Tonkin+Taylor

you've identified the risk, now what to do about it?

James Hughes

Exceptional thinking together
www.tonkintaylor.co.nz

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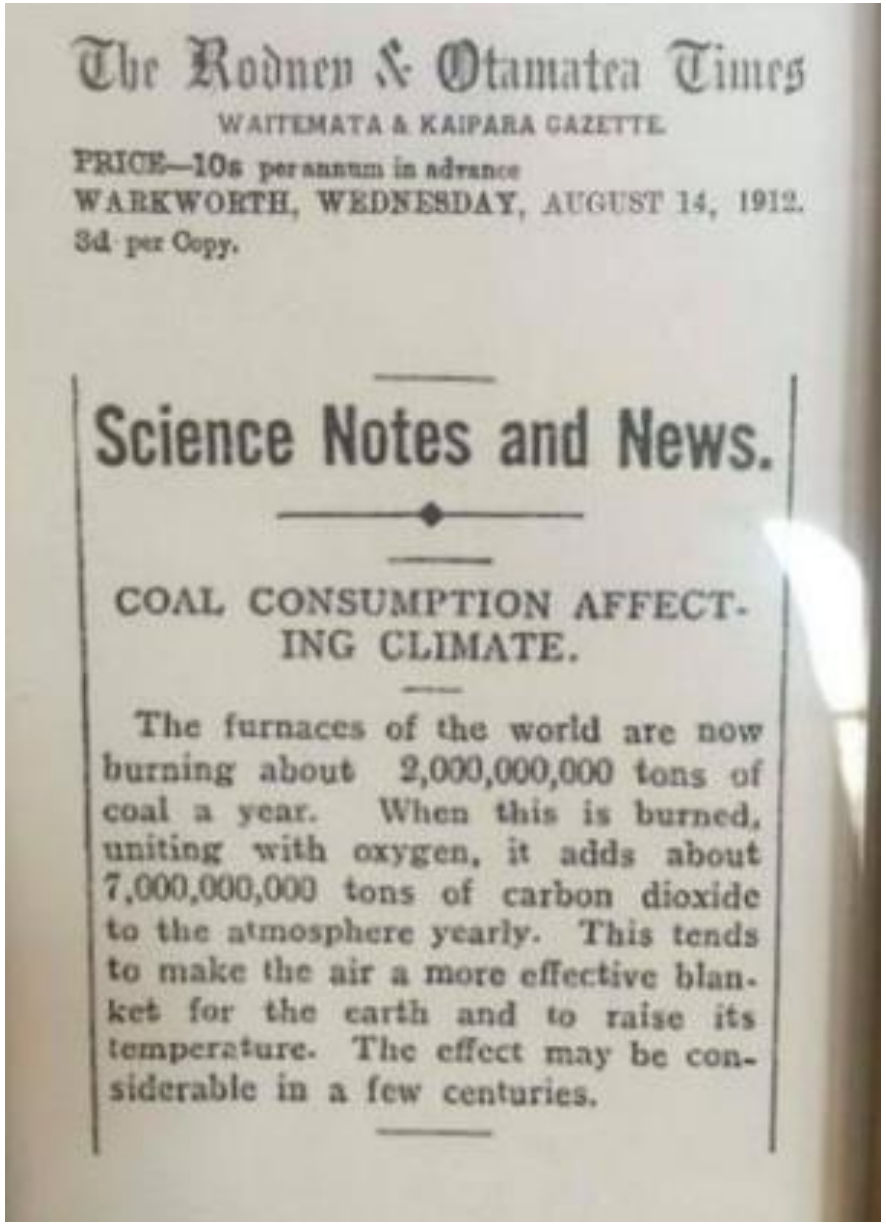
THE NEWS:
COMPLEXITY AND UNCERTAINTY

