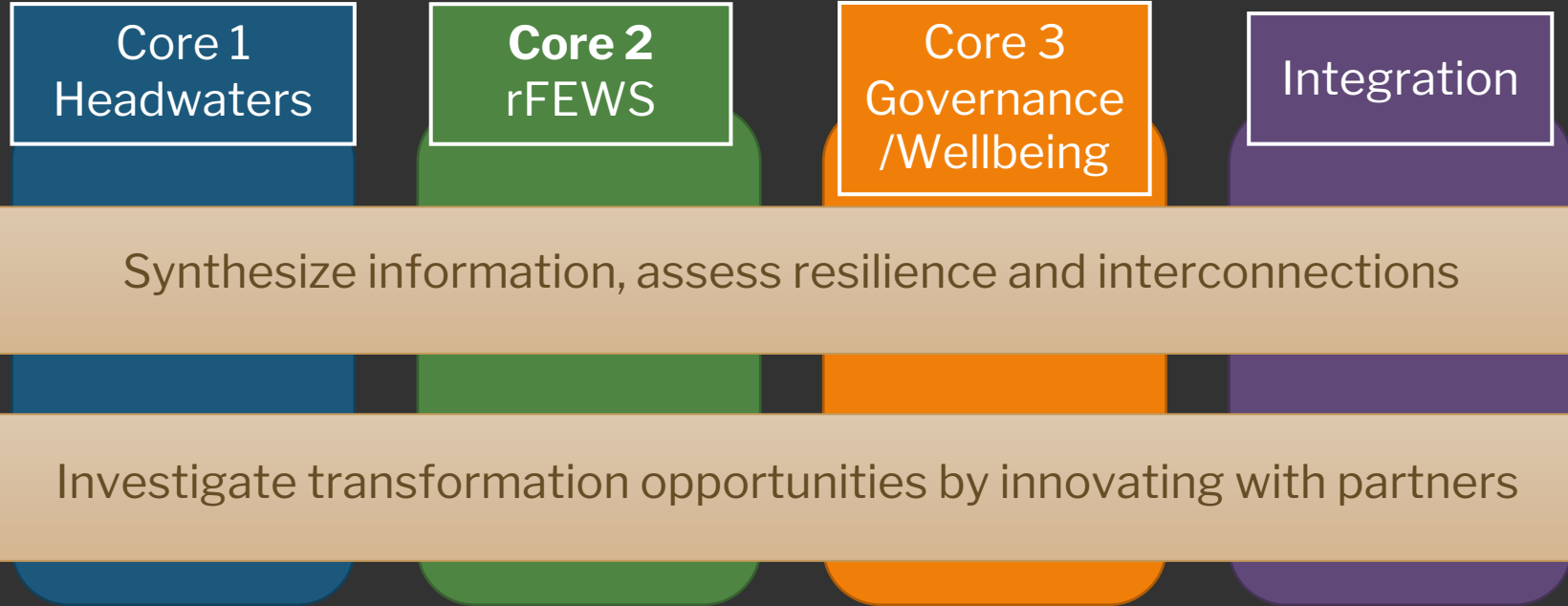
3
**Conservation
Districts**

The logo for the Middle Rio Grande Conservancy District features a stylized river flowing through a yellow landscape. The text "MIDDLE RIO GRANDE CONSERVANCY DISTRICT" is written around the perimeter.

5
Municipalities

The logo for the City of Spokane features a stylized blue archway over a series of white, curved lines representing water. The text "CITY OF SPOKANE" is written above the archway.

Our approach for building the Transformation Network



Task 1: Co-characterize systems across SRSs
Synthesize information, assess resilience and interconnections

Task 2: Co-generate transformative trajectories
Investigate transformation opportunities by innovating with partners

Task 3: Co-produce and communicate capacity

TN Data	Transformation Atlas	Cooperative Extension Network	Workshops	Resilience Colloquia
---------	----------------------	-------------------------------	-----------	----------------------

Our Team and Region: Transformation Network Partners



8
Universities
5 HSIs
5 AI&AN SIs

9
Urban Regions

4
Place-Based Systems





The nested Network **governance system** allows knowledge sharing, monitoring progress, and distributed decision making



