

An Integrated Framework for Drought Impact Assessment and Resilience Planning

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CCFI
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Lincoln, NE



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Nebraska
Lincoln



Heartland Center
for Leadership Development

Outline

- Drought Overview
- Drought Planning Overview
- Assessment Framework
- Case studies and examples

Organizational Partnership



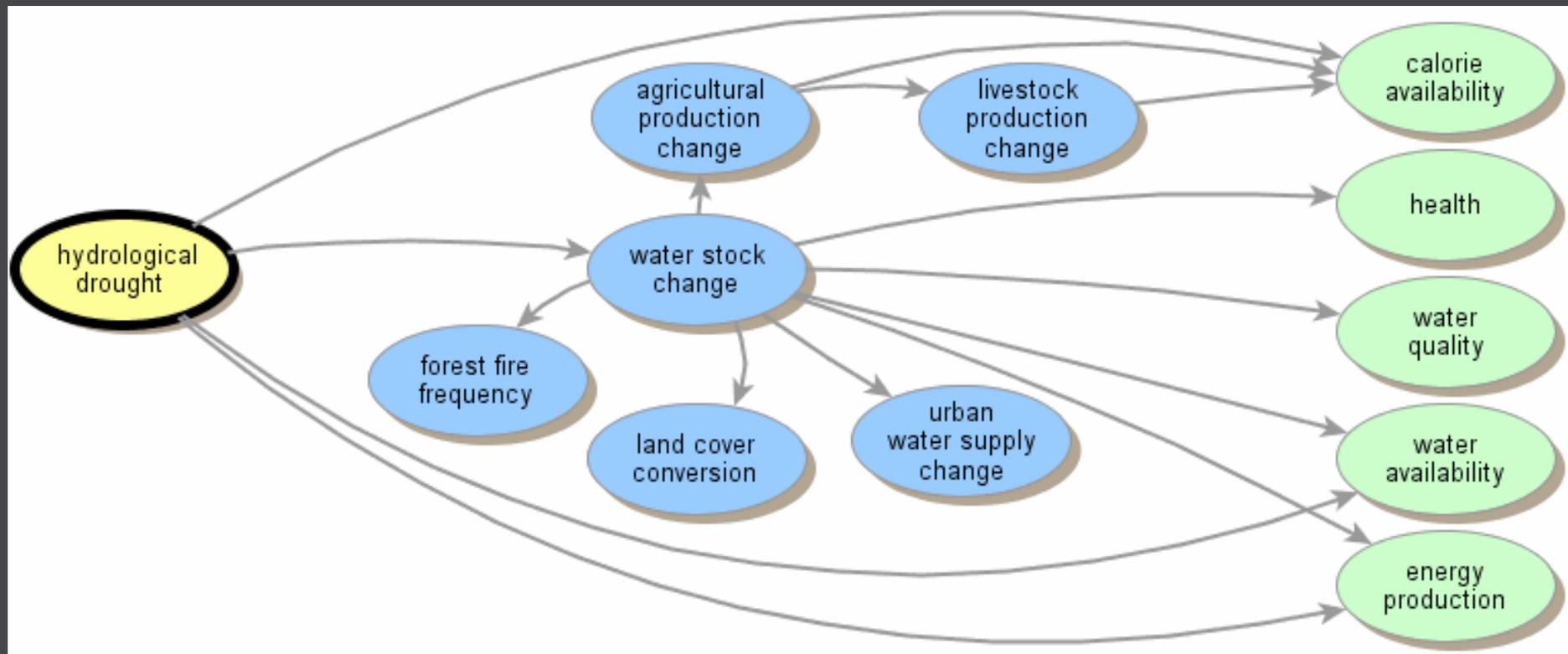
Why Drought?

