



bushfire&natural
HAZARDSCRC

THE AUSTRALIAN NATURAL DISASTER RESILIENCE INDEX

DEVELOPING AN INDEX OF RESILIENCE FOR AUSTRALIAN COMMUNITIES TO NATURAL HAZARDS

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An Australian Government Initiative



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HYOGO FRAMEWORK FOR ACTION

The HFA is a 10-year plan (2005-2015) to make the world safer from natural hazards.

It was endorsed by the UN General Assembly following the 2005 World Disaster Reduction Conference.

HFA recognises the need to develop key indicators of vulnerability as a key activity

Develop systems of indicators of disaster risk and vulnerability at national and sub-national scales that will enable decision-makers to assess the impact of disasters on social, economic and environmental conditions and disseminate the results to decision makers, the public and populations at risk

WHY RESILIENCE?

Although the HFA looks for indicators of vulnerability it also discusses resilience, defining it as;

The capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure.

Vulnerability vs Resilience

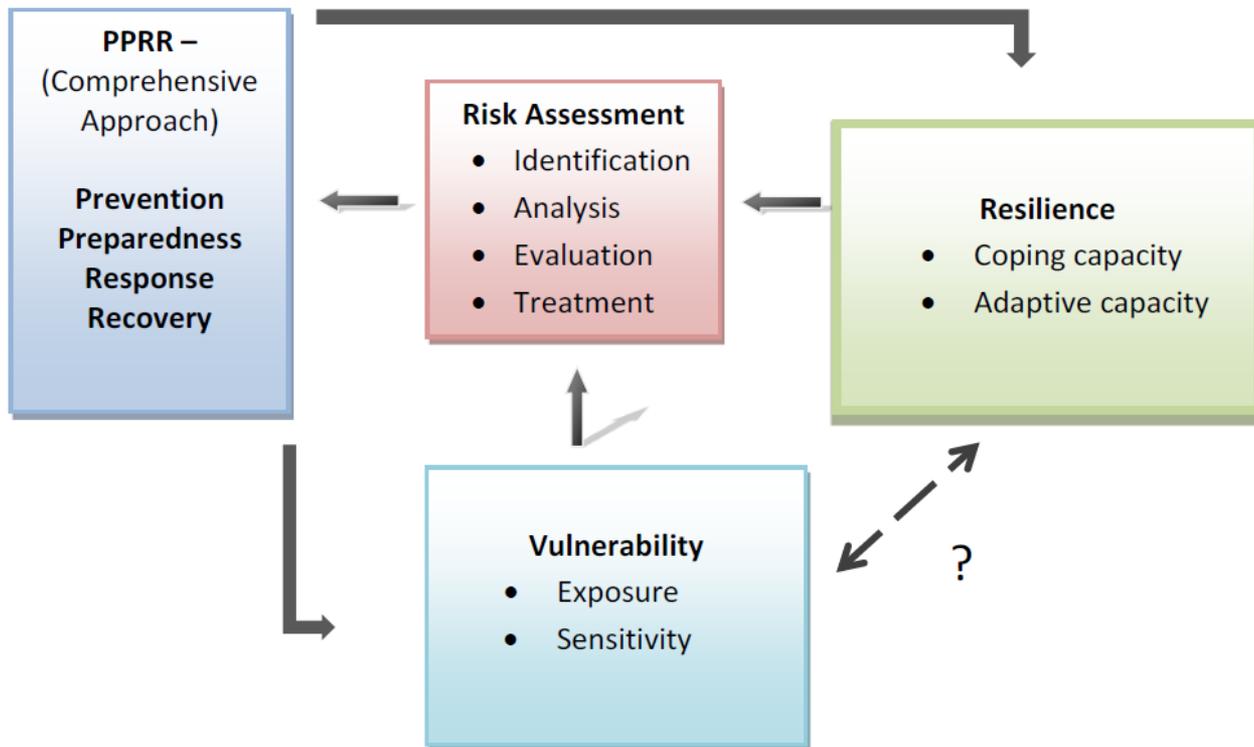
Both have numerous definitions

At their simplest they are seen as opposites, however

Vulnerability is increasing being seen as a function of risk and hazard specific

Resilience is more often seen as broader in scope, takes an all-hazards approach and incorporates recovery or 'bouncing back'

