Strengthening Community Resilience

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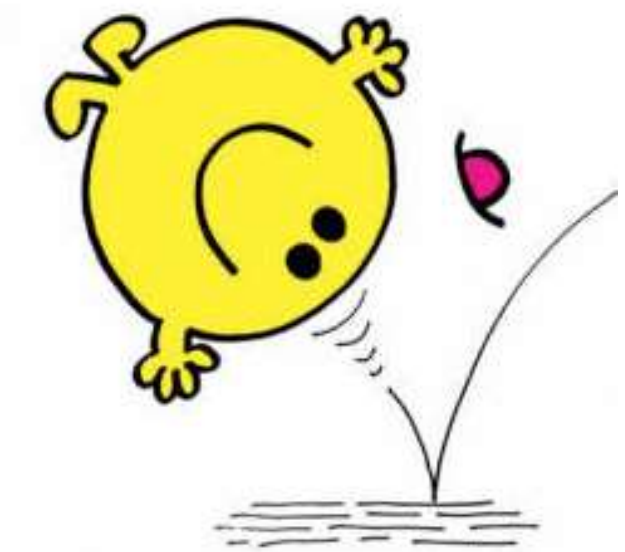

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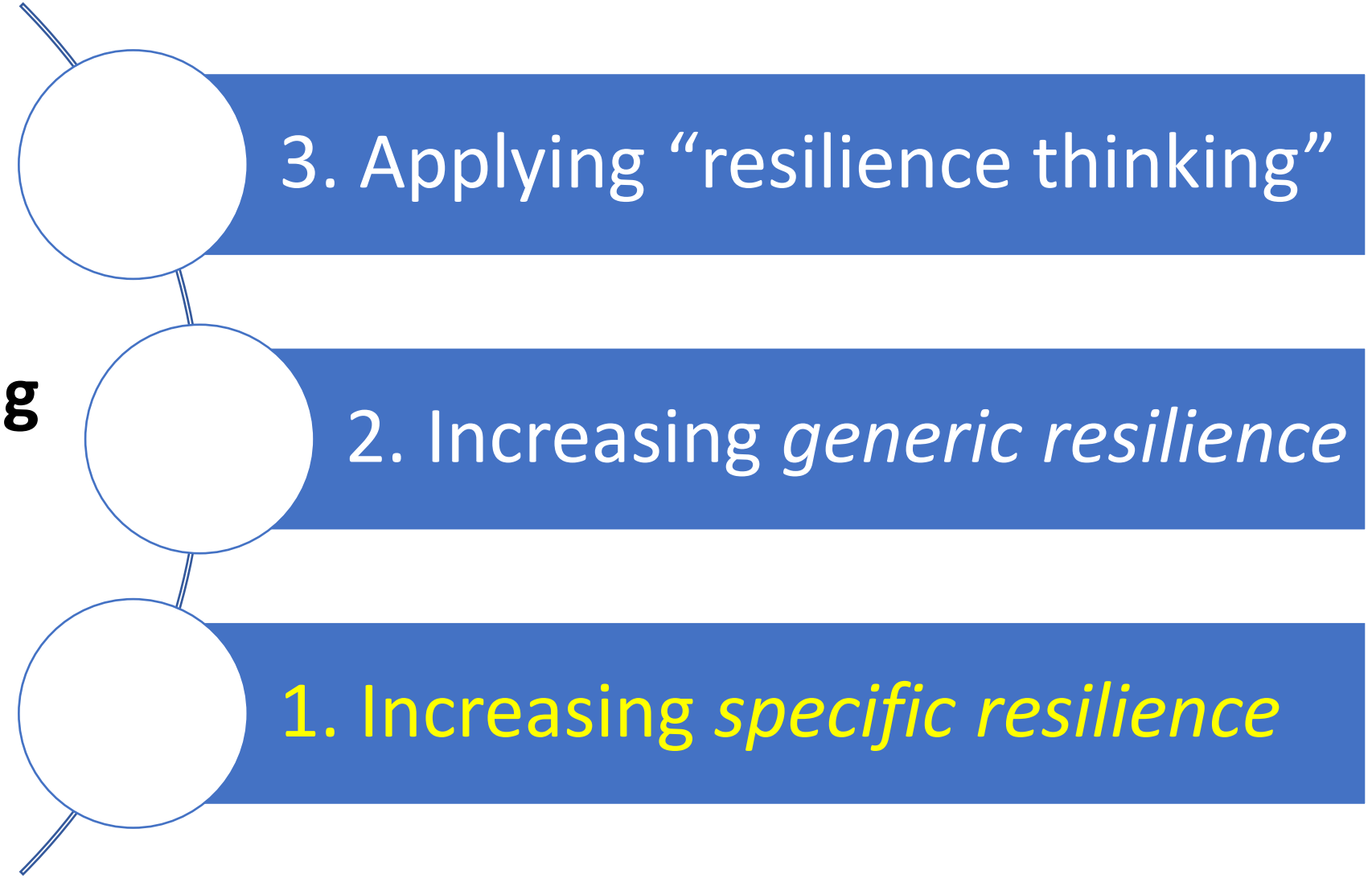
Climate Change Transformations Research Program

Strengthening resilience



Increasing specific resilience

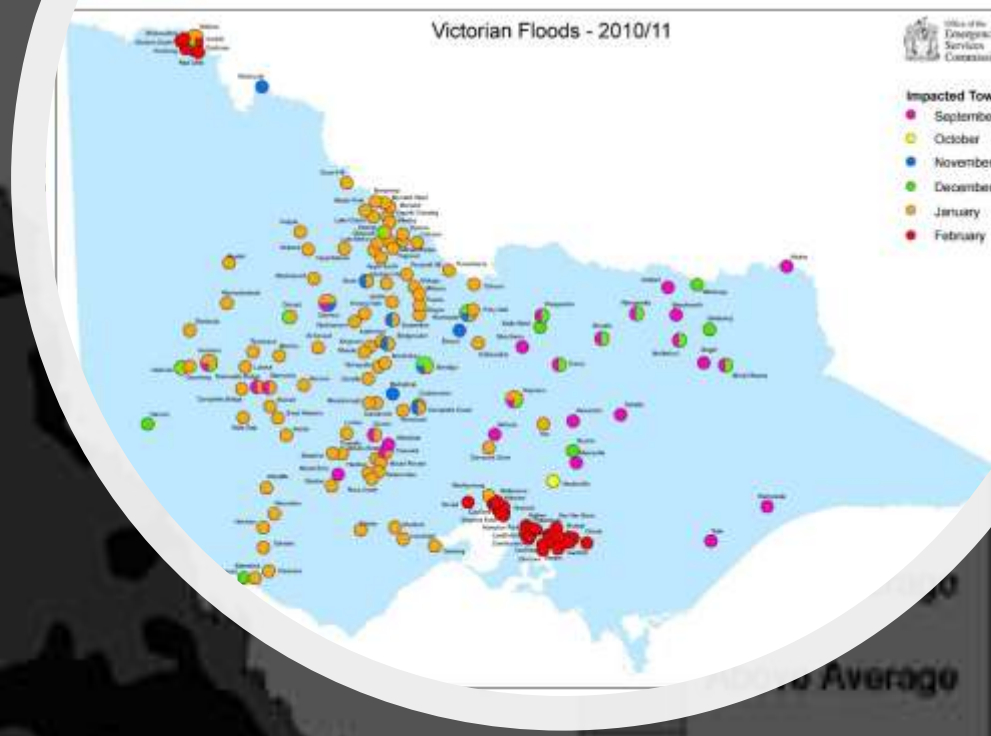
- Being able to manage a specific risk
  - Prevention: design out risks and vulnerability
  - Preparation: reduce the likelihood of the threat emerging or impacting you
  - Response: respond quickly and effectively to minimize damage
  - Recovery: bounce back, bounce forward (learn and improve for next time)

Two main approaches to reducing specific risks

1. **Reduce physical <u>exposure</u> to a given risk**
   - Eg Build shaded areas, flood levies, walls to keep risk at bay
   - Eg Install early warning system or stay out of danger zones
   - Eg Put fires out if they start