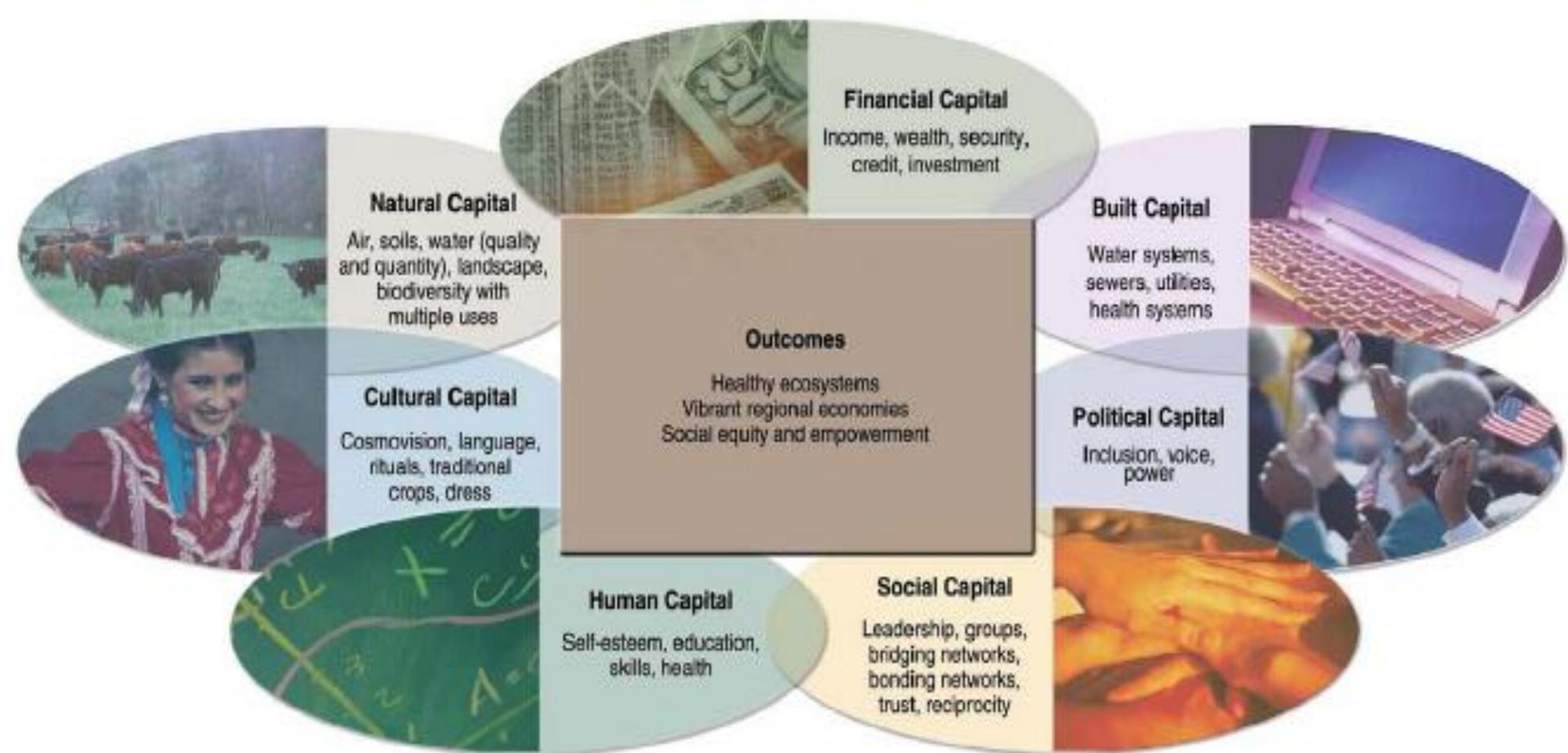
Event	Year	Cost Adjusted Billions of Dollars	Deaths
Katrina	2005	\$149	1,833
Sandy	2012	\$66	159
Hurricane Andrew†	1992	\$45	61
U.S. Drought / Heatwave	1988	\$39	454
Midwest Flooding	1993	\$34	48
Hurricane Ike†	2008	\$32	112
U.S. Drought / Heatwave	2012	\$30	123
Central/ Eastern Drought/ Heatwave	1980	\$28	1,260
Hurricane Ivan†	2004	\$25	57
Hurricane Wilma†	2005	\$23	35

What is drought?

- Drought is a **persistent** and **abnormal** moisture deficiency having adverse impacts on a well-defined sector.
- Classified by impacts to a sector
 - Agricultural
 - Hydrological
 - Meteorological
 - Socioeconomic