INTEGRATION WITH PPRR

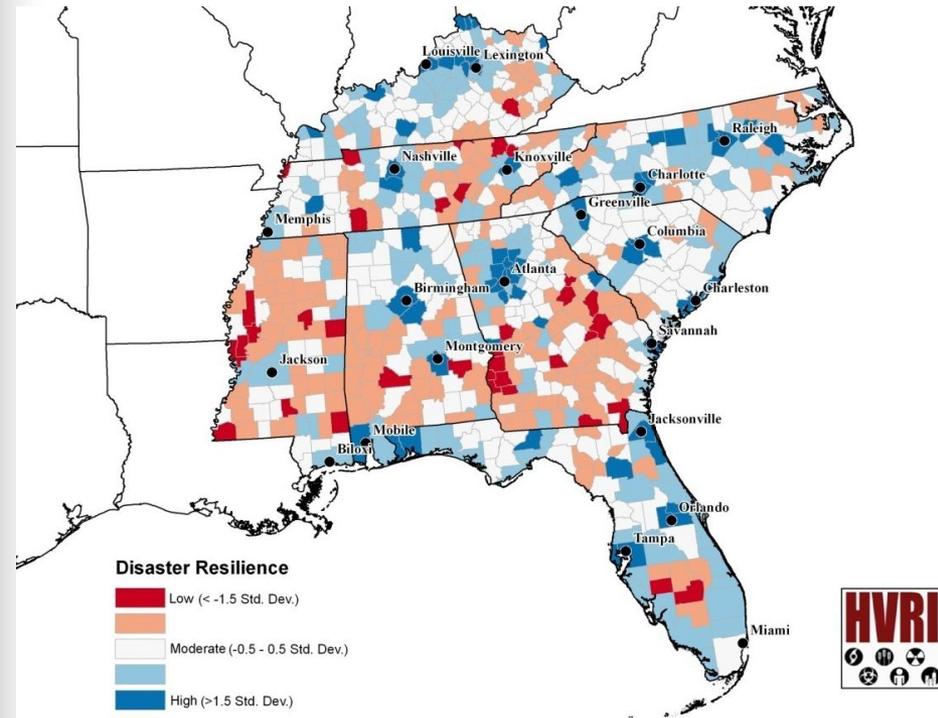


AUSTRALIAN NATIONAL STRATEGY FOR DISASTER RESILIENCE

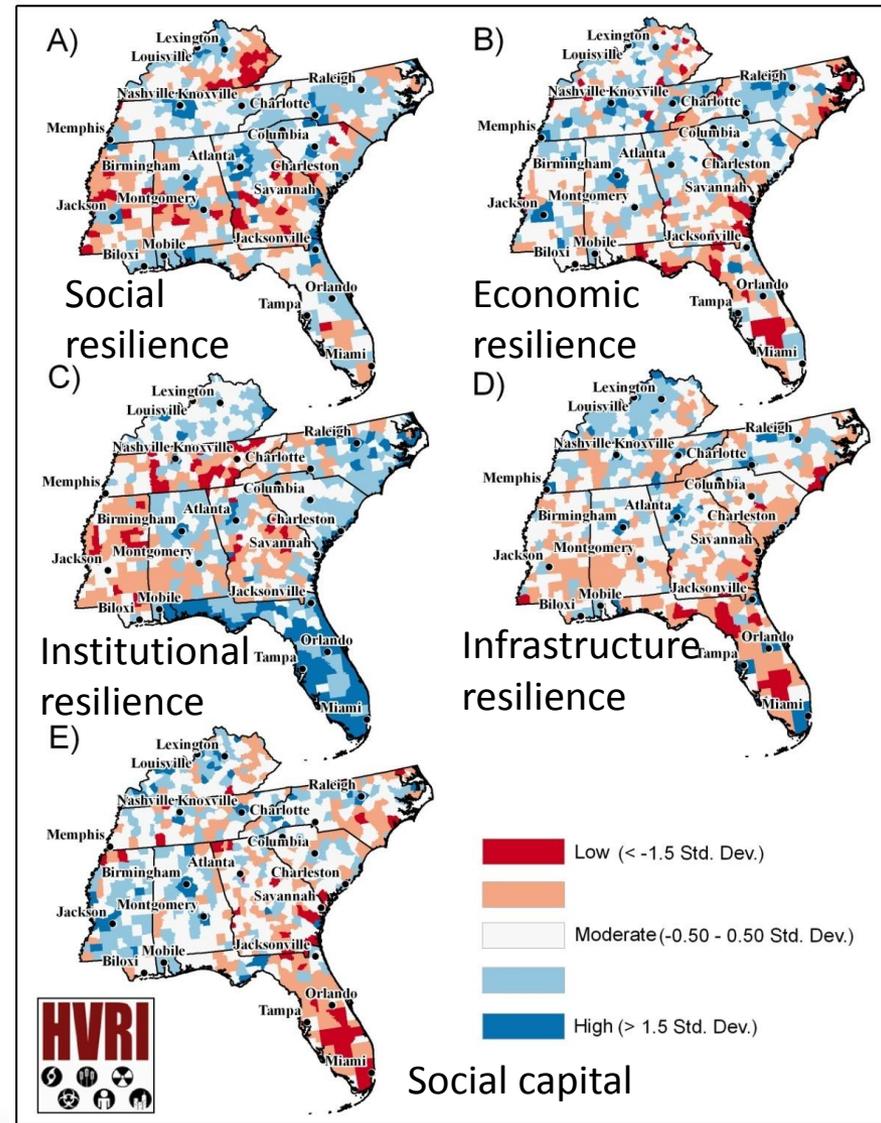
The NSDR recognizes four characteristics of disaster resilient communities:

- 1) they function well while under stress
- 2) they adapt successfully
- 3) they are self-reliant and
- 4) they have strong social capacity.

Some form of measure and benchmarking is needed.



While there are a number of indexes throughout the world (Cutter, Embrace, etc). These have not been applied to Australia, for Australian communities or based on Australian policy.





Project Aim:

This project will develop an index that measures the current state of disaster resilience for the Australian population – the Australian Natural Disaster Resilience Index.

PROJECT OBJECTIVES

1. Develop and test an Australian Natural Disaster Resilience Index
2. Report on the current state of disaster resilience in Australia using the Australian Natural Disaster Resilience Index
3. Develop guidelines for applying the Australian Natural Disaster Resilience Index in a local planning context
4. Contribute to national, state and local policy development through multiple BNHCRC priorities

PROJECT OUTCOMES

1. Provide measures of disaster resilience that are aligned with Australia's National Disaster Resilience Strategy
2. Provide a tested quantitative assessment of the current state of disaster resilience within Australia at the national and local scales
3. Provide examples of the use of the index for resilience planning
4. Provide a system for monitoring, evaluating and reporting disaster resilience in Australia

PROJECT TIMELINE

Conceptual
basis

2014-2015

- Conceptual framework
- Indicators

Data
collection

2014-2017

- Indicators split into themes for collection and testing

Reporting

2017-2018

- State of disaster resilience report
- Data products (GIS layers)

Case
Studies

- Framework
- Local Planning
- Scenarios and case studies

THE NEED FOR A CONCEPTUAL FRAMEWORK

So many definitions of resilience:

Alexander Stein (2013) from the IFPRI has a 30 page working paper just discussing the definitions of resilience.