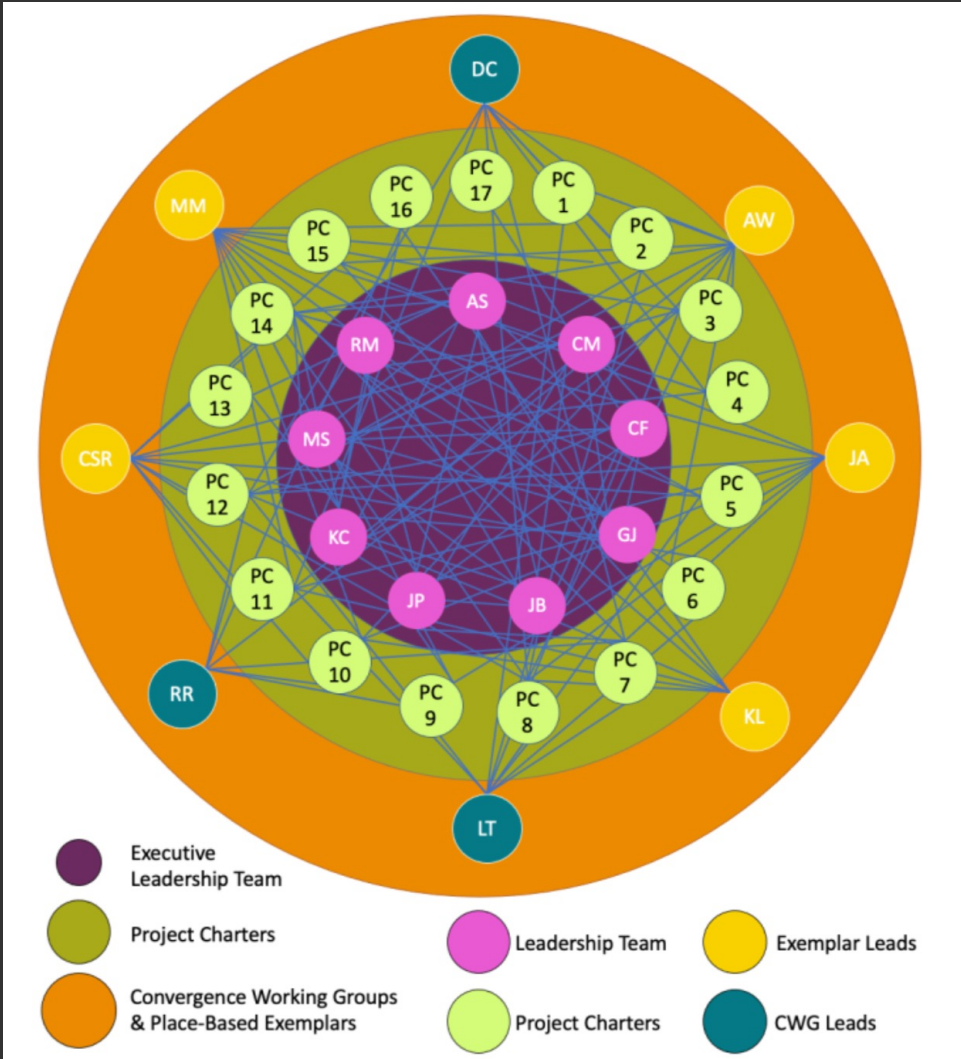
Advisory Board

Project Charters

Exemplar Study Areas

External Evaluator

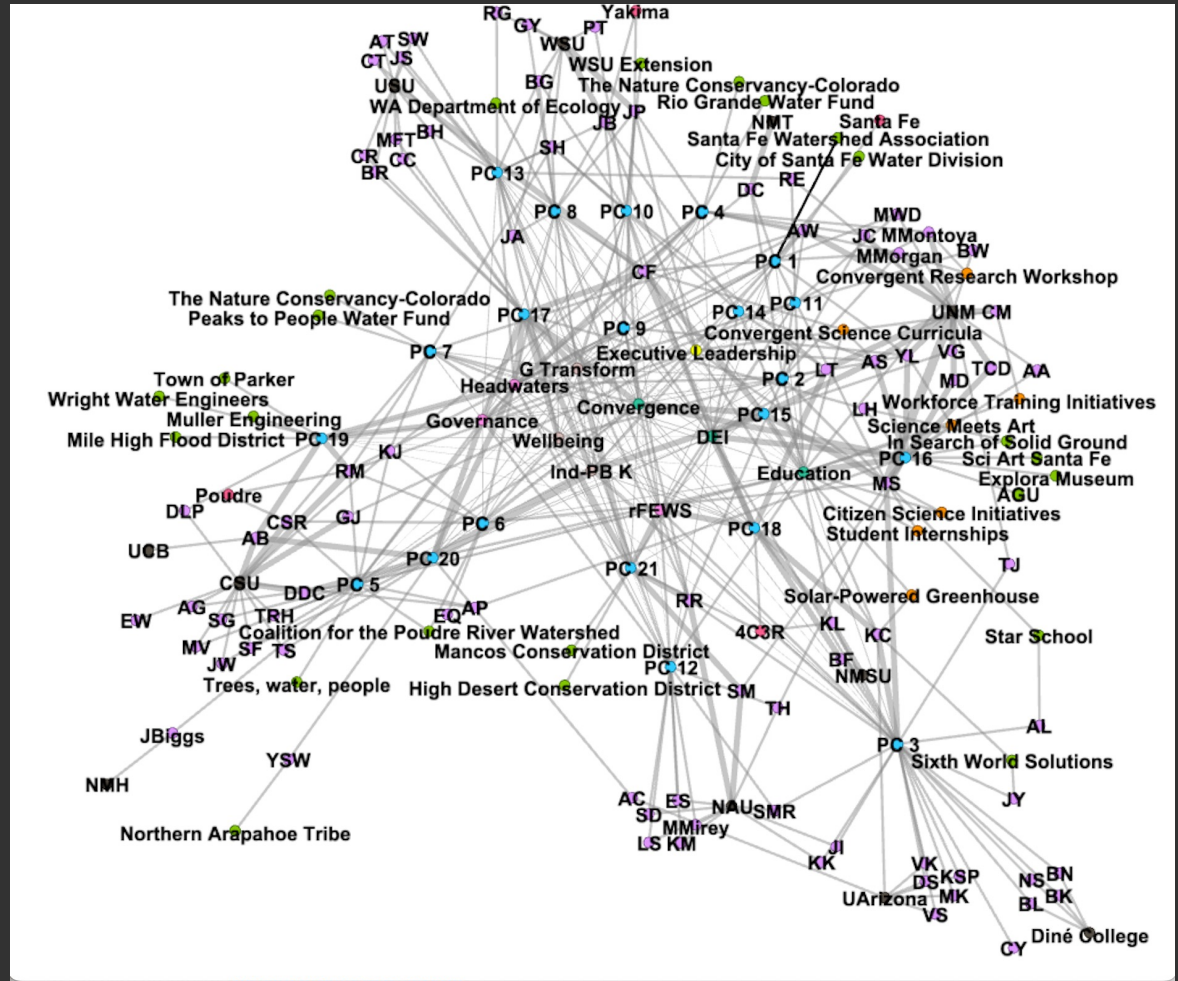
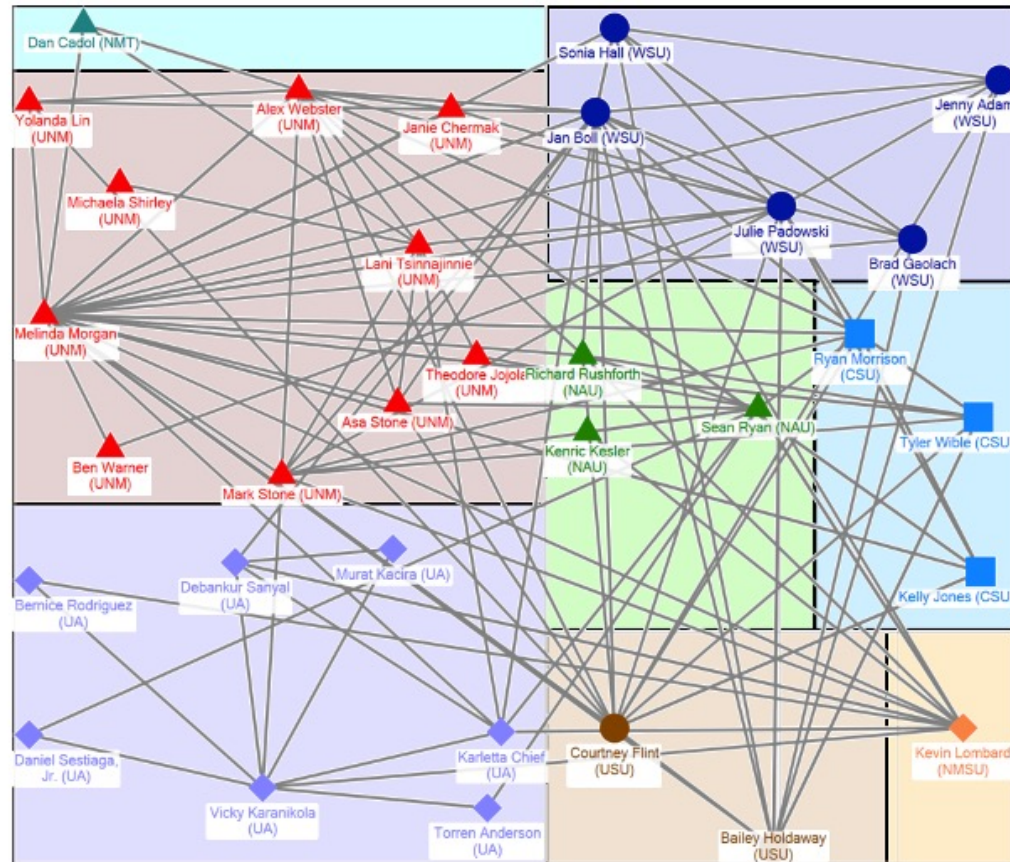
Convergent Working Groups



Current Convergence at Work in the TN



Figure 9 - Collaborations from the spring 2023 survey grouped by institution



NSF identifies CR having two primary characteristics:



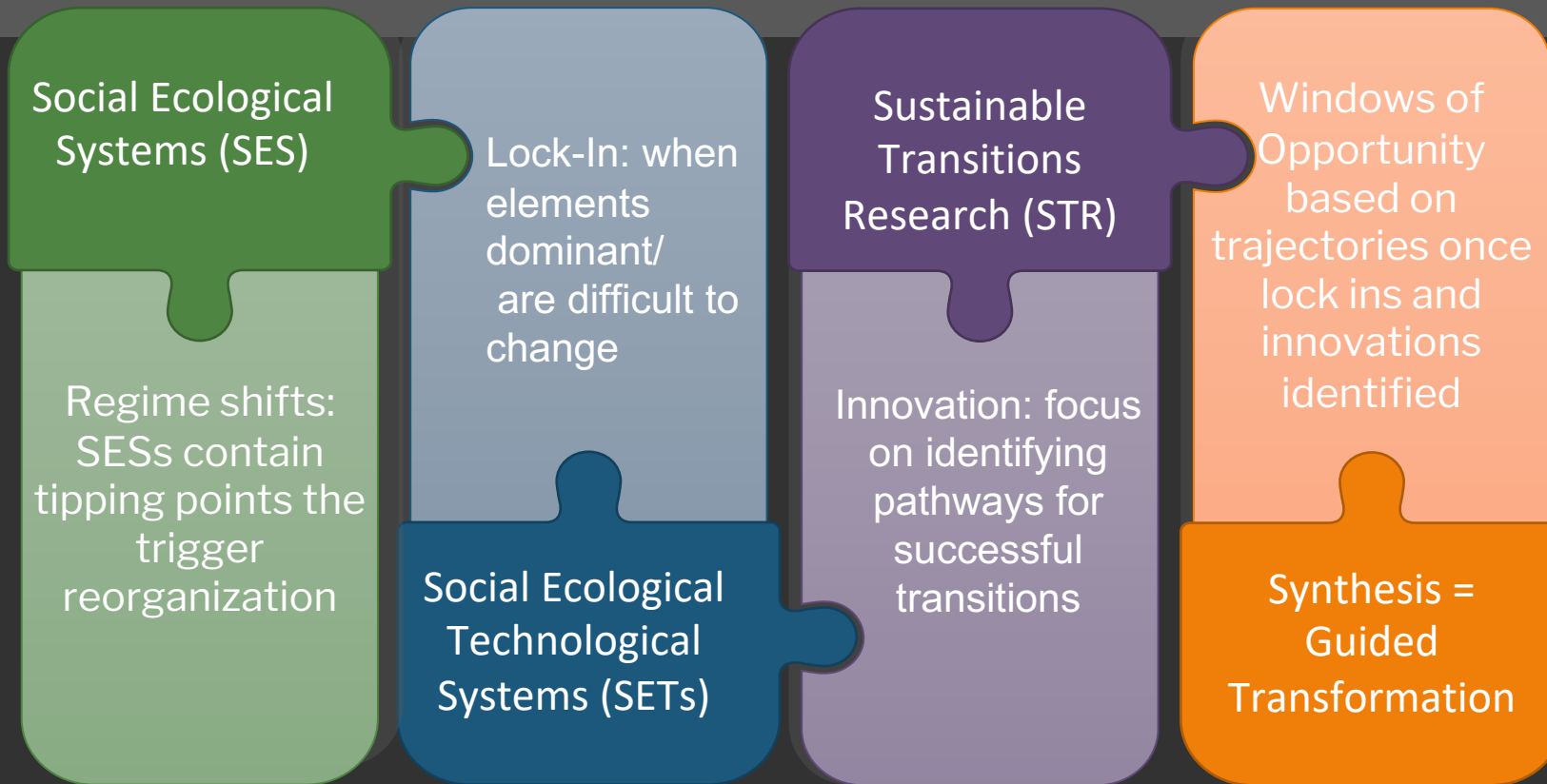
Research driven by a specific and compelling problem. CR is generally inspired by the need to address a specific challenge or opportunity, whether it arises from deep scientific questions or pressing societal needs.

Deep integration across disciplines. As experts from different disciplines pursue common research challenges, their knowledge, theories, methods, data, research communities and languages become increasingly intermingled or integrated. Formation of novel frameworks to catalyze discovery and innovation. New frameworks, paradigms or even disciplines can form sustained interactions across multiple communities.