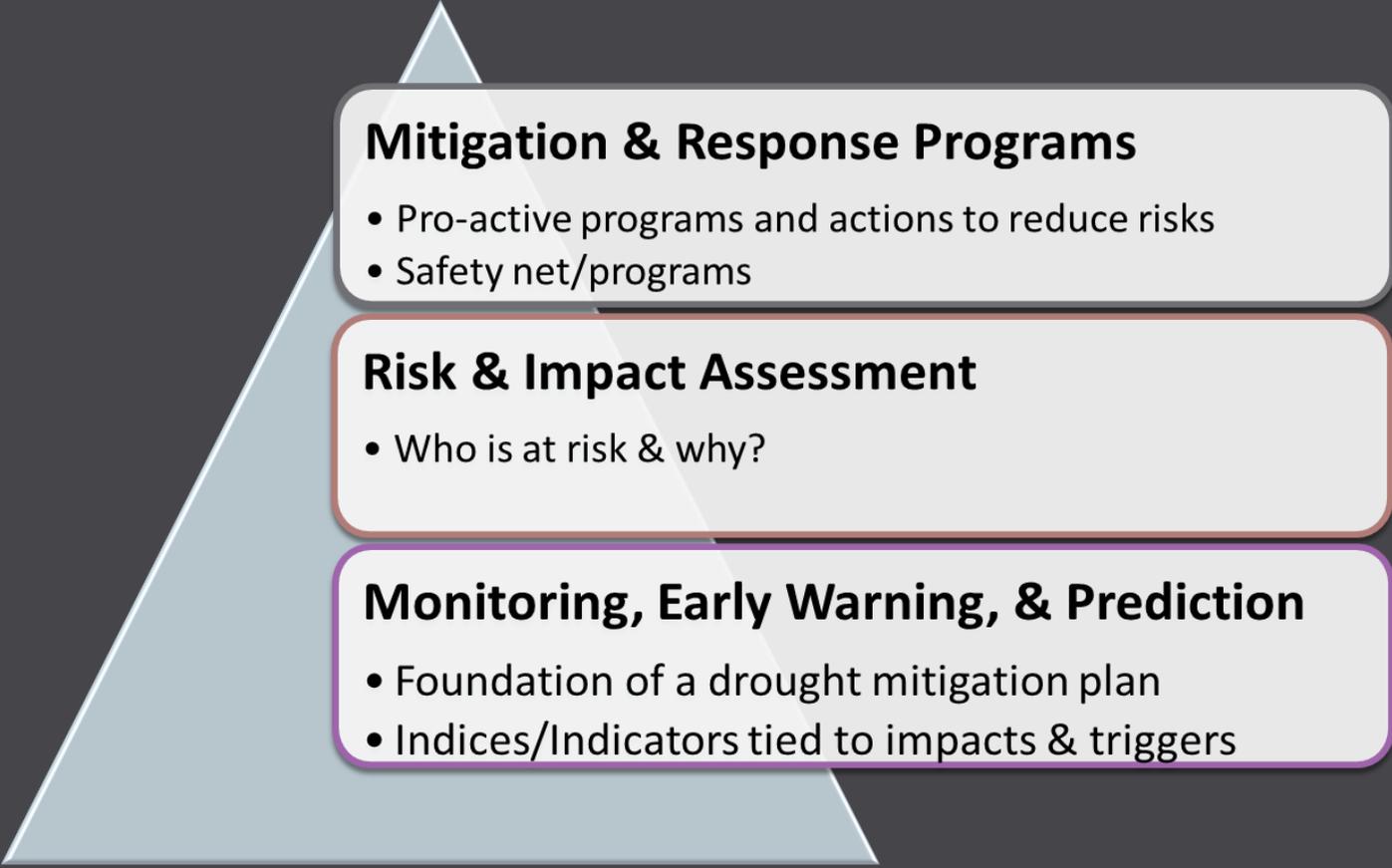
Hydrological Drought Impact Chain





Community Capitals Framework

Due to the highly diverse nature of drought impacts, it follows that the CCF would naturally lend itself to drought planning and mitigation efforts.



Mitigation & Response Programs

- Pro-active programs and actions to reduce risks
- Safety net/programs

Risk & Impact Assessment

- Who is at risk & why?

Monitoring, Early Warning, & Prediction

- Foundation of a drought mitigation plan
- Indices/Indicators tied to impacts & triggers

Successful Drought Mitigation Plan

CCF can fit into the entire process of drought planning by adding a solid & holistic approach to all components of a plan

**Developing a
Planning
Committee Using
the
Community Capitals**

Financial Capital

Potential Committee Members:

Representatives of
infrastructure development
groups, banks, endowments,
and funding agencies

Built Capital

Telecommunications systems
Utilities, industrial parks, main
street, business locations, etc.

Political Capital

Potential Committee Members:

Elected and appointed officials and
those with whom they work
Congressional delegation staff
Representatives of political groups

Social Capital

Potential Committee Members:

Representatives of clubs and organizations
People with links to outside resources
People who know many people
in the community

Human Capital

Potential Committee Members:

Facilitator, Educator (K-12), Trainers,
Representatives of service agencies, and
their customers
Economic Developer and their partners

Natural Capital

Potential Committee Members:

Representatives of parks and recre-
ation, watershed, nature groups, and
those who use the resources
Farmers, ranchers, and others who
make a living off the land and their
customers and suppliers

Cultural Capital

Potential Committee Members:

Representatives of cultural and religious groups
Representatives of museums and
historical associations and their support base.