- an ability to recover from or adjust easily to misfortune or change
- Resilience: (i) ability to recover readily from illness, depression, adversity, or the like; buoyancy, (ii) the ability of an ecosystem to return to its original state after being disturbed
- Resilience: The positive ability of a system... to adapt itself to the consequences of a catastrophic failure
- Add so on ...

We needed to clarify the terminology and scope in respect to the project.

DEVELOPING A CONCEPTUAL MODEL

Resilience of a social-ecological system is related to the capacities of a system that allow it to:

- withstand,
- absorb &
- recover from disturbance
- &
- adapt in anticipation of, or in reaction to a disturbance (e.g. hazard event)

We are also taking an all hazards approach i.e. resilience of any place to any event

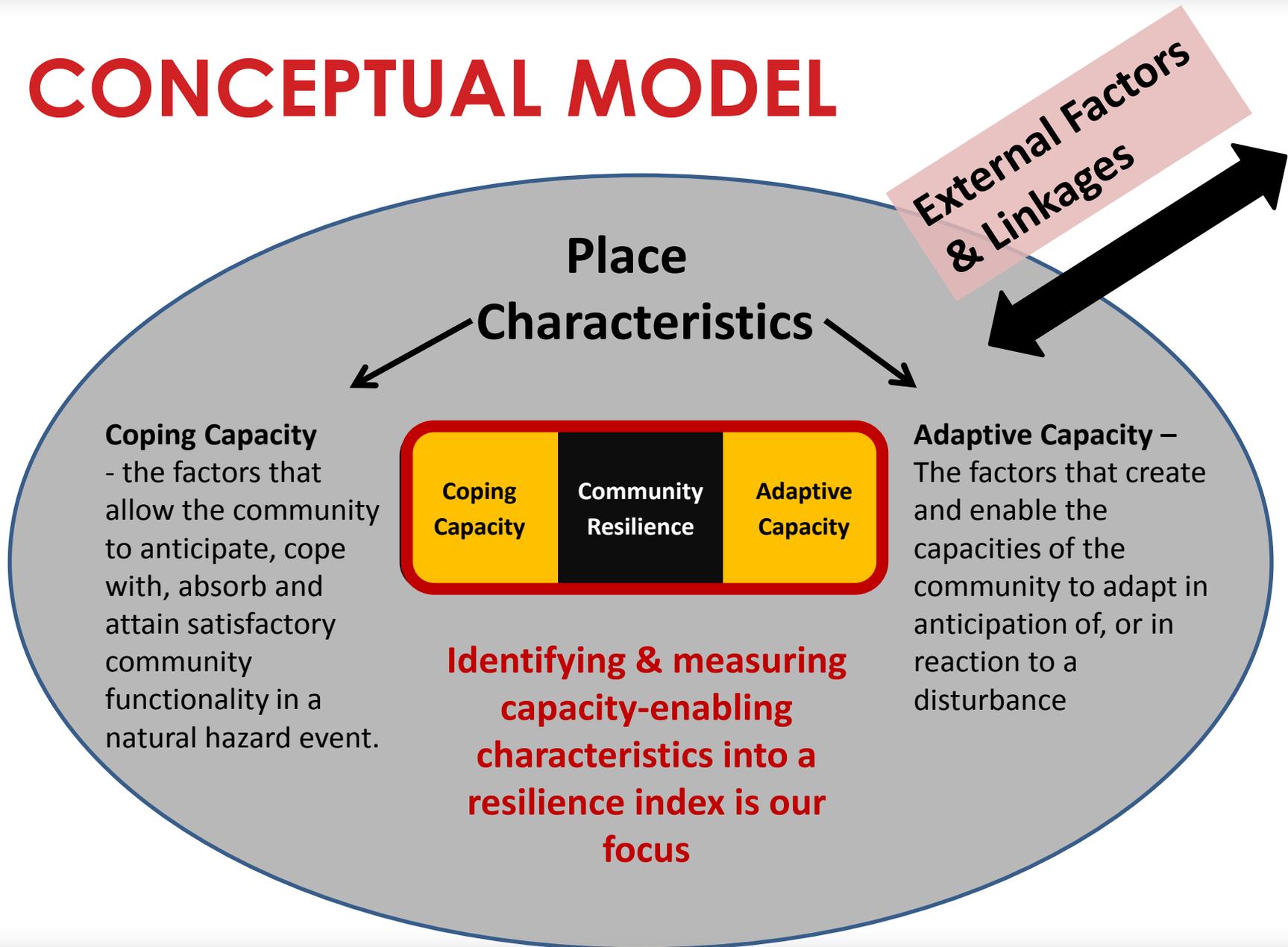
CONCEPTUAL MODEL - PLACE



The **characteristics** of this **place** can be described* ...

- People/ Demography
- Environment
- Economy
- Public Administration
- Social Setting
- Infrastructure