2. **Reduce <u>sensitivity</u> to a given risk (how much it affects you)**
   - Eg Increase knowledge and skills for responding to emergencies
   - Eg Reduce lock in, increase options – eg alternative transport routes & modes
   - Eg Secure resources - water storage, off-grid electricity source
   - Eg Take out insurance

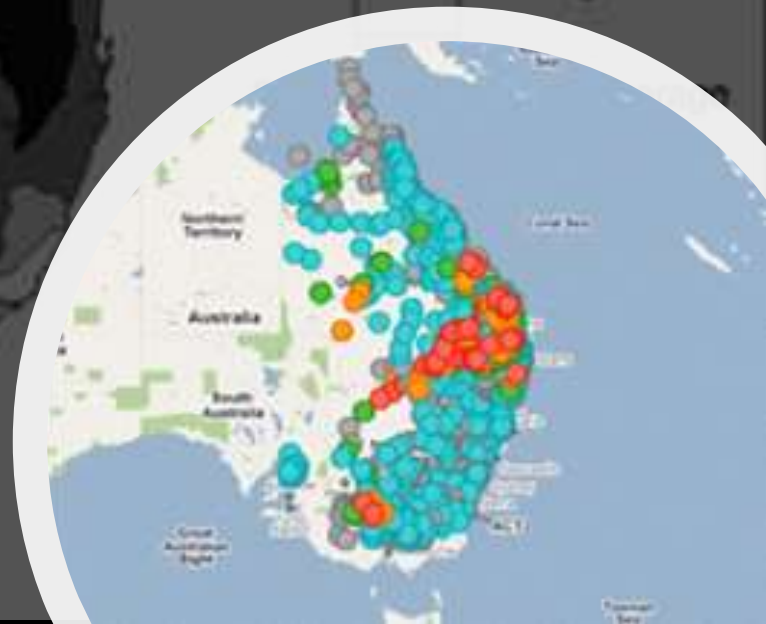
The case of the 2010-2011 SE Australia floods



The physical event itself

Was exceptionally widespread & long lasting:

- Local **rain** impacts Qld, NSW, Vic
- **Water flows** widespread throughout MDB
- Meant emergency services were over-stretched, recovery options constrained



Flow-on effects shaped by land use

- Biophysical (erosion, mud and turbidity, salinity, pollution, weeds…)
- Disruptions – eg to energy and transport infrastructure
- Economics costs - $ billions recovery and lost revenue

Compounding impacts

Impacts worsened by sensitivities to flood right along the food supply chain: food production, transportation, retail and consumers…

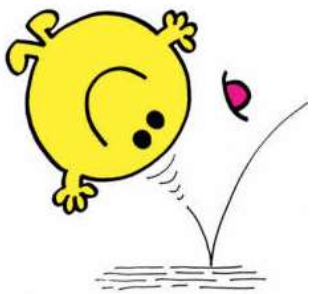
Rockhampton's narrow reliance on a few suppliers with inflexible sources and a heavy dependence on roads meant that food insecurity was widely experienced (Smith and Lawrence 2014).

Four risks of Specific Resilience approaches

1. That ill-considered responses generate injustices and unsustainable solutions

- Over-riding due process, social participation, local needs, local capacities and efforts

- Bouncing back when you need to "bounce forward"



Crises should be addressed without falling into the trap of "crisis talk" or assuming a permanent crisis mode…. Acute crisis policies have rarely led to sustainable solutions so far; they were driven more by the wish to find a short-cut out of the problem.

Haase et al (2018)

Taking care with trade-offs

- Acknowledge, discuss, negotiate
- Share responsibilities, costs
- Search for co-benefits, synergies

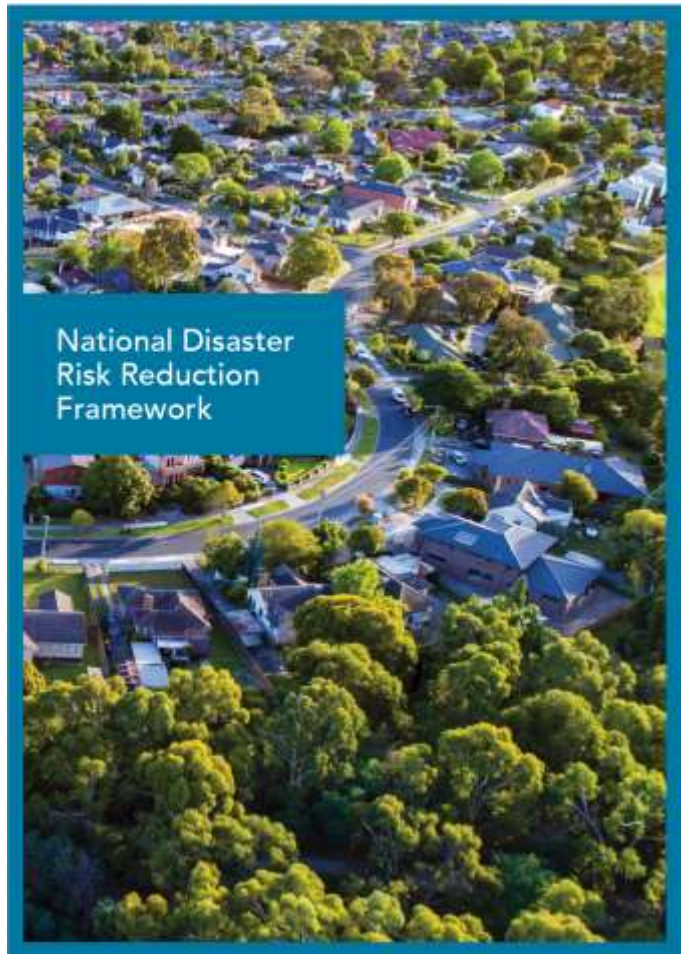
2. Lack of discussion about who and what is prioritised and why

Who or what is implicitly being asked to sacrifice their interests?

- Eg If the resilience of *Community X* is the goal:
  - What about other communities?
  - What about smaller groups?
  - What about larger groups and areas?

3. Resilience to what? What threats are left out of view?

- The world is becoming more complex, uncertain, unpredictable – need to be “ready for anything”



Drivers for action

NATURAL HAZARDS ARE MORE FREQUENT AND INTENSE

Many natural hazards are becoming more frequent and more intense, driven by Australia's changing climate. The Bureau of Meteorology/CSIRO's 2018 *State of the Climate* report describes the effect of Australia's changing climate, including warming temperatures, rising sea level, more severe fire weather, and increased rainfall in Australia's north and decreases in the south. It is predicted that these changes will continue, while new natural hazard threats will emerge. There is growing potential for cumulative or concurrent, large-scale natural hazards to occur.

ESSENTIAL SERVICES ARE INTERCONNECTED AND INTERDEPENDENT

Australians depend on reliable and affordable food, water, energy, telecommunications, transport networks (including road, rail, aviation and maritime), and financial services. These functions also depend on each other. The networks that ensure the sustained delivery of food, water and energy involve complex interactions between infrastructure, people, the environment, money and technology. A failure in any of these elements could have wide-ranging consequences across communities, businesses, governments and economies.

PEOPLE AND ASSETS ARE MORE EXPOSED AND VULNERABLE

As cities and regional centres expand to accommodate growing populations, the buildings and infrastructure needed to support our future communities will be exposed and vulnerable to natural hazards. The 2015 Intergenerational Report highlights that our population is growing and ageing. Our overall standard of living has improved, yet socioeconomic differences among communities remain, and people and assets continue to be located in at-risk areas such as coastal zones, floodplains and areas where bushland meets cities and towns.