Complex

1. Emergent and unpredictable
2. Huge amounts of Data
3. Responses and behaviours vary – and this creates feedback

Data

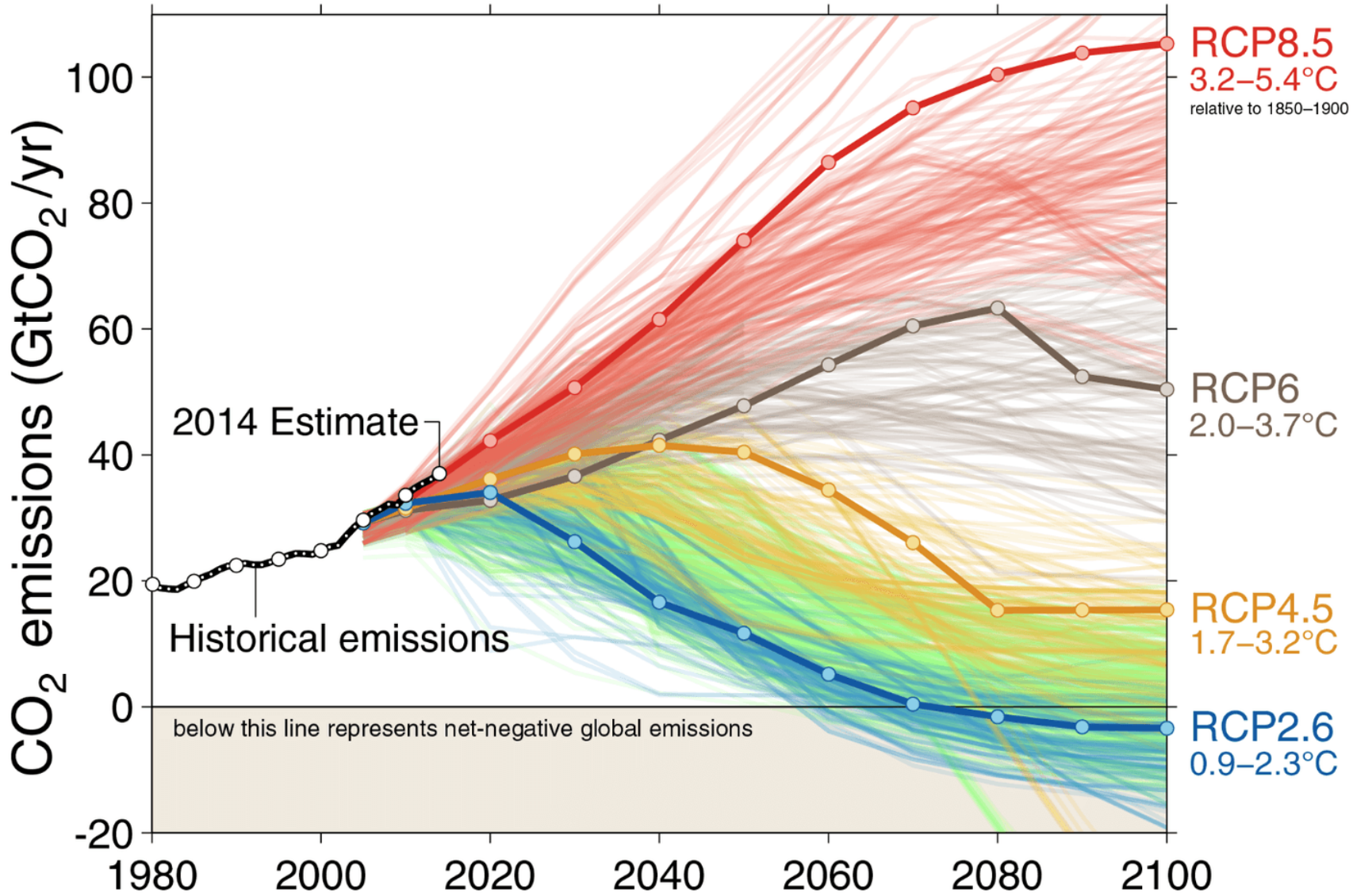


The Rodney & Otamatea Times
WAITEMATA & KAIPARA GAZETTE.
PRICE—10s per annum in advance
WARKWORTH, WEDNESDAY, AUGUST 14, 1912.
3d per Copy.

Science Notes and News.