CONCEPTUAL MODEL

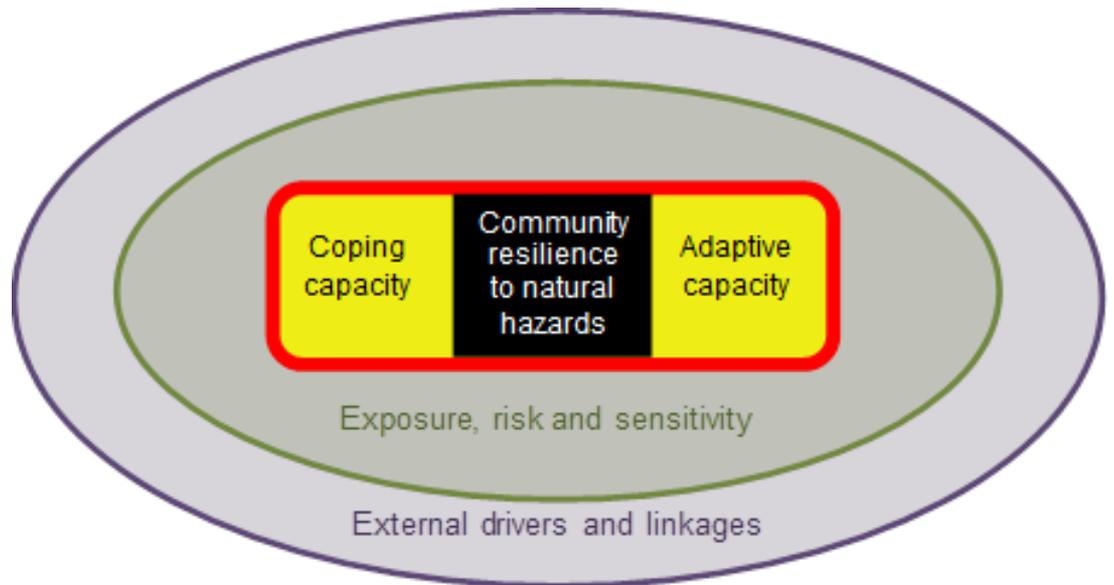


CONCEPTUAL MODEL

So the resilience of a community is function of the

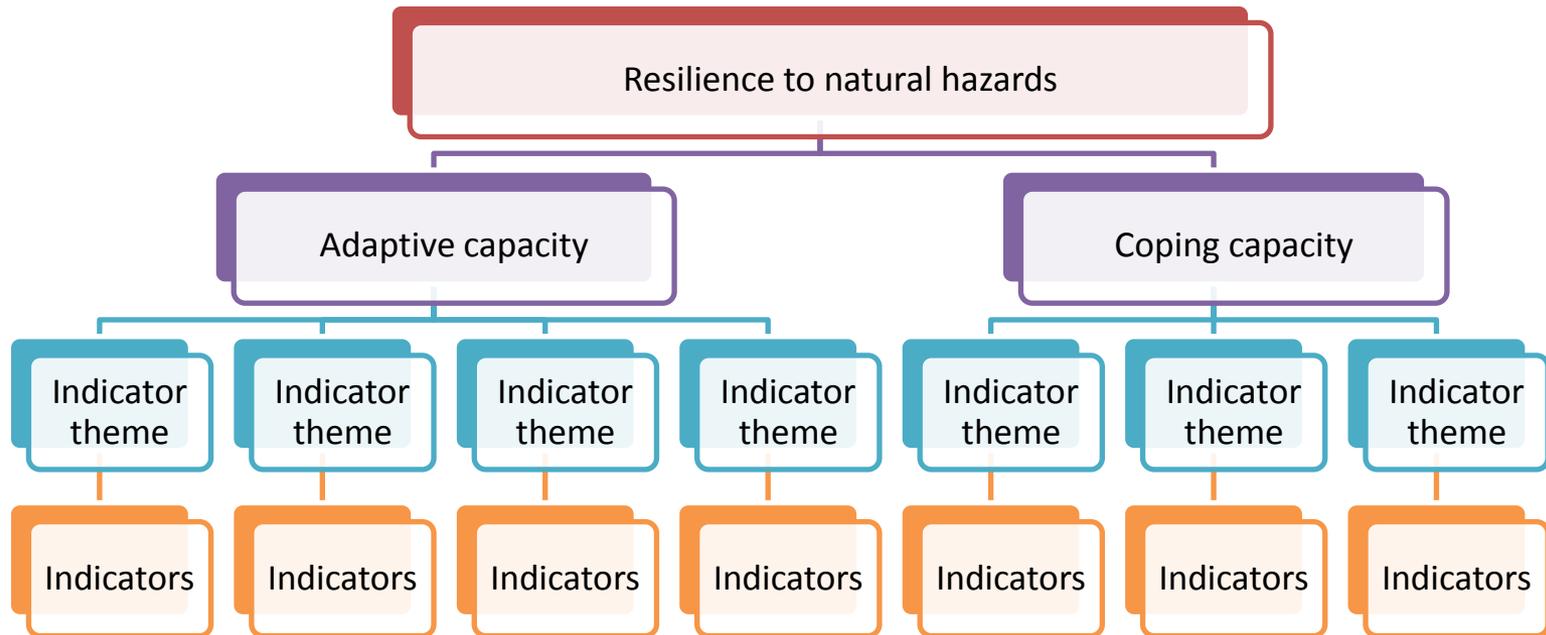
Coping Capacity
and the
Adaptive Capacity

And a form of measure can be determined from the characteristics of that place



WHAT WILL THE AUSTRALIAN NATURAL DISASTER RESILIENCE INDEX LOOK LIKE?

- Composed of and reported at multiple informational levels using a hierarchical approach i.e.



COPING CAPACITIES

Theme	Indicators
Emergency services	i.e. volunteerism, active units, funding, access to medical services,
Self-reliance	Planning, training, insurance, education levels, wealth, family structure, language competency and ethnicity, housing capital/home ownership, migration, transport, vulnerable/special needs groups, communication access, remoteness, early warning systems, reliance on aid/social services
Mitigation	Built environment, building standards, critical infrastructure protection, mitigation schemes, rural/urban setting
Economic capital	Employment, business wealth, income equality, single sector employment dependence, population growth or loss
Risk awareness and access to information	Locational awareness, access to information, t of information, communication methods, past disaster declarations
Social cohesion & connectedness	Place attachment, political engagement, volunteerism, advocacy, wellbeing, health, civic organizations, community bonds
Recovery potential	Schools, hospitals, tradespeople, municipal services, insurance, social characteristics
Natural capital	State of the environment