DISASTER IMPACTS ARE LONG TERM AND COMPLEX

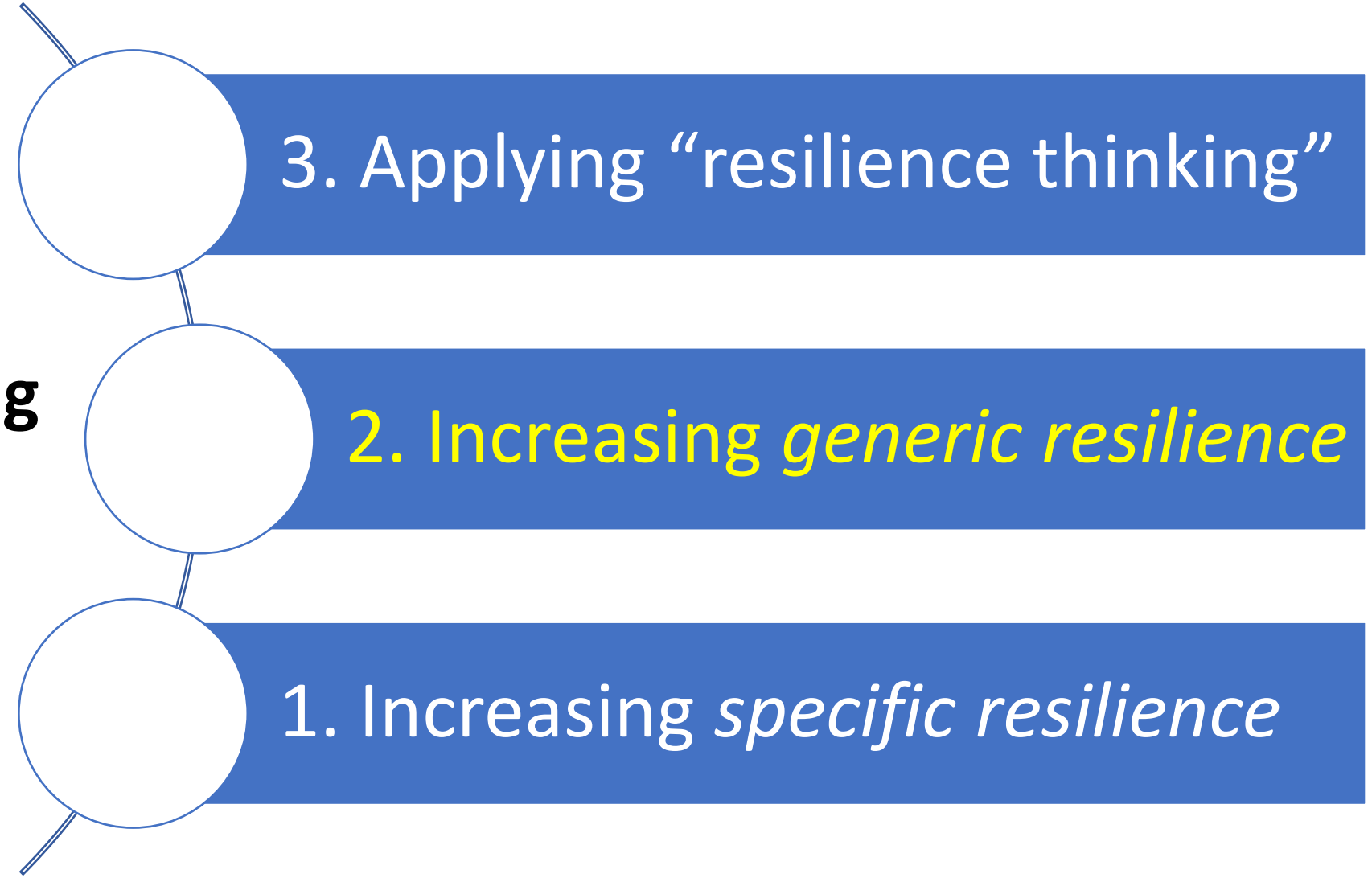
The impacts of disasters can be long term, complex, and intangible. Collectively, we are only now beginning to fully understand indirect, flow on and cumulative effects of disasters. We do know that disasters can trigger long-term challenges across a range of areas, including reduced education and workforce participation, increased crime, and physical and mental health and wellbeing. These impacts are often felt disproportionately by vulnerable or susceptible groups. Factors such as health and wellbeing, economic resources, social capital and knowledge influence a person's ability to prepare for, respond to, and recover from disasters.

Becoming too resilient to one threat (e.g. drought) does not leave you just unprepared for other things (e.g. flood, economic shock) – it can also *reduce* your resilience by using up resources and reducing your adaptability

4. Resilience is not always positive – sometimes we need to *transform*

- Resilience implies that we want to and should protect what exists
- Unjust and illogical systems can be very resilient!
- The issue then is not resilience, but overcoming lock-in

Strengthening resilience



Generic Resilience as Fit & Thriving

- Fitness: Strength, speed, endurance, flexibility, agility, courage…
- Thriving : “kicking goals”, improving

DEFINING URBAN RESILIENCE

Resilience is about **surviving and thriving**, regardless of the challenge.

100 RESILIENT CITIES

PIONEERED BY THE ROCKEFELLER FOUNDATION

http://www.laresilience.org

LEVERS OF COMMUNITY RESILIENCE

The RAND Corporation identified eight "levers," or means of achieving community resilience. Activities related to these eight levers help move a community closer to achieving community resilience through an ongoing process.

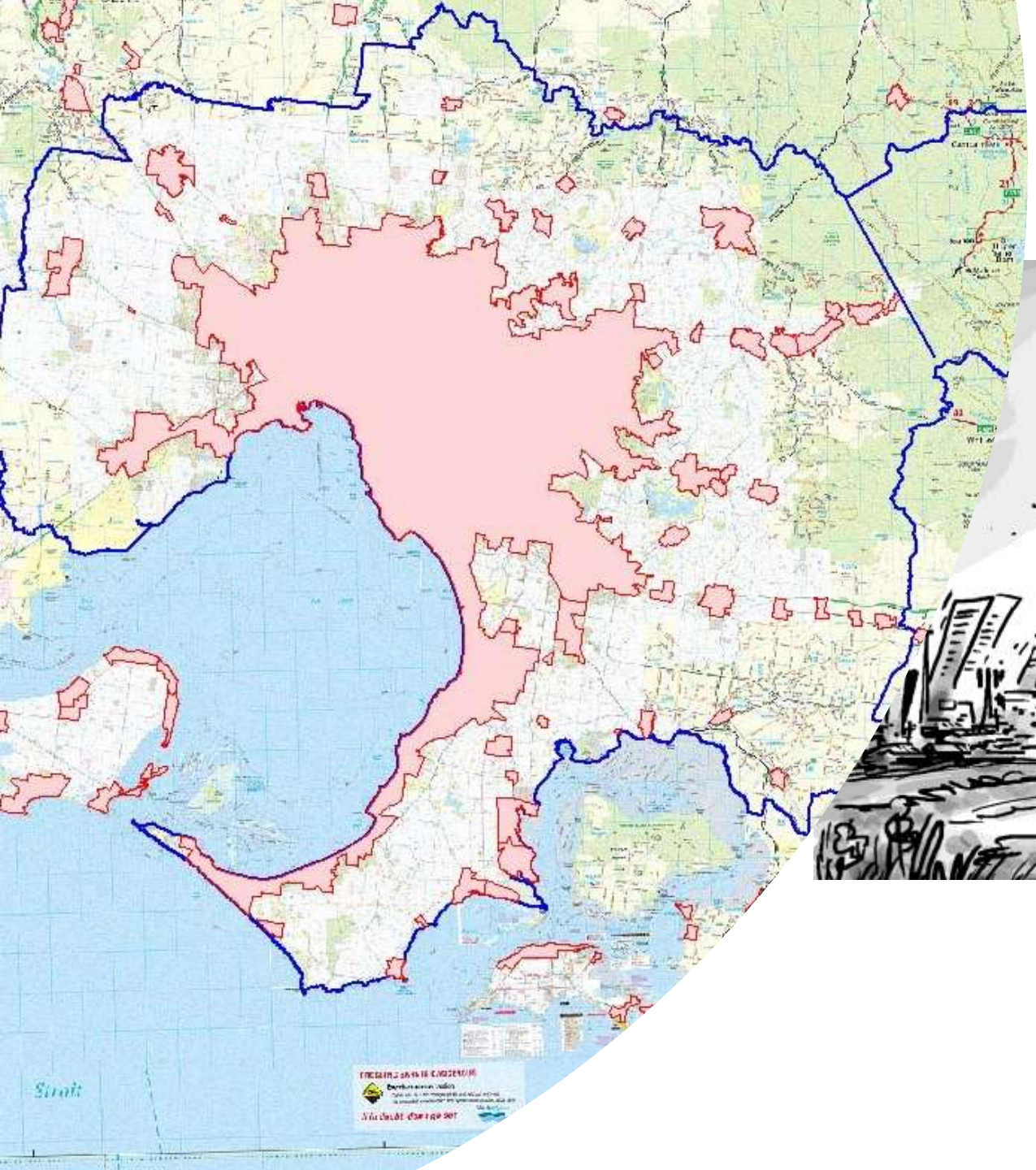
- **Wellness** and **access** contribute to the development of the social and economic well-being of a community and the physical and psychological health of the population.
- Specifically following a disaster, **education** can be used to improve effective risk communication, **engagement** and **community self-sufficiency** build social connectedness, and **partnerships** ensure governmental and nongovernmental organizations are integrated.
- **Quality** and **efficiency** are ongoing levers that cut across all levers and core components of community resilience; considerations about quality monitoring and resource efficiency are essential in developing local community resilience-building plans.