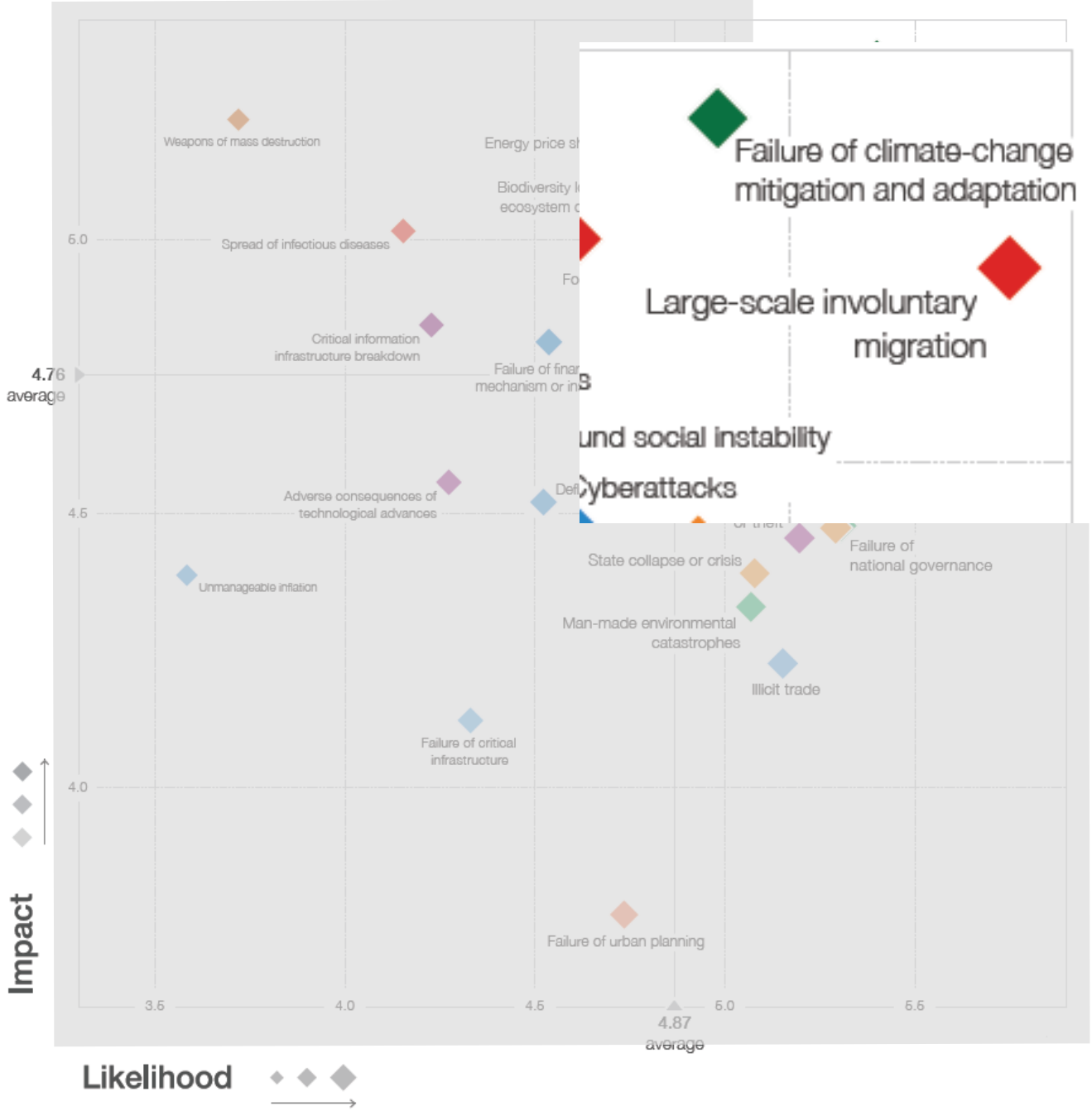
COAL CONSUMPTION AFFECTING CLIMATE.

The furnaces of the world are now burning about 2,000,000,000 tons of coal a year. When this is burned, uniting with oxygen, it adds about 7,000,000,000 tons of carbon dioxide to the atmosphere yearly. This tends to make the air a more effective blanket for the earth and to raise its temperature. The effect may be considerable in a few centuries.



Source: Fuss et al, 2014

So what does this mean?