Identify Capitals/Assets

Capitals of the Great Plains



Natural



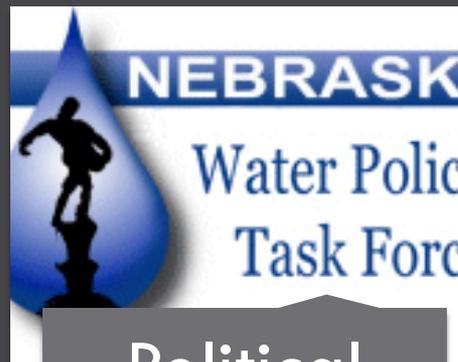
Built



Financial



Human



Political

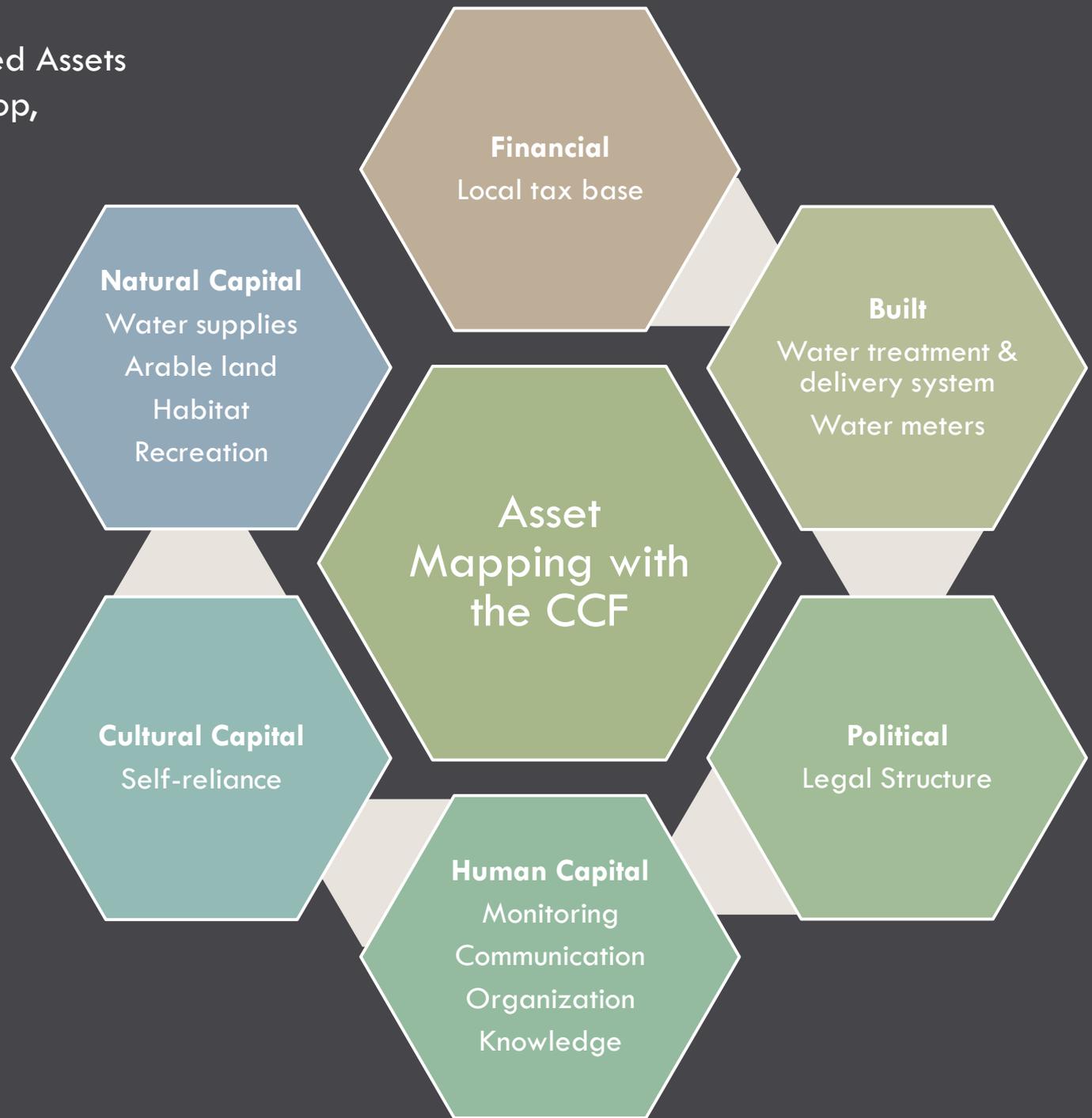


Social



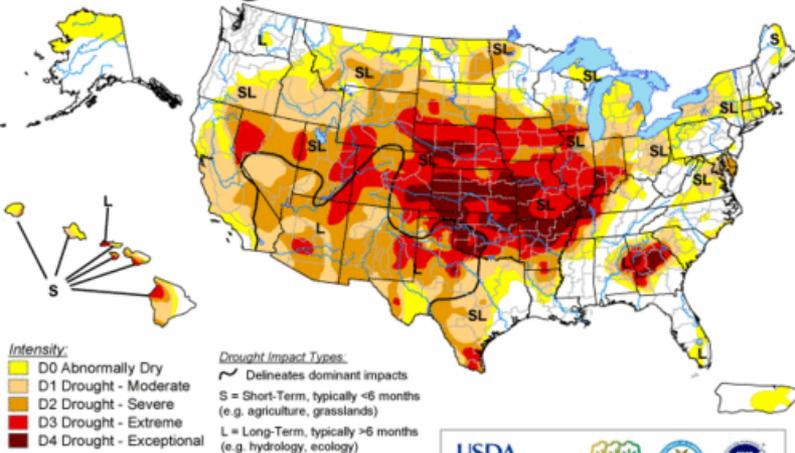
Cultural

Local/Community Based Assets
(Kansas RC&D workshop,
November 2013)



U.S. Drought Monitor

August 21, 2012
Valid 7 a.m. EDT



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Released Thursday, August 23, 2012