Source: Chandra et al, 2011, RAND

Generic Resilience as Sustainable Development

- Need the basics in place: environmental sustainability, social equality
- Address existing damage, inequities, gaps, chronic stresses, undesirable trends

https://www.thebanksyshop.co.uk/banksy-canvas-print-beggar/

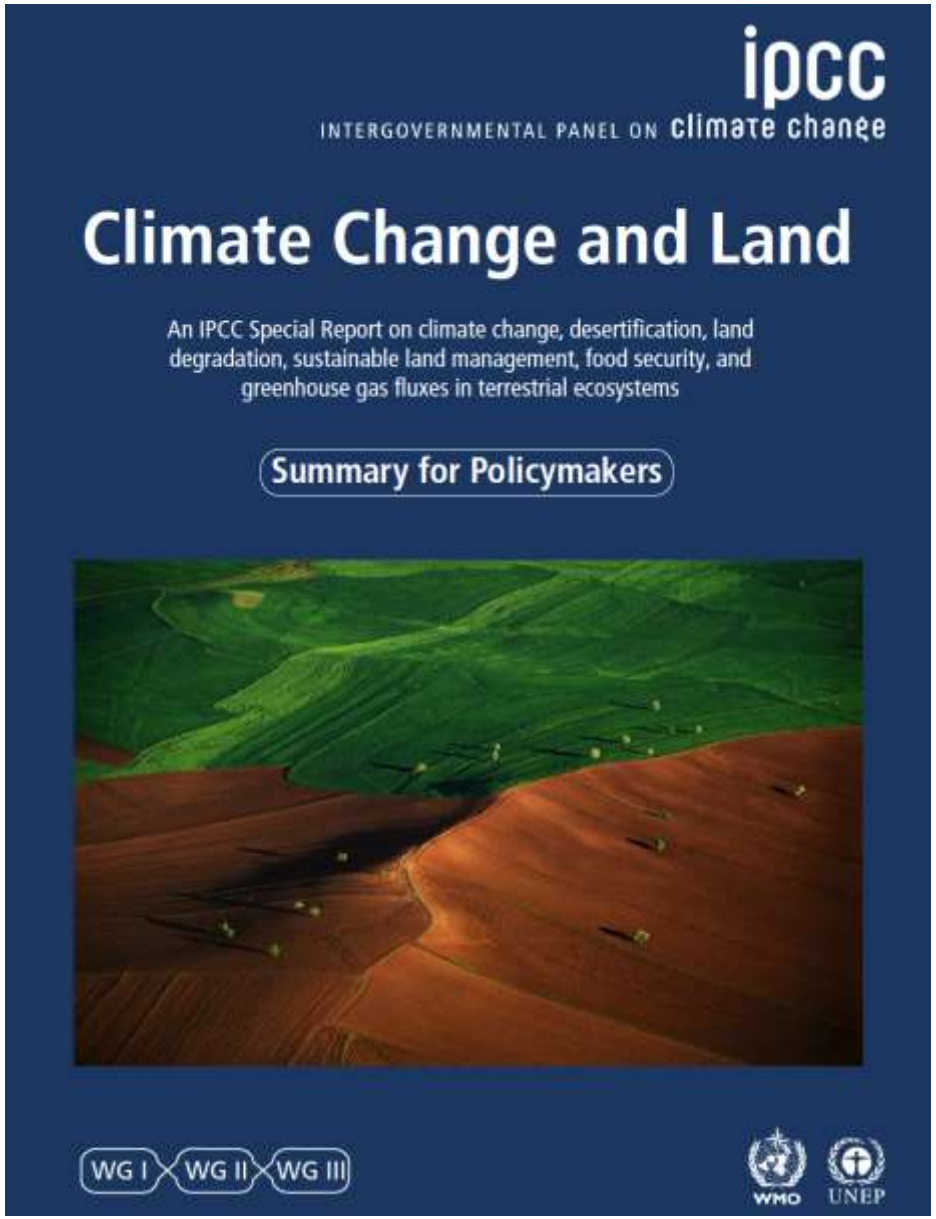


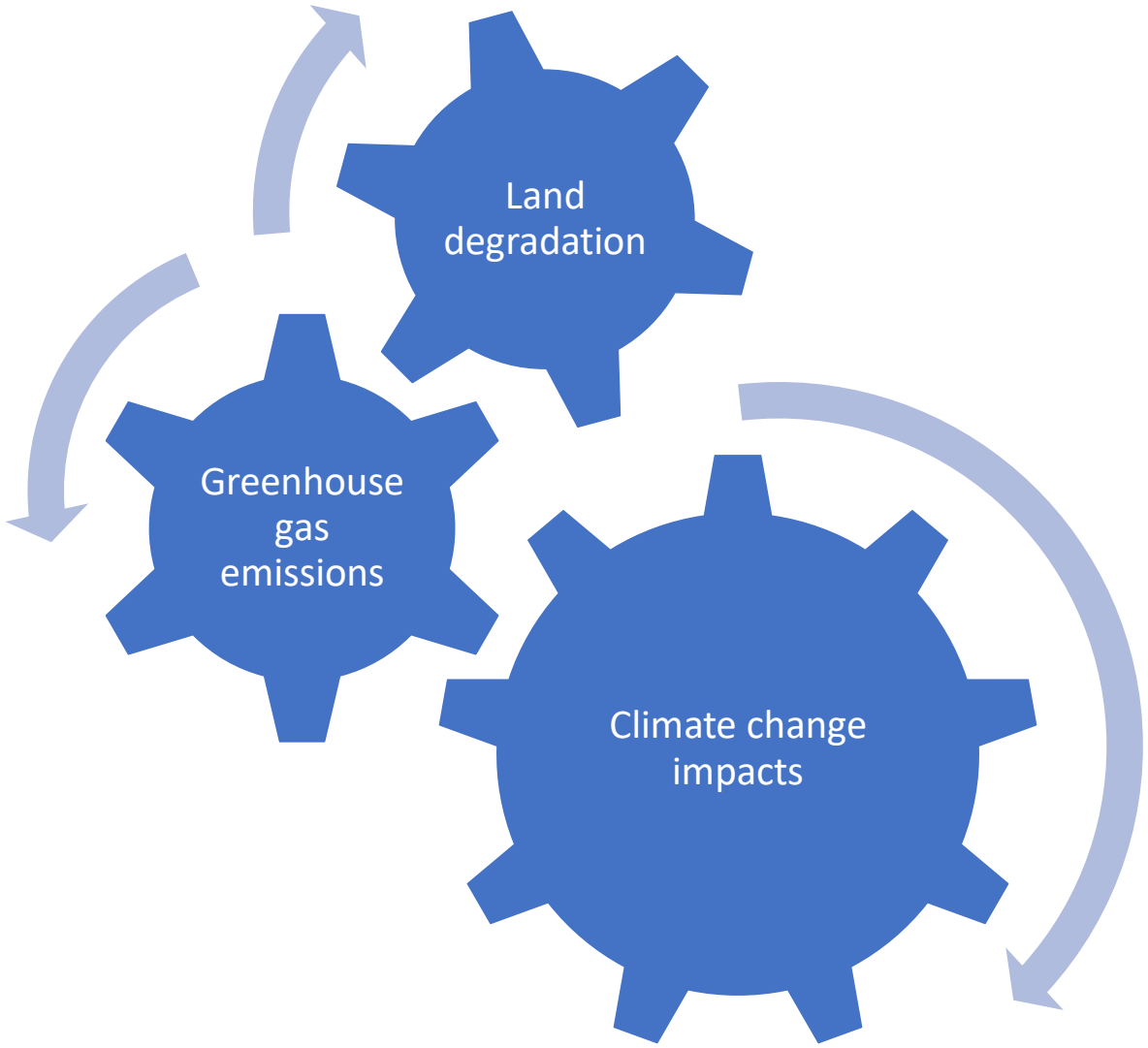
-THERE's A CITY COMING !!