World Economic Forum: ***Global Risks Report 2016***

BAD NEWS:
WE AINT DOIN’ WELL

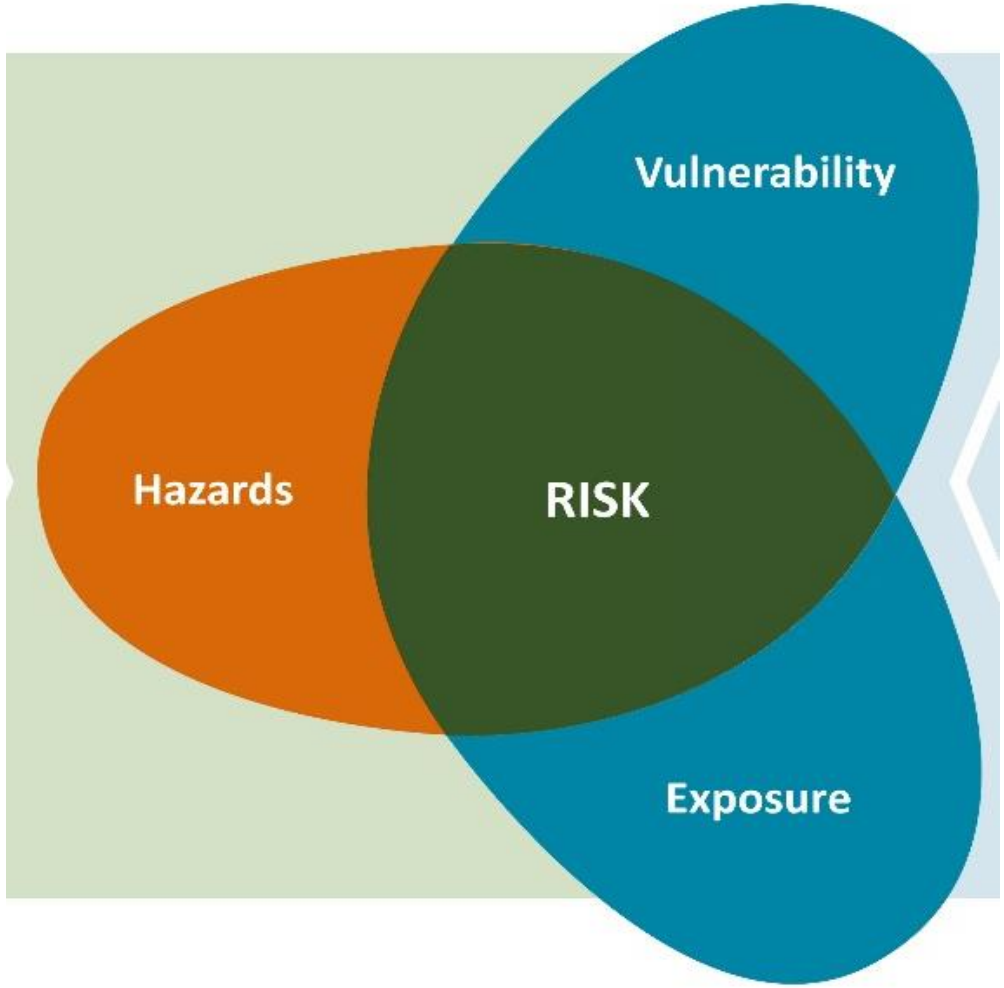
Natural hazards like earthquakes, volcanic eruptions, and river floods can happen at any time. In contrast, sea level rise is incremental and inexorable – its effects on our coast will unfold slowly for a period before accelerating.