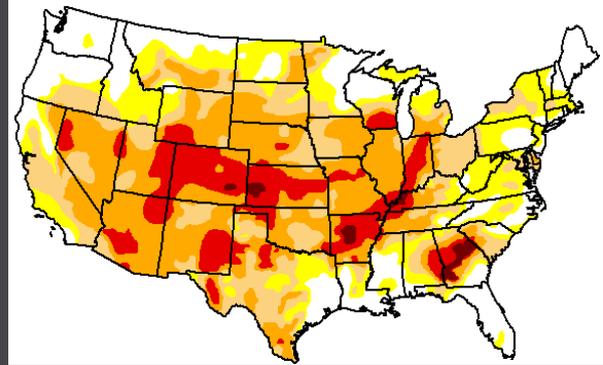
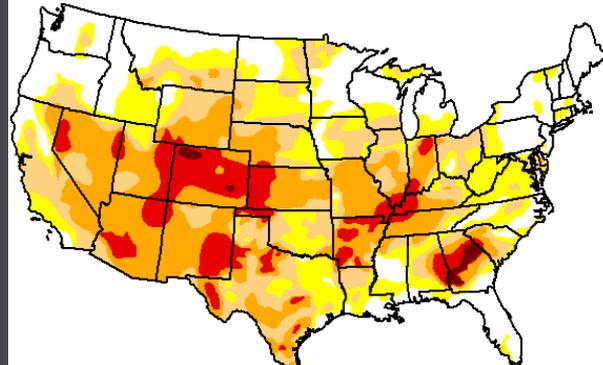
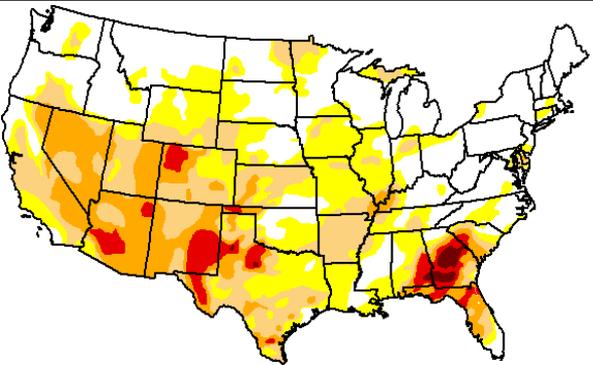
Author: Michael Brewer/Liz Love-Brotak, NOAA/NESDIS/NCDC

<http://droughtmonitor.unl.edu>



CCF & Drought Impacts

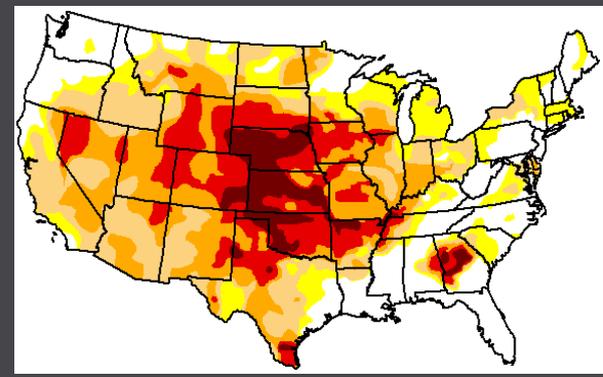
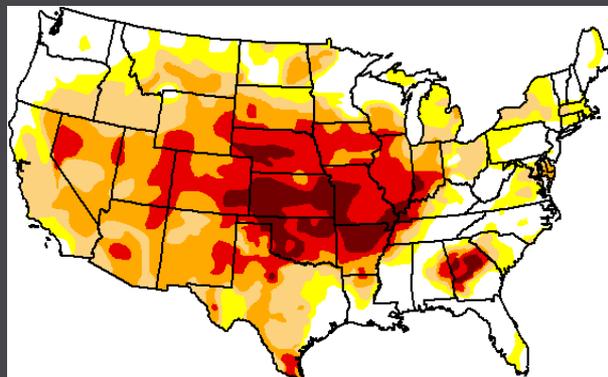
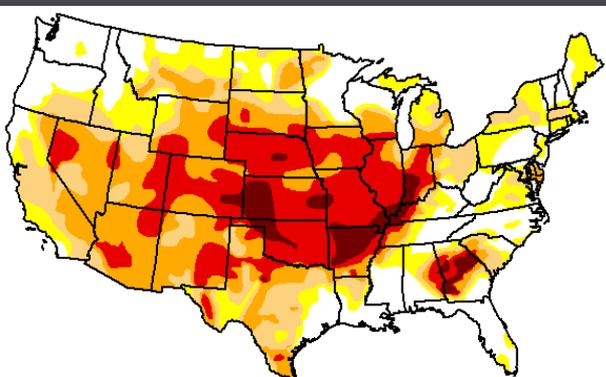