Guided Transformation—framework and approach



Working with communities and systems facing social and/or ecological regime shifts to develop concepts and strategies for enhanced resilience

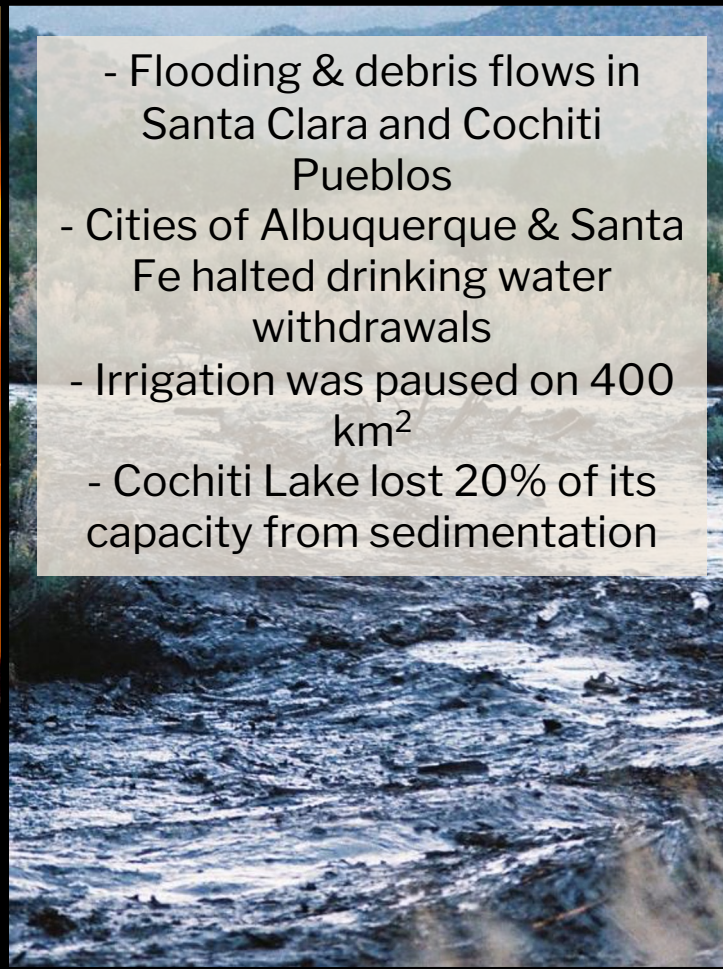


Rio Grande Watershed Exemplar

A transformation in approaches to landscape-scale headwater forest management.



- 156,000 acres (630 km²) burned
- 40% burned in first 30 hours



- Flooding & debris flows in Santa Clara and Cochiti Pueblos
- Cities of Albuquerque & Santa Fe halted drinking water withdrawals
- Irrigation was paused on 400 km²
- Cochiti Lake lost 20% of its capacity from sedimentation

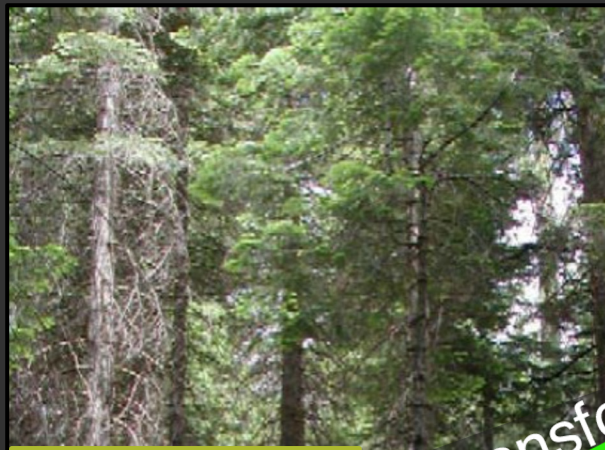


- Inspired a transformation in landscape management
- Collaborations across Tribes, agencies, academics, and NGOs

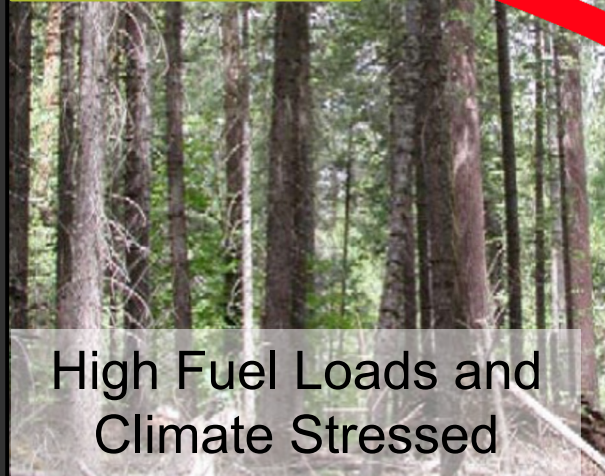
Cochiti Canyon Flood Dixon's Apple Orchard