Parliamentary Commissioner for the Environment, 2016

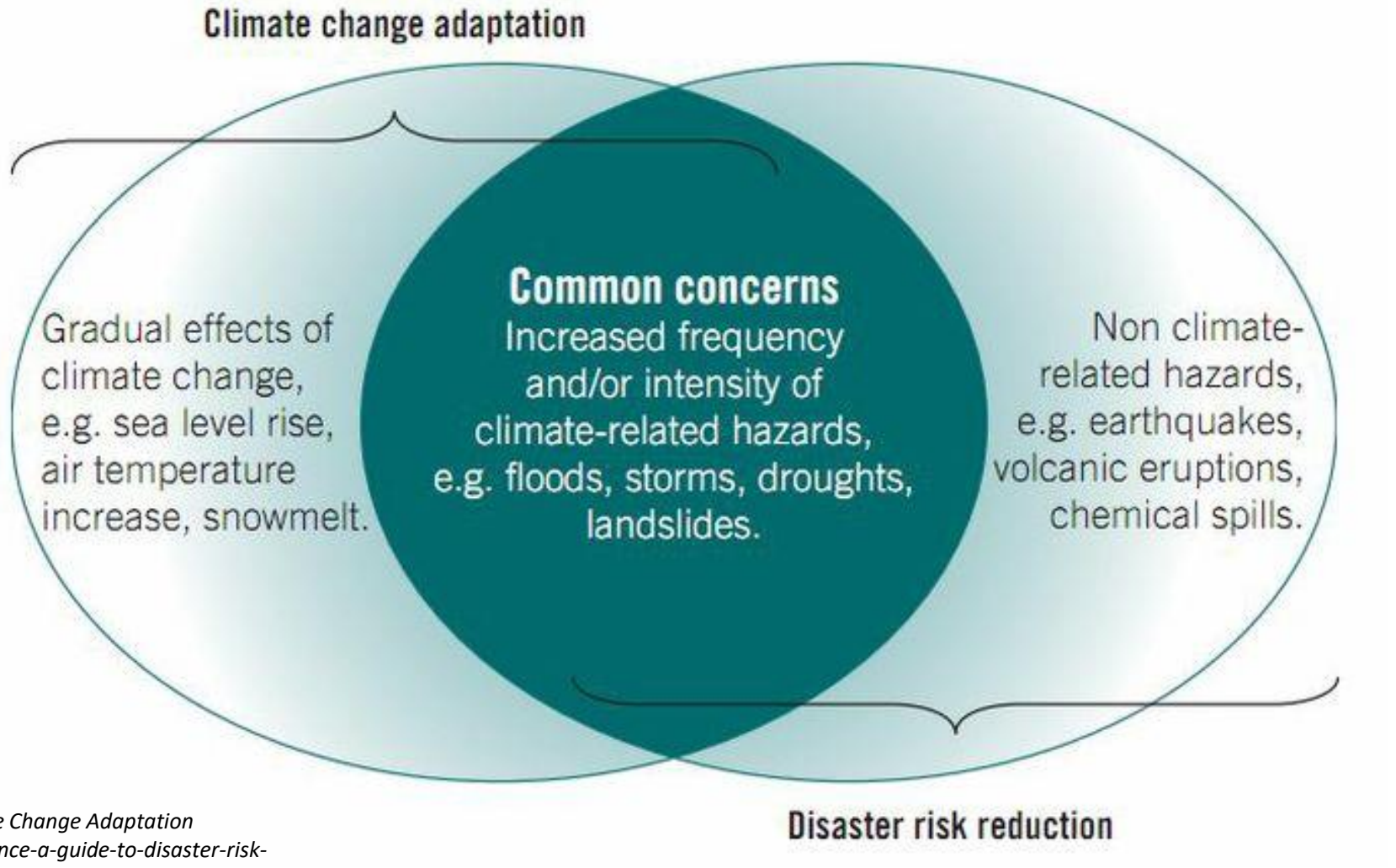
Not doing well

- Understanding
- Approaches
- Consistency

Climate risk / natural hazard risk

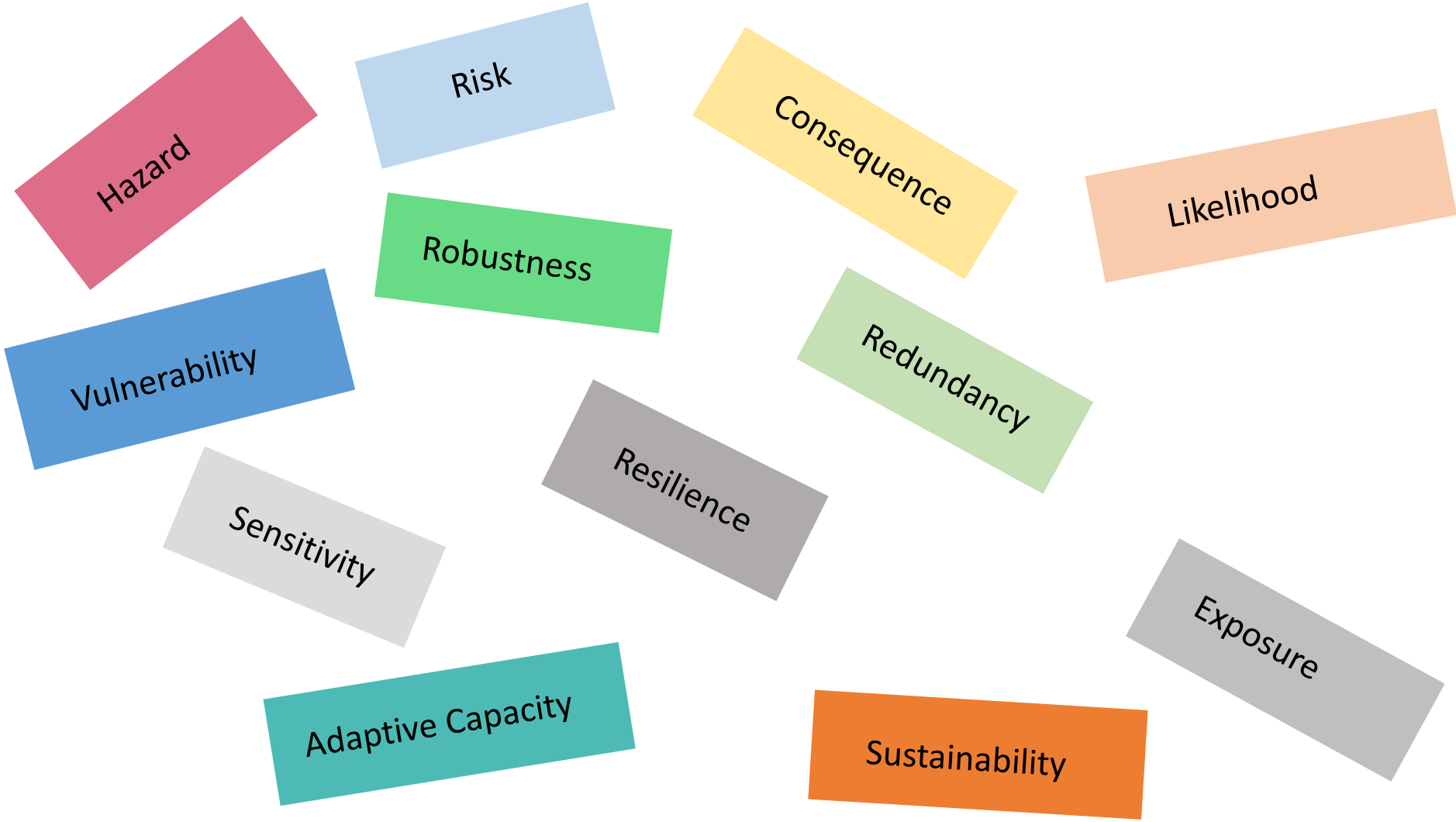


Common concerns: CCA and DRR



Toward Resilience: A Guide to Disaster Risk Reduction and Climate Change Adaptation (http://www.ecbproject.org/resources/library/341-toward-resilience-a-guide-to-disaster-risk-reduction-and-climate-change-adaptation)

Many different approaches & language



Many things happening

- CDEM National Resilience Strategy
- NPS (Nat Hazards, Urban Capacity, FM)
- Local Government Risk Agency
- 60:40 Review
- MfE Coastal Guidance
- Royal Society Report on Climate Change Implications (2016)
- MfE – Working Group, stocktake and options report (2017/18)
- PCE Report
- Peter Gluckman Reports on Risk Management
- National Science Challenges – Deep South, Living on the Edge, Resilience to Natures Challenges, Our land and water etc
- Lifelines Vulnerability Studies
- Infrastructure Strategies

Summary of issues

- Government policy and activity is fragmented
- Sectoral responses are uneven
- Approaches and language are confused

THE BAD NEWS – Contd:

WE DON’T UNDERSTAND RISK WELL

Is unprecedented the new normal?

- The past is not a good indicator of the future
- Direct / indirect / residual risks

The Washington Post
Democracy Dies in Darkness

Wonkblog | Analysis

Houston is experiencing its third '500-year' flood in 3 years. How is that possible?

By Christopher Ingraham
August 29, 2017 at 7:30 AM

This drone video taken Aug. 27 shows the historic flooding in Houston caused by Hurricane Harvey. (ahmed.gul/Instagram)

Hurricane Harvey has brought "500-year"