June 5, 2012

July 3, 2012

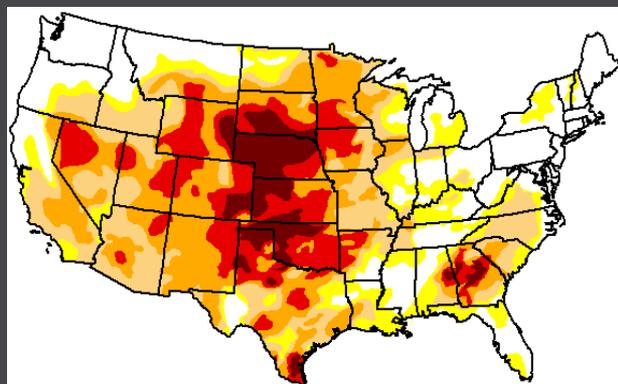
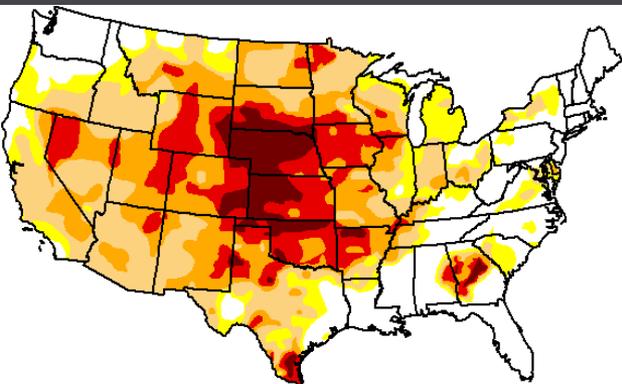
July 17, 2012



August 7, 2012

August 21, 2012

September 4, 2012



Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

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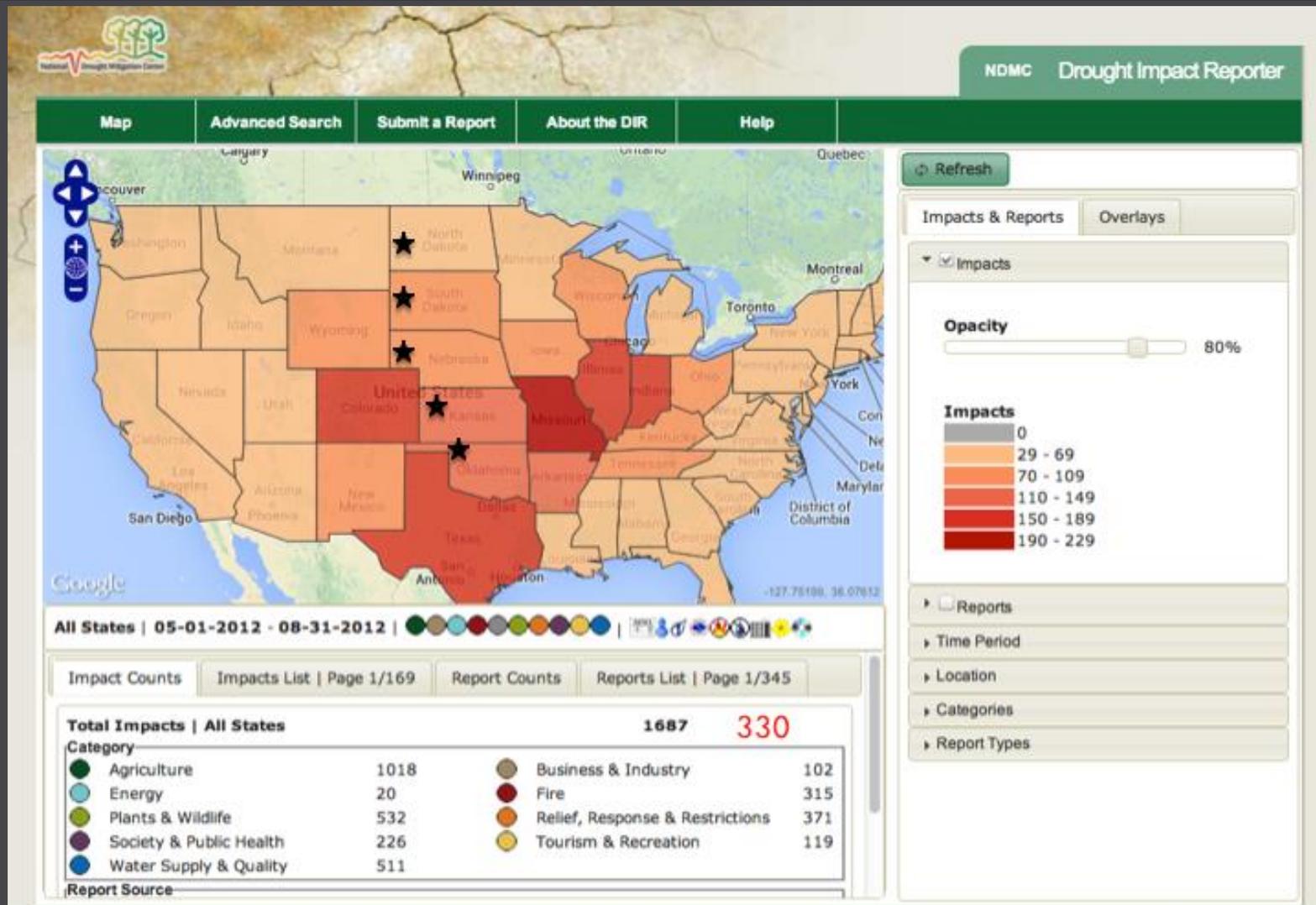