August 22, 2011

Rio Grande Watershed Exemplar



Innovative Intervention



High Fuel Loads and Climate Stressed



Post-Fuel Reduction



Pine Beetle Die-Off



Low-Severity Wildfire



High-Severity Wildfire



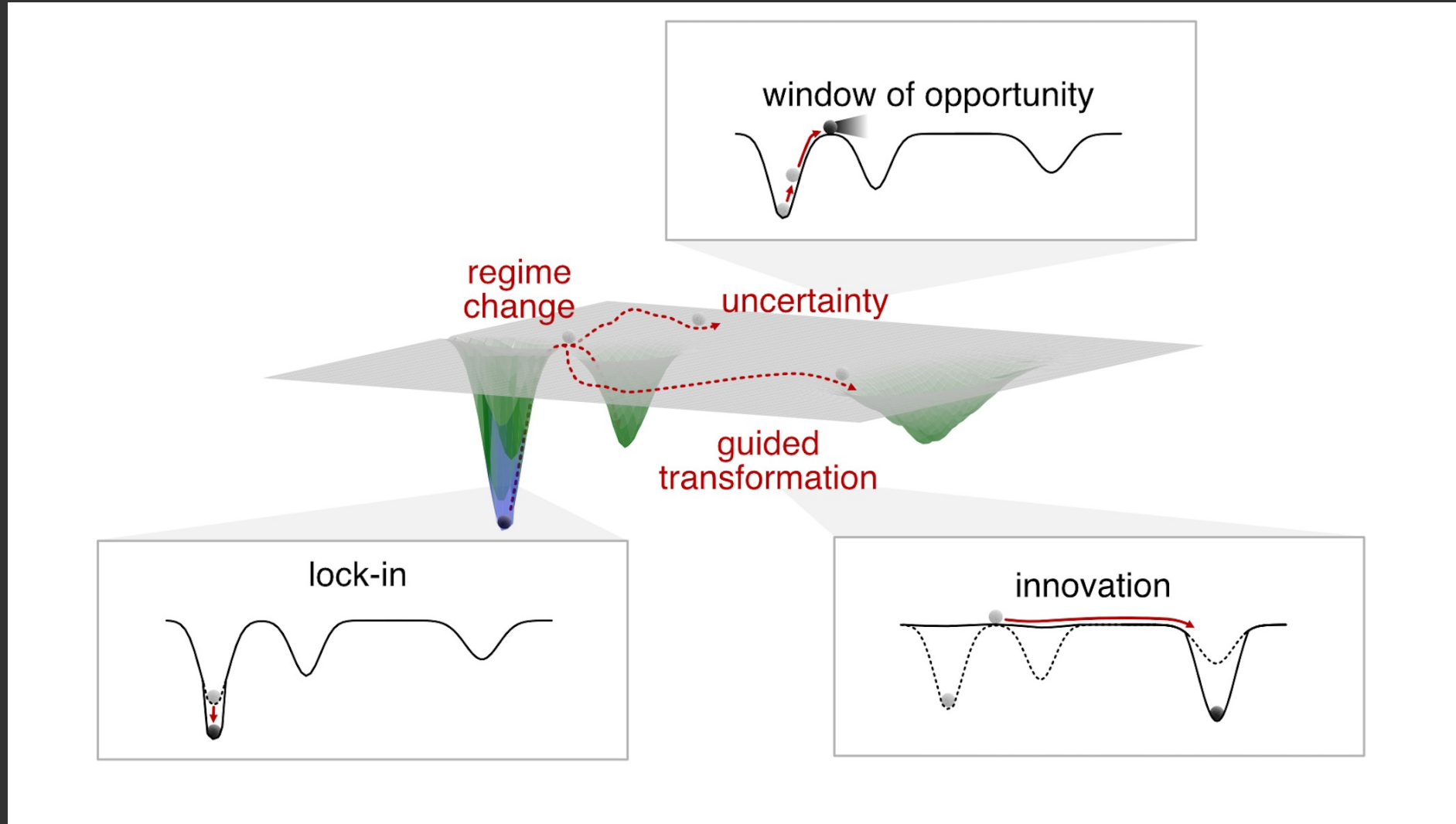
Resilient Forests

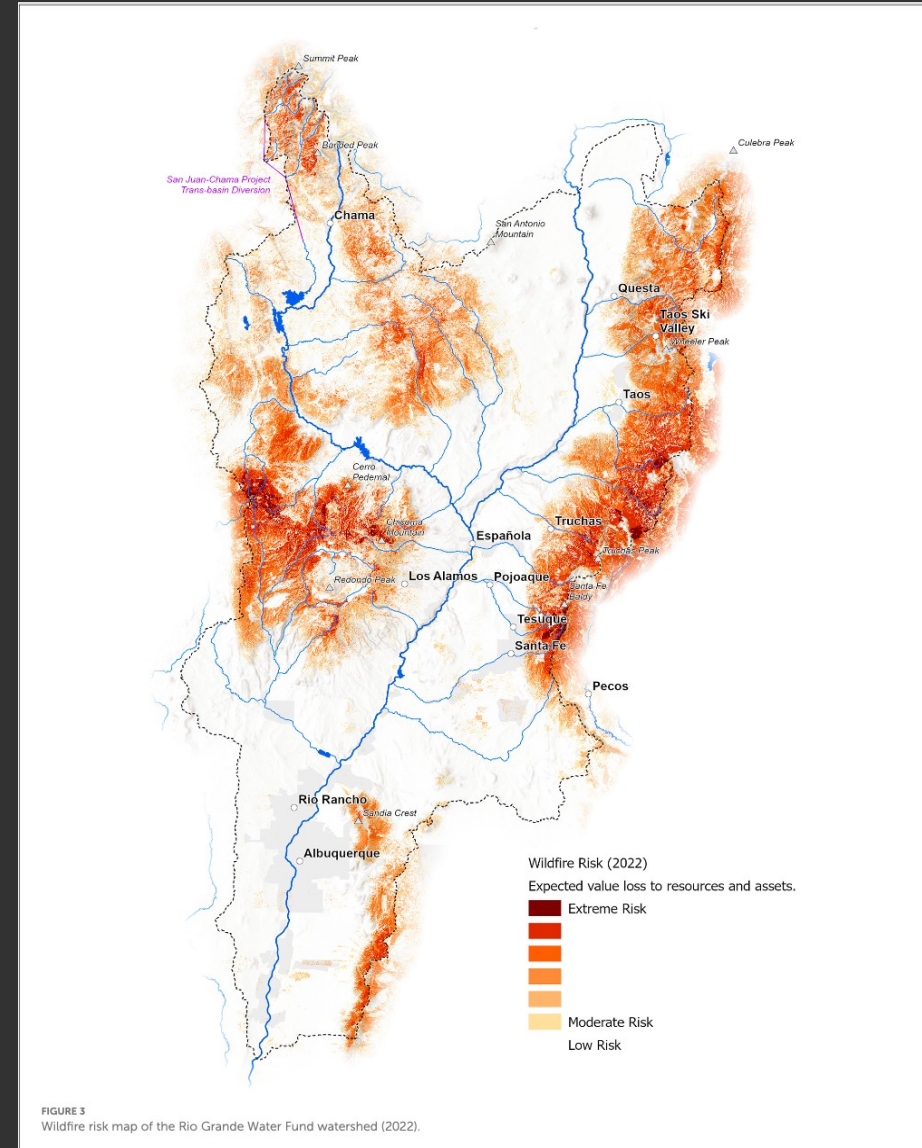
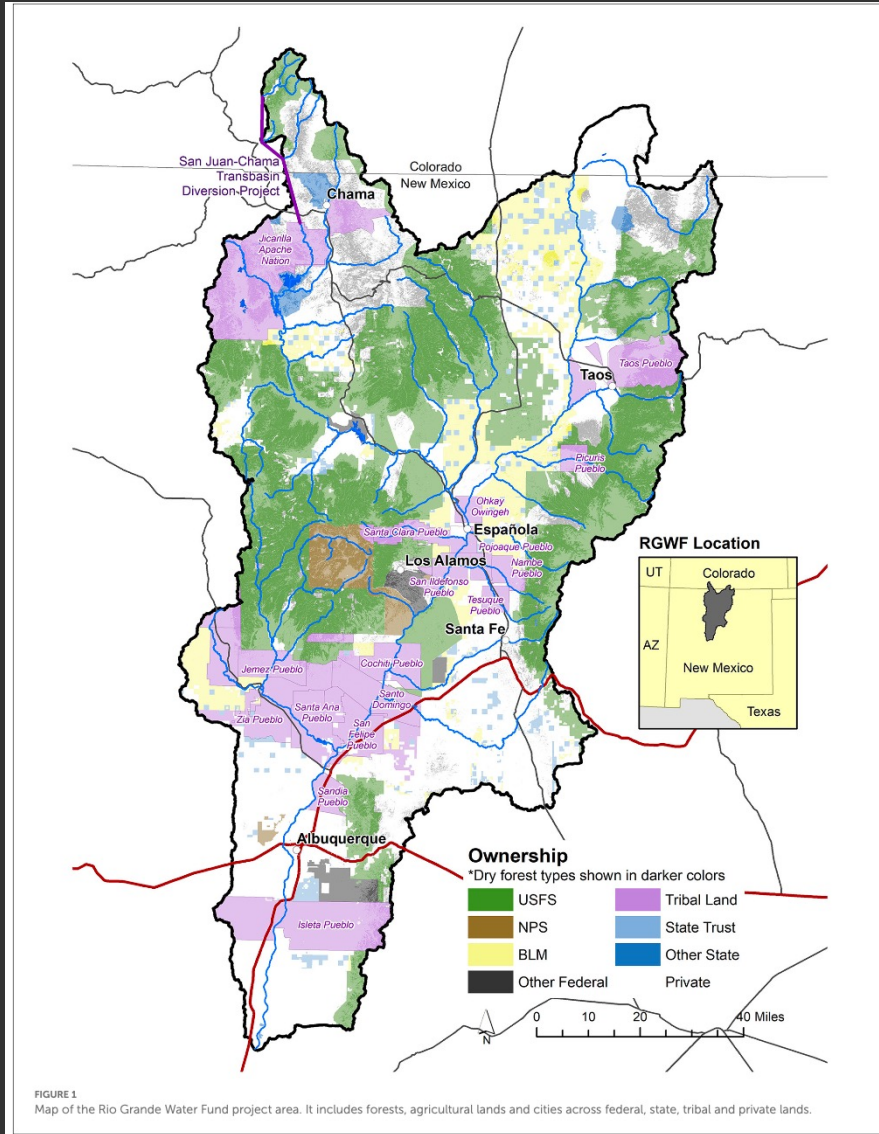