- INSERT VIDEO

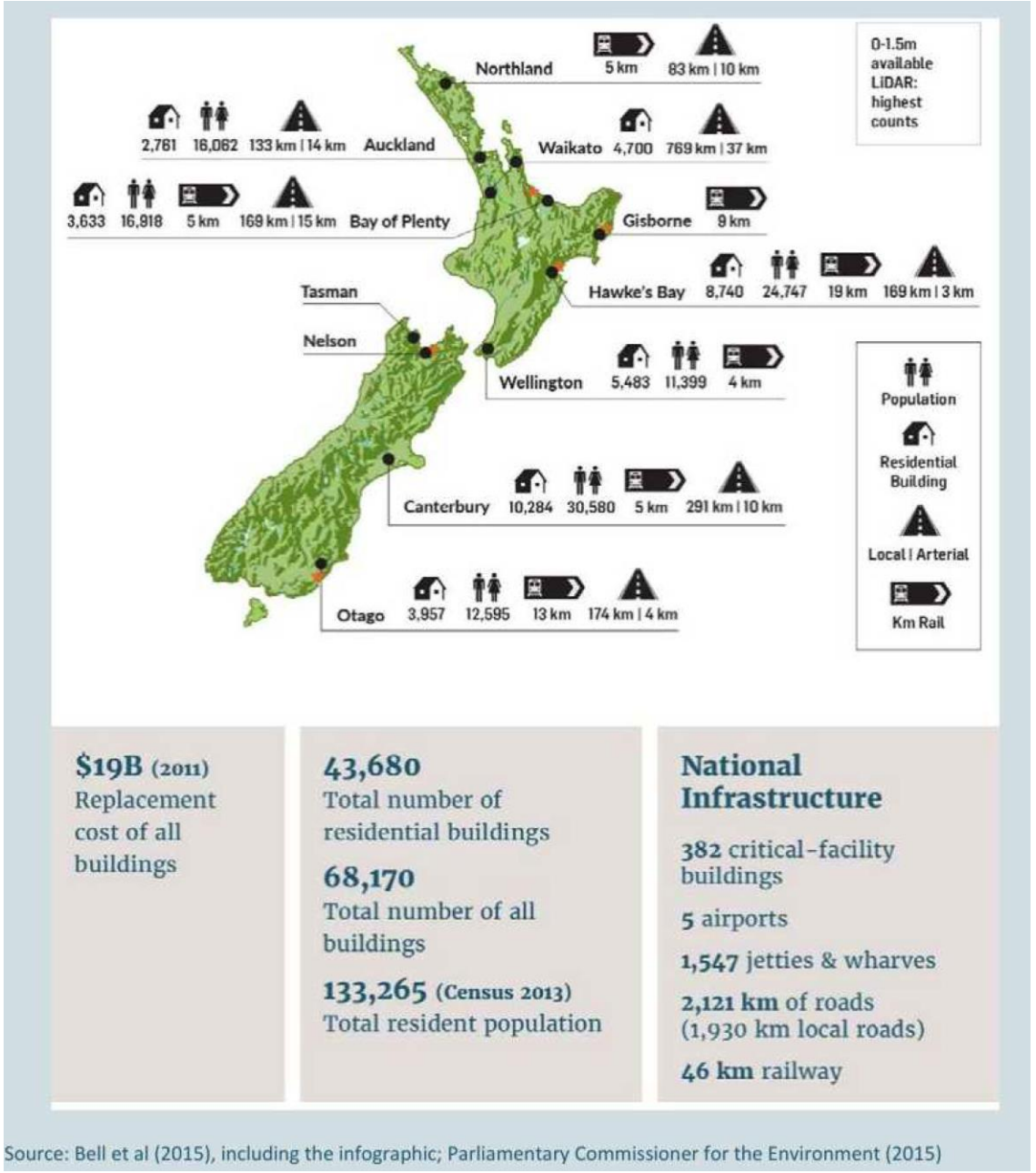

364 river control, flood protection, and land drainage schemes
protect some 1.5 million hectares of land
collective replacement value of $2.3 billion

Edgecumbe flood 2017

… the Panel has concluded that the historic framework which has governed the development of the Rangitāiki River Control Scheme is at or near the end of its useful life. Frameworks now being more widely adopted look towards allowing greater room for rivers to move. ***This change is underlined by the near-certainty that climate change is leading to more severe and more frequent extreme weather events of the sort that occurred in April this year.***

Rangitaiki River Scheme Review, 2017

How well do we understand risk?

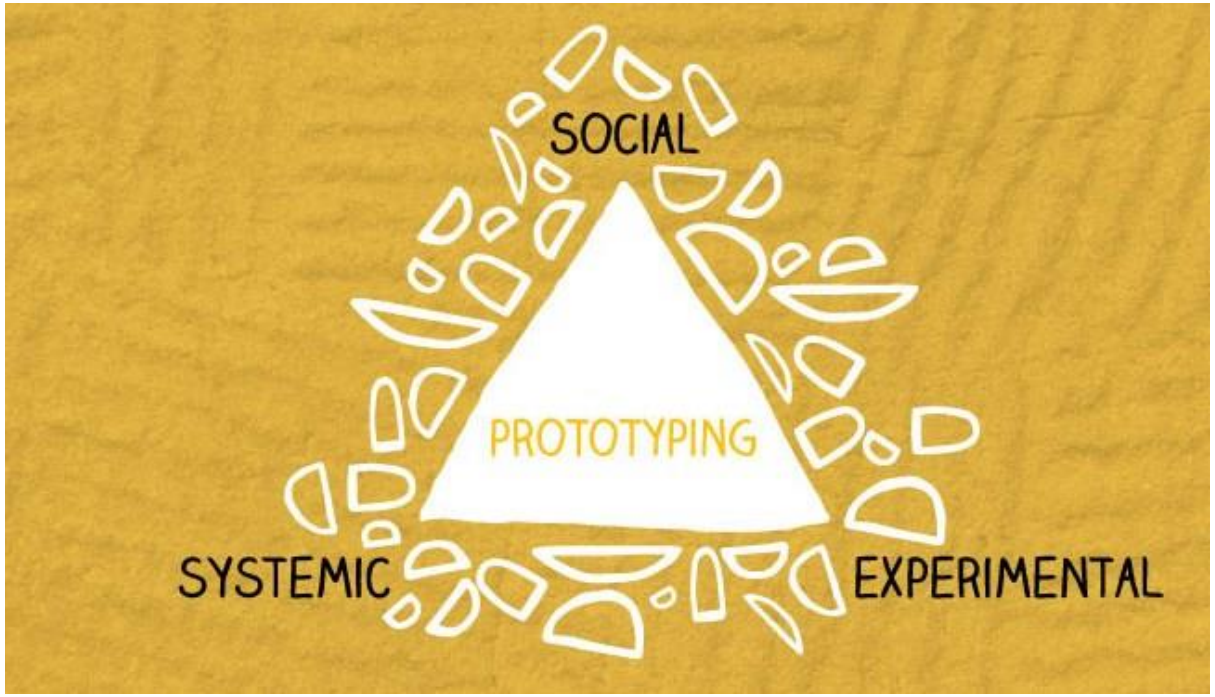


Source: Bell et al (2015), including the infographic; Parliamentary Commissioner for the Environment (2015)

- Areas of hardship within NZ will be more greatly affected during and after a shock event.
- In a major event, how will society respond? How can we learn from this?