October 2, 2012

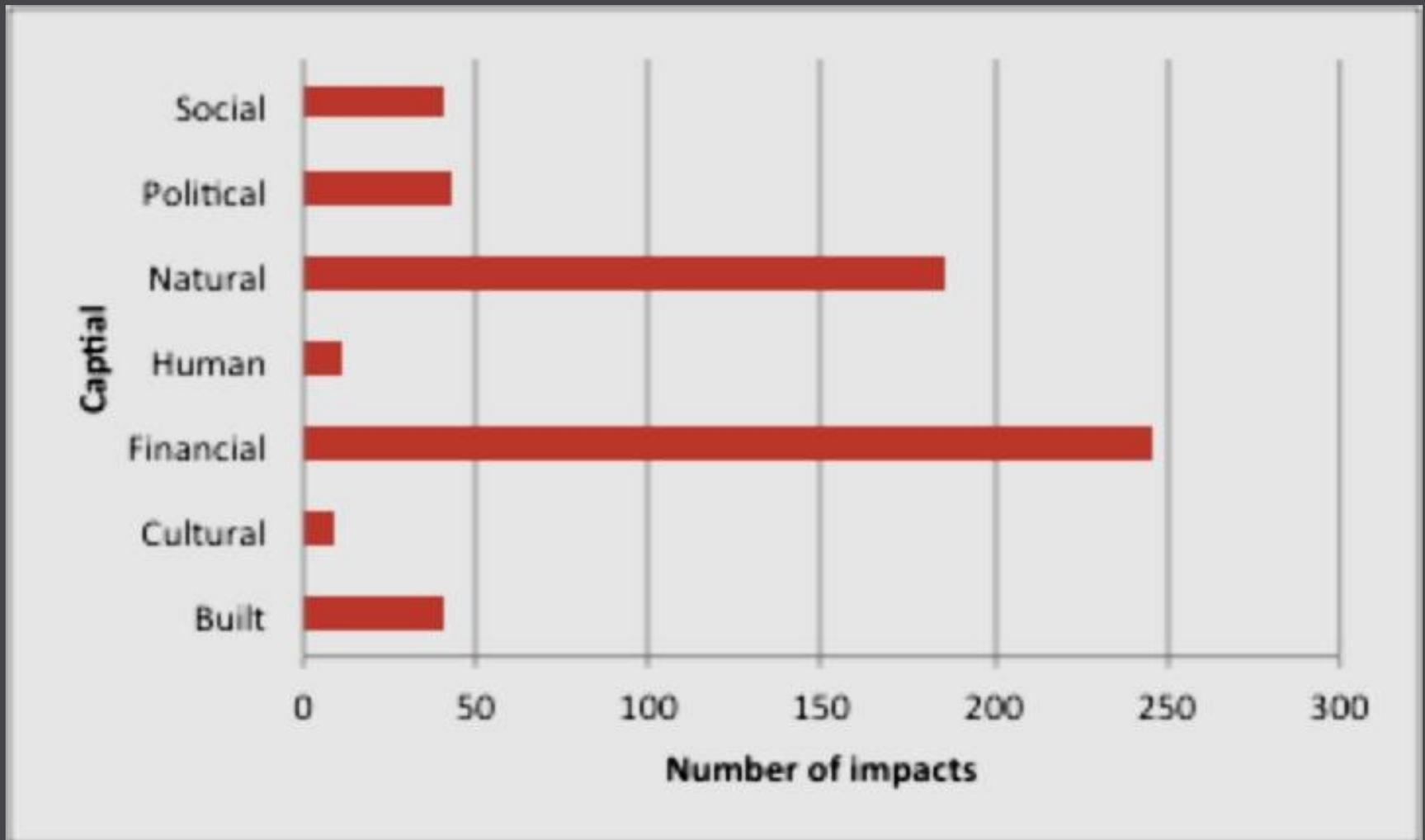
December 5, 2012

<http://droughtmonitor.unl.edu/>

Impact Analysis: 2012 Drought



Overview of Results



Drought Impacts and Community Capitals

Natural Capital

- Decline in rangeland grass production
- Trees susceptible to pests/disease
- Algae blooms in ponds
- Blowing dirt
- Grass fires
- Wildlife deaths

Financial Capital

- Decreased crop yields
- Increased water and energy rates
- Reduced revenue from water sales
- Remove menu items (elk & buffalo)
- Closed ethanol plant
- Increased firefighting expenses

Drought Impacts and Community Capitals

Built Capital

- Wells shut down
- Power outages
- Shifts and cracks in foundations
- Closed roads (fire)
- Homes destroyed in wildfires

Political Capital

- Activation of water restrictions
- State of Emergency declarations
- Improvements to USDA programs
- Opening of CRP lands for grazing
- Federal Drought Aid