"Urban design caused the Hurricane Harvey disaster"

Ilan Kelman | 1 September 2017 | 33 comments

Houston's poor urban planning, not climate change, is to blame for the catastrophic flooding following Hurricane Harvey, says disaster expert Ilan Kelman in this Opinion column.


ipcc
INTERGOVERNMENTAL PANEL ON climate change
Climate Change and Land
An IPCC Special Report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems
Summary for Policymakers
WG I
WG II
WG III
WMO
UNEP


Land degradation
Greenhouse gas emissions
Climate change impacts

Building generic community resilience

- Looking after all the parts:
  - All individuals, all groups
  - Physical environment, assets
- Looking after the positive relations within and beyond:
  - Equality, inclusion, kindness
  - Social networks (‘Bonding social capital’)
    - Get to know each other
    - See each other regularly
    - Build cooperation, trust
    - Shared spaces, projects, infrastructure
  - Information sharing, learning from others elsewhere (‘Bridging social capital’)

Recovering from disasters: Social networks matter mo than bottled water and batteries

February 14, 2017 1.16pm AEDT

See for example Daniel Aldrich’s work

y after the March 11, 2011 earthquake and tsunami. Warren Antiola/Flickr, CC BY-

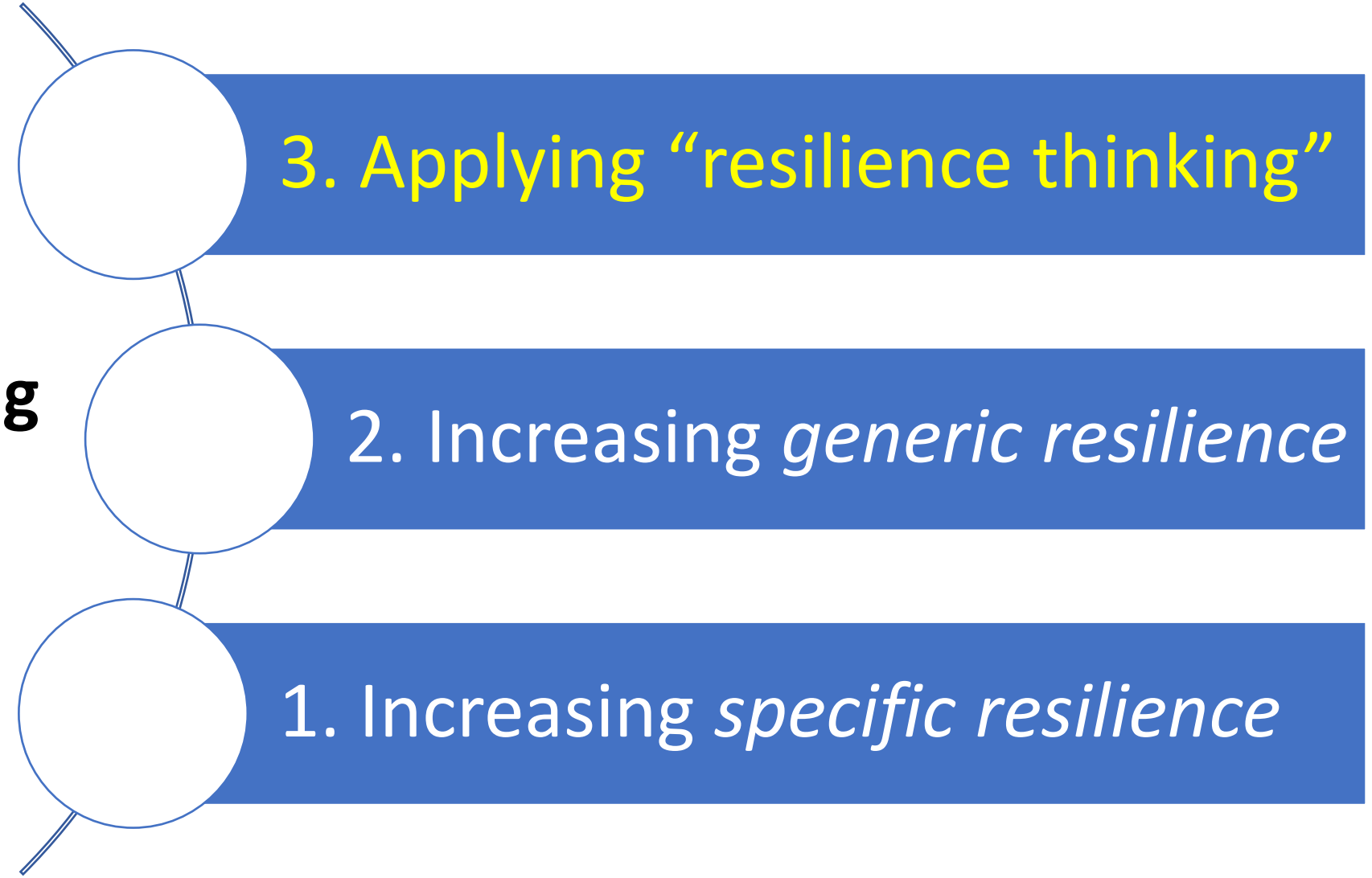
ce about preparing for disasters focuses on building shelters and
like food, water and batteries. But resilience - the ability to
cluding natural disasters - comes from our connection
al infrastructure or disaster kits.

A risk of Generic Resilience approaches:

Reification of strength, demonization of weakness

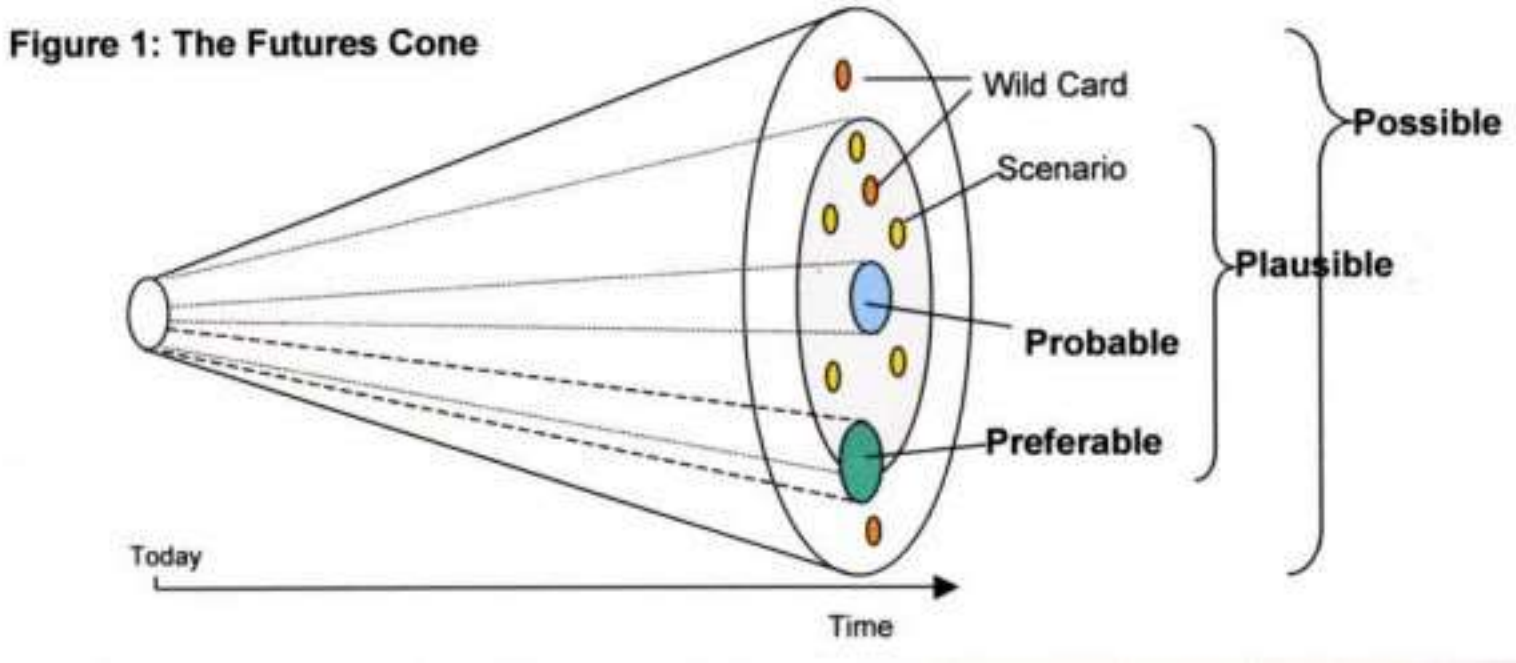
- Resilience as the new strength
- Individualisation of responsibility
- Normalisation of adversity
- Condoning of structural inequality

Strengthening resilience



Applying resilience thinking

- Requires appreciation of dynamic processes, connections, interactions, systemic effects
- Can challenge some conventional risk management approaches – including a narrow focus on *most likely or calculable* events



Voros (2003)

Applying resilience thinking

7 core principles

1. Build in diversity, alternatives
2. Build in buffers, some slack (v. efficiency)
3. Be prepared for multiple and unexpected feedbacks
4. Manage connectivity carefully:

From Fiksel (2015)

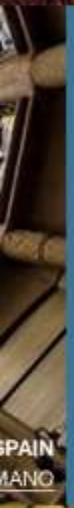
Applying resilience thinking

- 7 core principles
  1. Build in diversity, alternatives
  2. Build in buffers, some slack
  3. Be prepared for multiple and unexpected feedbacks
  4. Manage connectivity carefully
  5. Foster the capacity to sense changes *and learn* from them (more than monitoring…)
  6. Involve those at multiple levels and situations in decision making (more than telling…)
  7. Foster responsiveness and adaptability (more than potential - actual change)

see https://www.stockholmresilience.org/research/research-news/2015-02-19-applying-resilience-thinking.html

Reflective
using past experience to inform future decisions

Resourceful
recognizing alternative ways to use resources



Robust
well-conceived, constructed, and managed systems

Redundant
spare capacity purposively created to accommodate disruption

Flexible
willingness and ability to adopt alternative strategies in response to changing circumstances

Inclusive
prioritize broad consultation to create a sense of shared ownership in decision making

Integrated
bring together a range of distinct systems and institutions

Haworth et al. (2018)

A risk of Resilience Thinking approaches:

Reification of adaptability

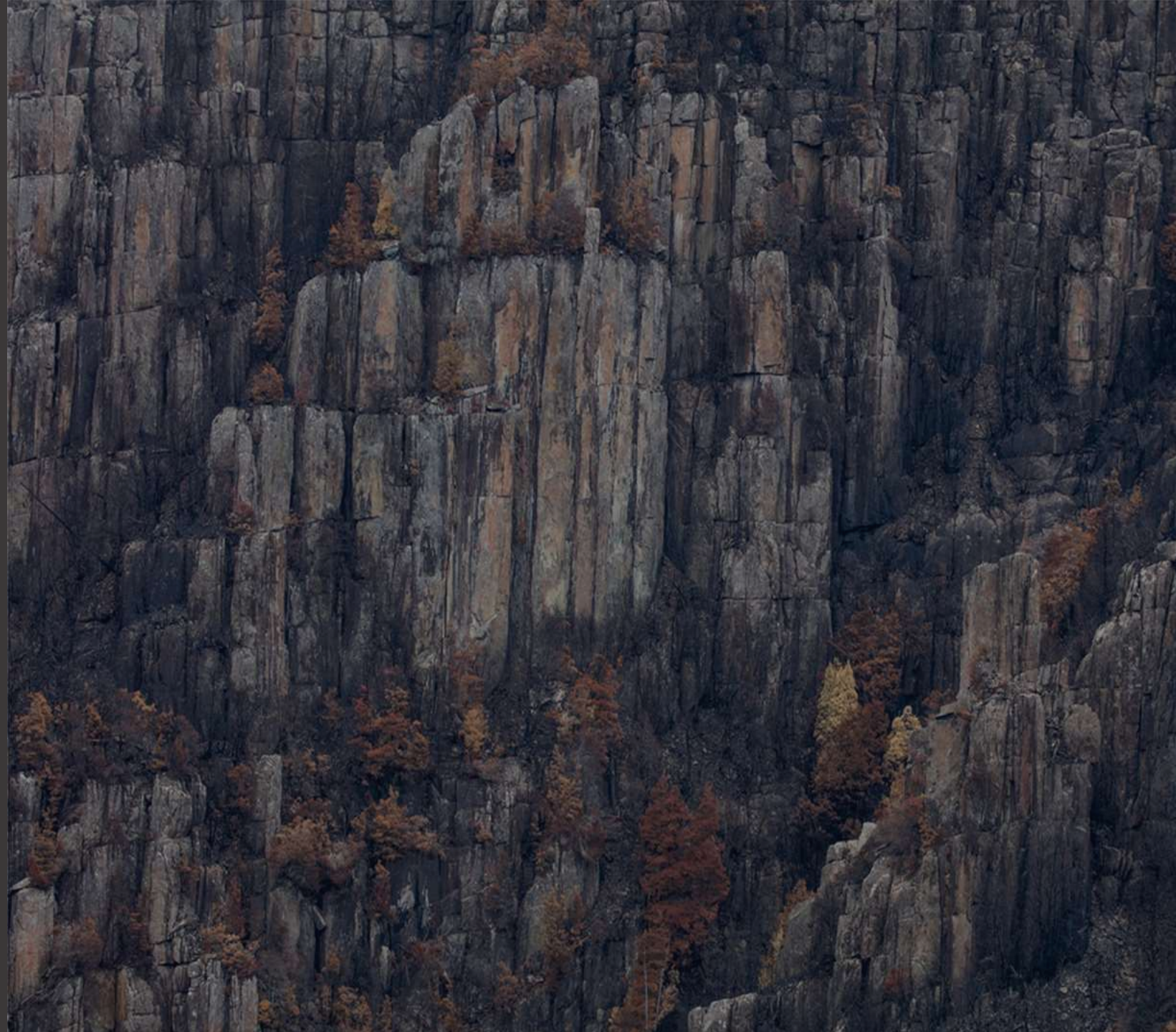
(1) In nature, resilience (as in agility, mobility, responsiveness) is only one ecological 'life strategy'

- Others include being slow, immobile… We need to value these qualities too
- And, again, not demonise vulnerability, softness, weakness

‘A global tragedy is unfolding in Tasmania. World heritage forests are burning; 1,000-year-old trees and the hoary peat beneath are reduced to char. Fires have already taken stands of king billy and pencil pine – the last remaining fragments of an ecosystem that once spread across the supercontinent of Gondwana…

Unlike Australia’s eucalyptus forests, which use fire to regenerate, these plants have not evolved to live within the natural cycle of conflagration and renewal. If burned, they die.’