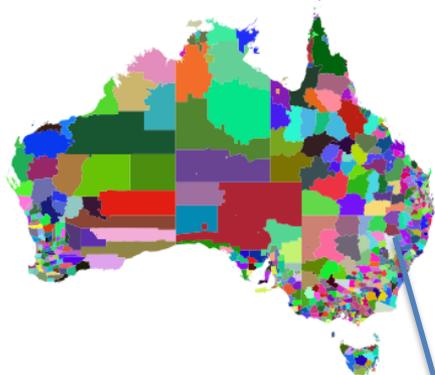
ADAPTIVE CAPACITIES

Theme	Might include things about (needs to be supported by literature)
Governance	Learning organizations, innovation, policy mechanisms, political will, shared responsibility, legal and regulatory constraints to change
Risk reduction	Mitigation funding, policy mechanisms, building code change, royal commissions/inquiries/court case recommendations, availability of information, risk perception and training
Social cohesion /connectedness	Neighbourhood attachment, self-reliance, adaptive strategies
Community engagement	Programs, funding, effectiveness, innovation, education, community led action, participation, relationship building, risk perception and training, effective messaging
Partnerships	Public-private, government, funding, insurers
Learning and review	Single-double-triple loop learning, reviews, litigation, legal obligation, research and development
Leadership	Political leadership, policy leadership, organizational leadership,

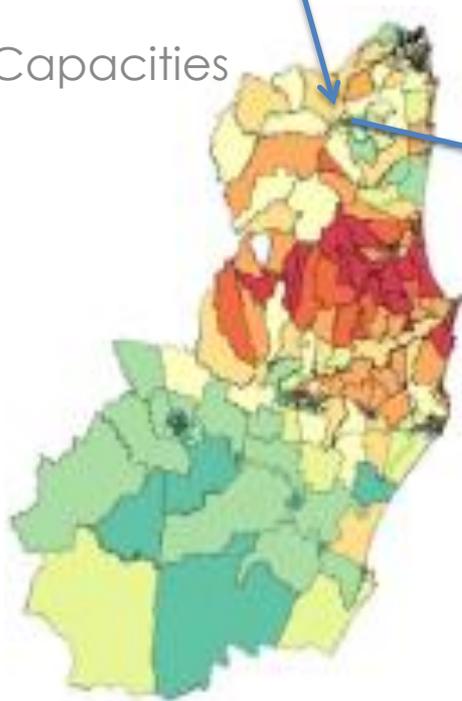
WHAT WILL THE AUSTRALIAN NATURAL DISASTER RESILIENCE INDEX LOOK LIKE?

Indicators of Resilience mapped across Australia at the most appropriate scale

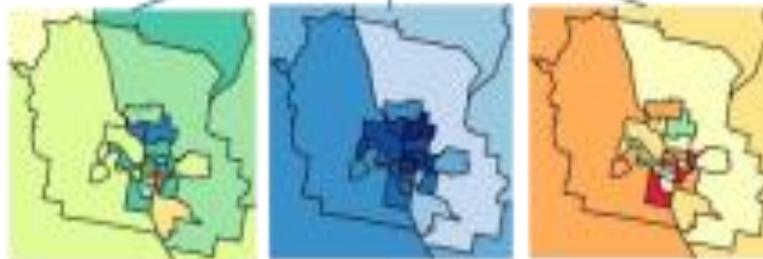
MCAS – ability to add risk and other information



Capacities



Themes



Indicators

WHAT IS THE MOST APPROPRIATE SCALE?

Potential uses – strategic planning, supporting adaptation, policy development, community engagement

Approx 500 LGAs
 2000 SA2 areas
 and 55000 SA1

However data needs to be available Australia wide, and of fine enough scale to be useful, ABS SA1 data has an added error.

AT THIS STAGE WE STILL HAVE MORE QUESTIONS THAN ANSWERS

How do we measure various aspects of resilience, what indicators can be used, at what scale, is the data available etc ...

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THANKYOU

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