Drought Impacts and Community Capitals

Human Capital

- Increased respiratory illness
- Increased heat-related ambulance calls
- Increased spider bites (brown recluse)
- Farmers less optimistic
- Increased anxiety in ethanol business

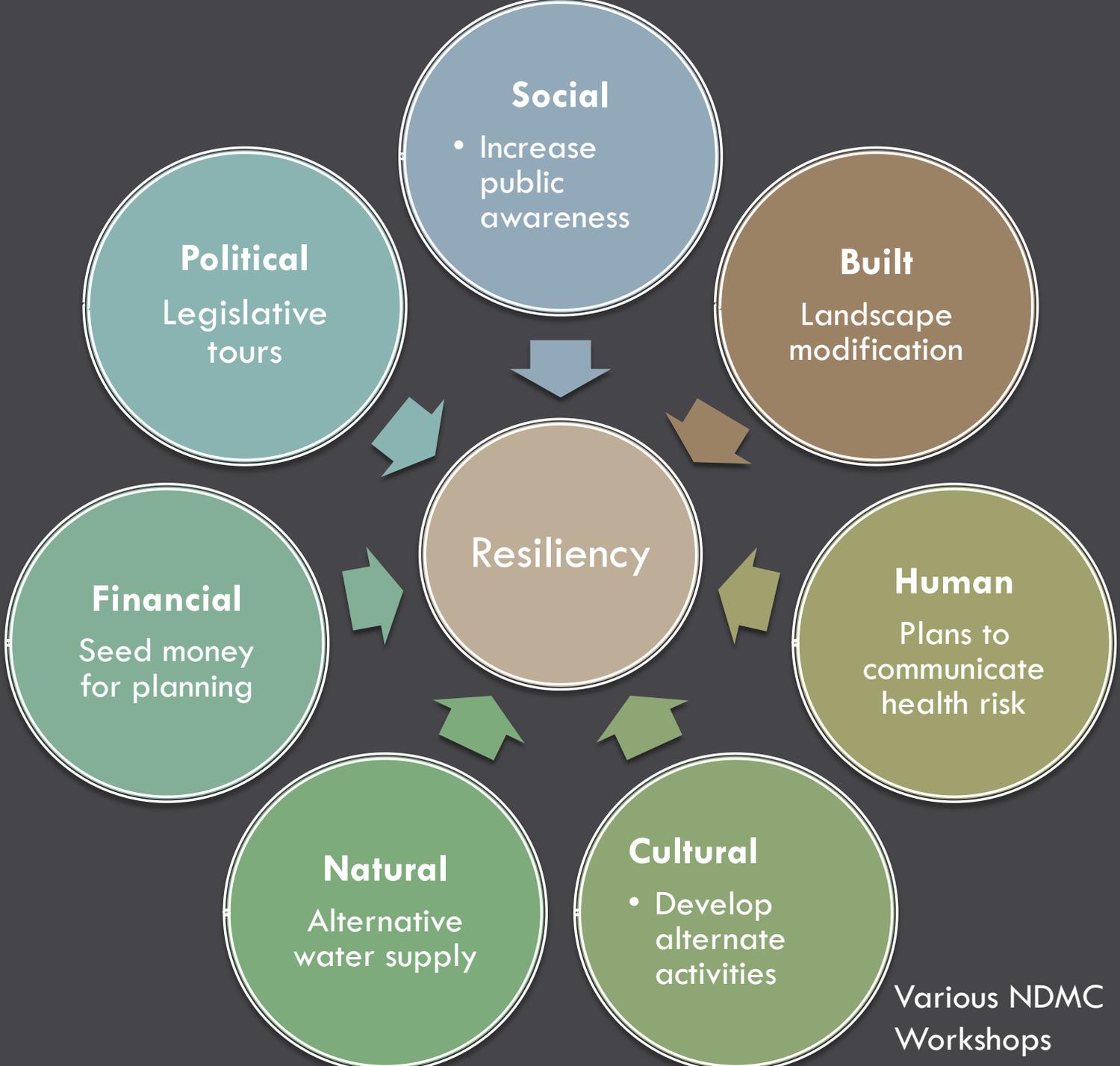
Social Capital

- Voluntary water reductions
- Increased public awareness and media efforts
- Increased demands on volunteer fire and rescue
- Working extra overtime repairing water mains

Cultural Capital

- 4th of July fireworks cancelled
- Closed swimming pools
- American Farm Bureau held national day of prayer
- Decreased hunting opportunities

Drought Planning Strategies



Various NDMC Workshops

Conclusions & Future Research

- Drought impacts all capitals & these need to be considered in the planning process
 - Identify committee members & stakeholders
 - Assess risk & develop mitigation and response strategies
 - Understand impacts

Feedback regarding areas of need:

- Methods of analysis & the ability to make correlations between drought hazard and community level capital formation (empirical results), data categories should show (or not show) long-term adaptive capacity
- Need to bring out the theory of CCF or just find ways to use it as tool (within a DVRI/Drought Exercise and Assessment Process)



Thank you

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