Mathiesen (2016)



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2,000-year-old King Billy pines reveal Tasmania's climate and fire history

ABC Radio Hobart By Carol Rääbus

Posted 7 Oct 2017, 8:00am

PHOTO: Some of Tasmania's King Billy pines are thousands of years old.
(Flickr: Natalie Tapson)

Fire is not natural in this sort of vegetation. It destroys it' - Prof. Jamie Kilpatrick, University of Tasmania

[Under climate change] ‘We must no longer accept these annual wildfire events as a fait accompli; or as if part of some romantic view of Australia in a Dorothea Mackellar poem…’

Lyndall Rowley,
Tasmania Times

Reification of adaptability continued:

(2) Need to defend the relevance of **precautionary principle**

And call out inappropriate uses of "adaptive management"

Not all disasters and impacts are "unpredictable"!

EXCLUSIVE POLITICS FEDERAL ADANI

Scientists warn ancient desert springs may dry up under Adani plan

By Nicole Hasham
June 9, 2019 — 3.46pm

A group of Australia's pre-eminent water scientists say a rare desert oasis may dry up under Adani's "flawed" protections for groundwater near its proposed Carmichael mine, in a scathing assessment days out from a crucial ruling on the plan.

Queensland's Department of Environment and Science is this week due to decide on Adani's groundwater management plan – one of the last remaining barriers to construction of the coal project.

Former federal environment minister Melissa Price granted approval for the highly contentious groundwater plan days out from the federal election campaign. This came despite CSIRO and Geoscience Australia raising concerns over the energy company's modelling and proposed management.

Doongmabulla Springs, which scientists say may be destroyed by the Adani coal mine. DEAN SEWELL

A A A

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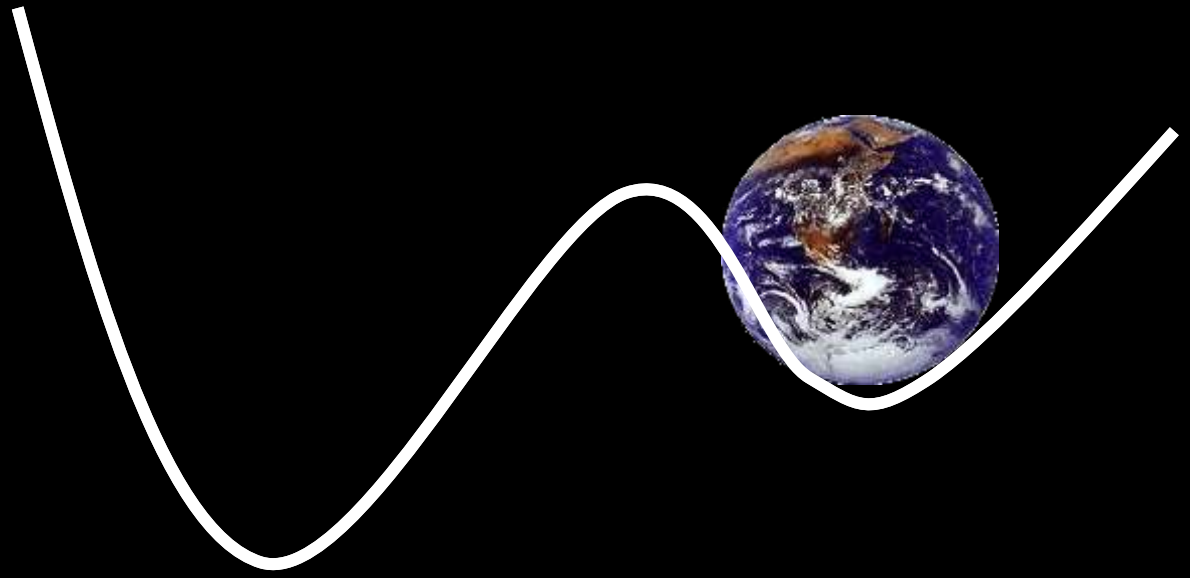
'No point pretending there's nothing to see here': Peter Dutton warns on China
2 hours ago

AUSTRALIAN ECONOMY
Australian economy has reached a 'gentle turning point': RBA governor

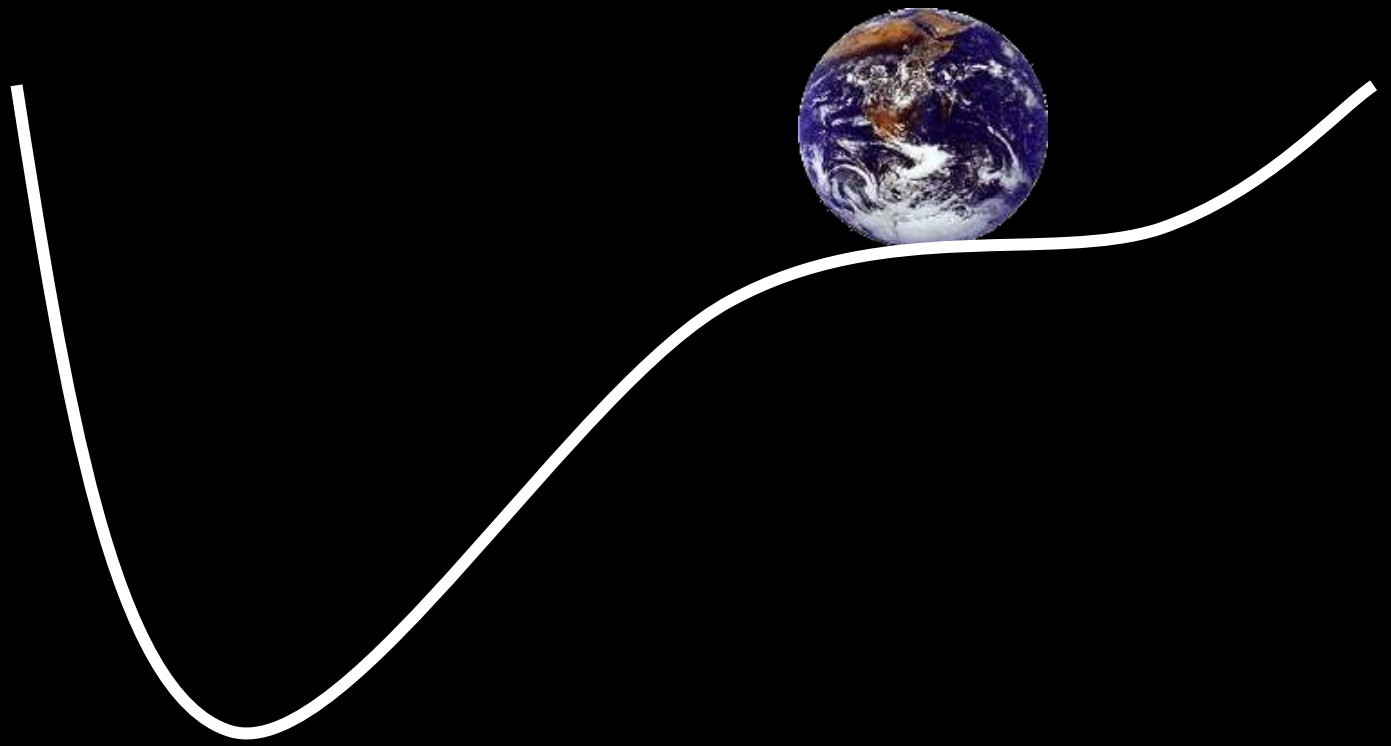
The scientists rejected Adani's so-called 'adaptive management' plan to mitigate risks to the wetland. The method – essentially a learning-by-doing approach – was unsuitable partly because of lag times between mining activity and the effect on the springs, they said.