Loss of Ecosystem Services

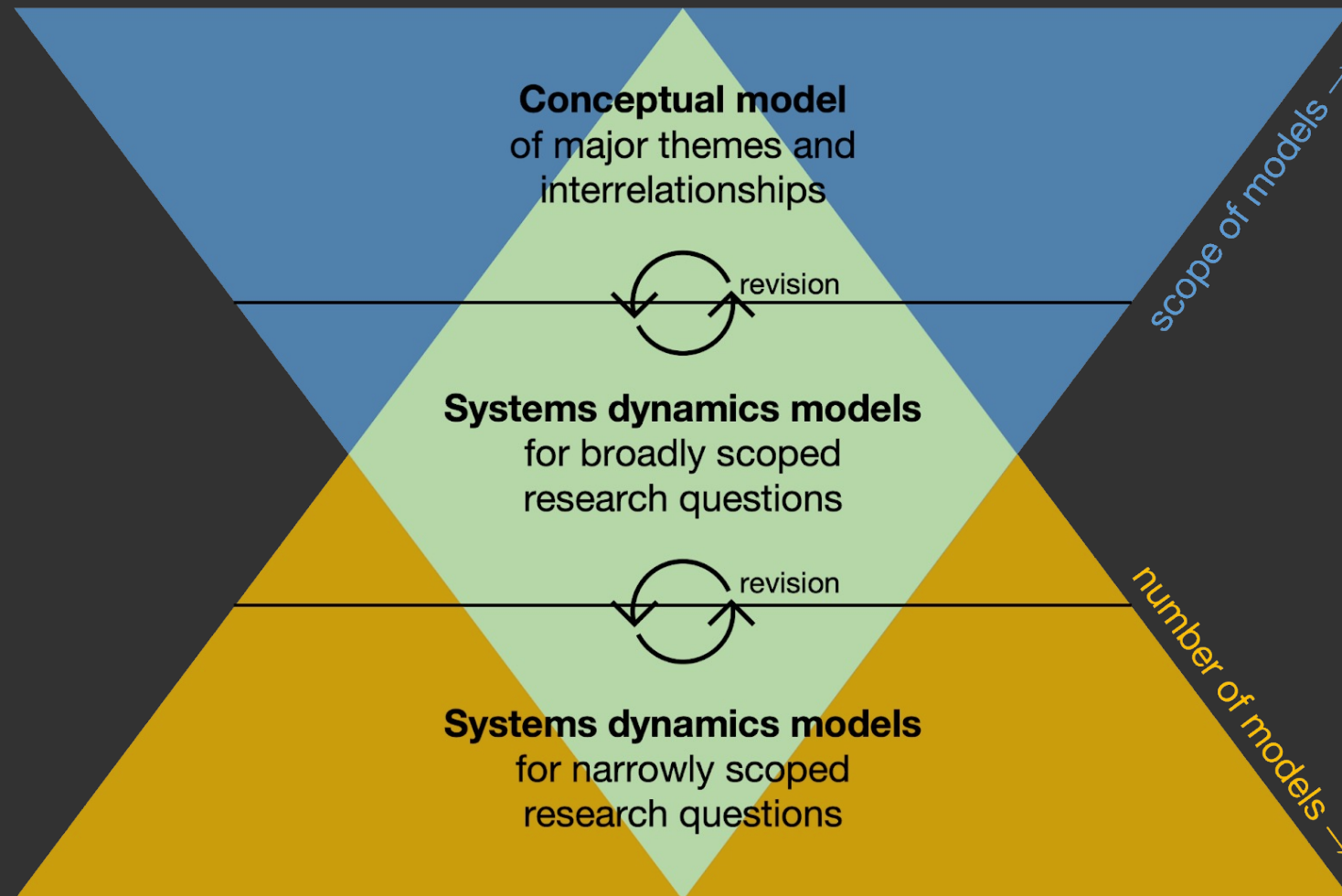
Transformation through innovative landscape management

Guided Transformation—framework and approach





System Dynamics Modeling—Participatory Approach



Concluding thoughts



Transformation!

Beware of convergence
fatigue!

Remember novelty!



**INTERMOUNTAIN WEST
TRANSFORMATION
NETWORK**

Thank you and contact information



Melinda Morgan

W.K. Kellogg Chair in
Sustainable Environmental &
Food Systems

Director, Sustainability Studies
Program

Professor, Geography &
Environmental Studies

Pronouns: she, her, her
mhbenson@unm.edu

Grant# 2115169



**INTERMOUNTAIN WEST
TRANSFORMATION
NETWORK**