Possible cumulative impacts to the wetland from other proposed coal projects have also not been properly considered…

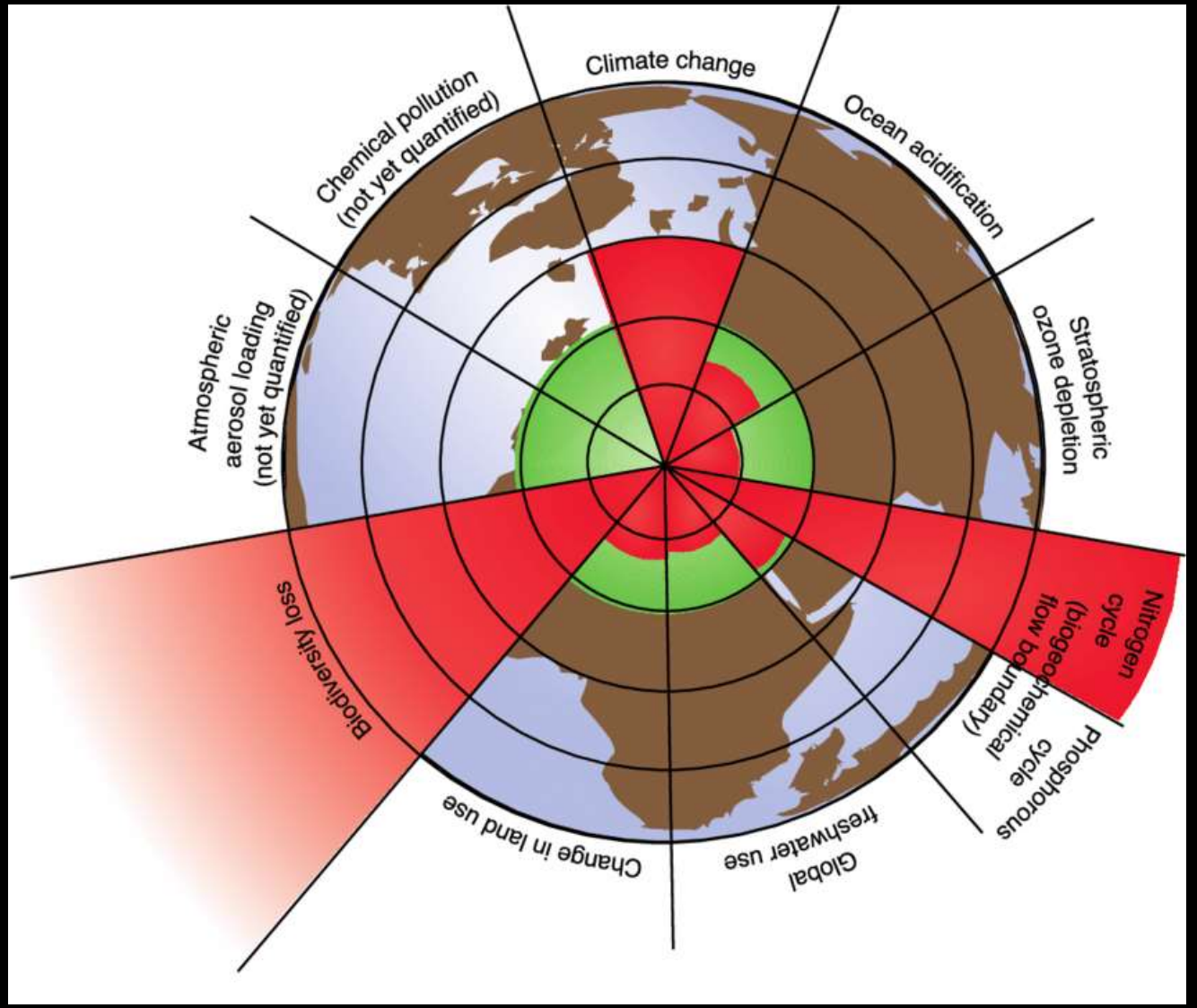
"If we allow Adani to drain billions of litres of water with this groundwater plan then we are effectively playing Russian roulette with the very existence of a million-year-old ecosystem," Professor Werner said.



Reduced resilience – our precarious global situation

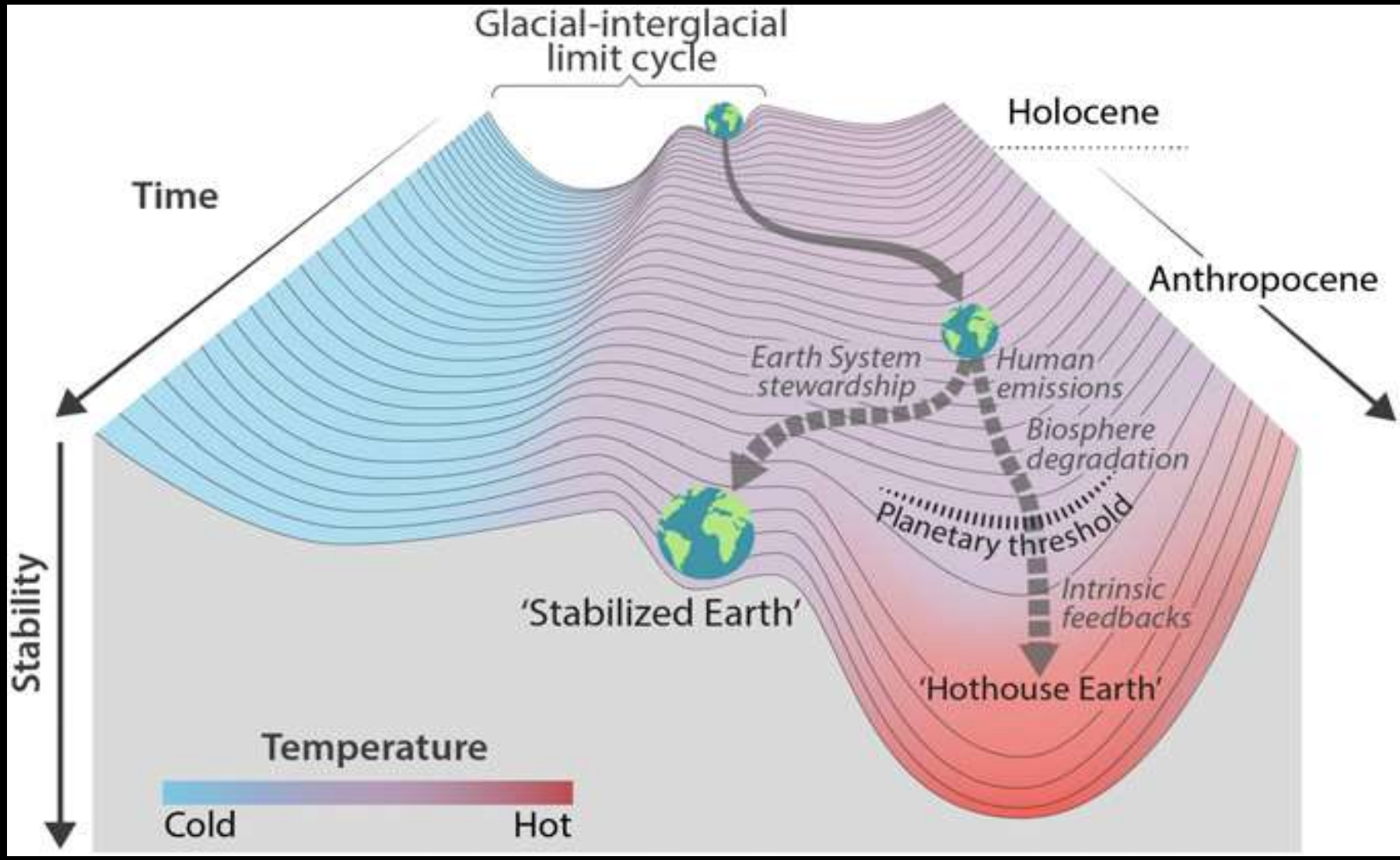


The Earth functions as a single system and is beginning to move into an ***unsafe operating space***



Steffen et al. 2015b

We need to *stabilize* the planet



Steffen et al. (2018)

In sum:

- Community resilience is crucial! And tricky
- It is a process and skill, not a thing or destination
- It demands continual awareness of context
- Continual awareness of the risks and limitations of any one approach
- Challenging, ongoing, learning and shared decision making

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