THE GOOD NEWS:
WE CAN MANAGE RISK

Social and Technical Responses



Step 1: Engage

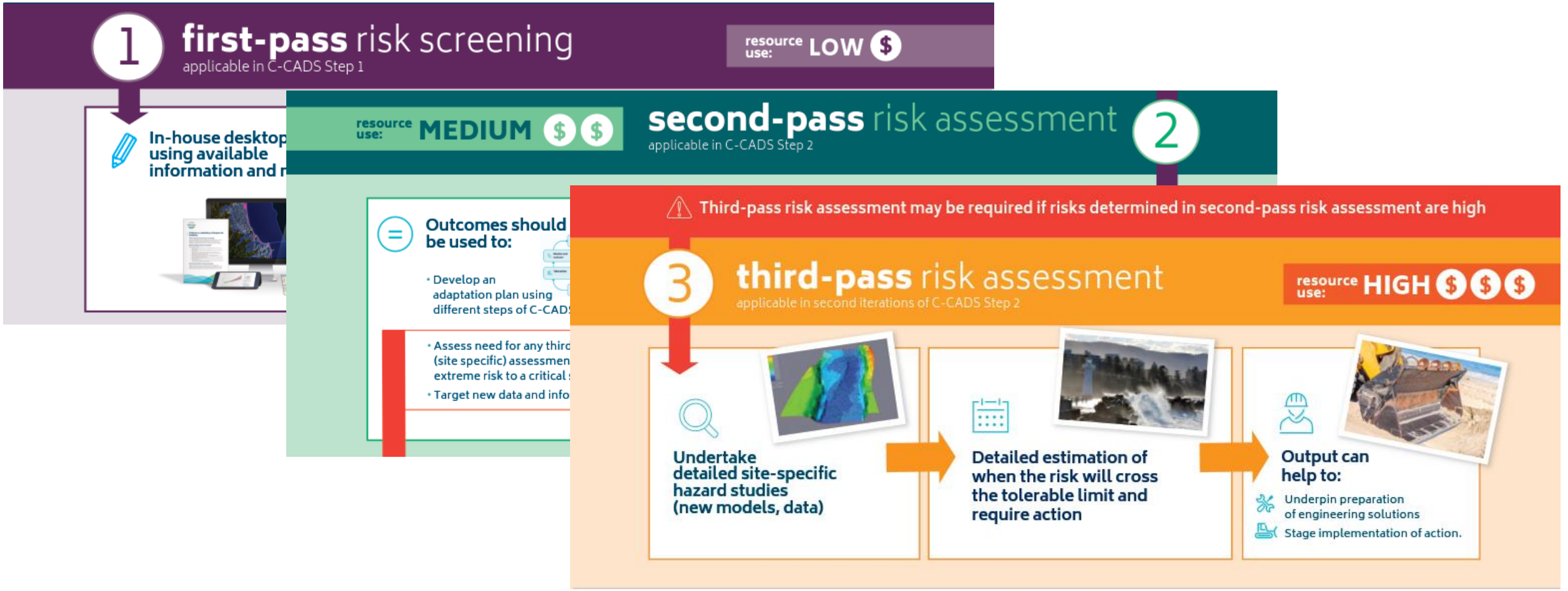
NOT:

- **D**esign,
- **E**ducate,
- **A**nnounce,
- **D**efend.

Step 1: the right people in the room

- Iwi, Council, Community workers, educators, health workers, artists, scientist, engineers etc

Step 2: Risk assessment process



Source: NCCARF, CoastAdapt

Step 3: Determine options for addressing risk

- *Manage the unavoidable*
- *Avoid the unmanageable*

Types of actions needed

- **No regrets** – actions that yield benefits even in the absence of climate change.
- **Flexible/Reversible** – actions that can be easily retrofitted or upgraded
- **Safe failure**
- **Safety Margin** – designing infrastructure to cope with the full extent of likely climate impacts.
- **Soft** – financial, institutional or behavioural tools.
- **Reducing decision-making time horizons** – building cheaper, shorter-lived assets.

Example: Boulder Colorado

Example: Copenhagen Cloudburst Management Plan

Closing comments

- Problems are interdisciplinary, complex, uncertain, dynamic – we need new ways of working together: Social and Technical bringing in new 'boundary' disciplines and researchers.
- A **joined up approach** to DRR and CCA
- **Consistent policy** and institutional arrangements (eg Climate Commission)
- **Risk assessment** across all sectors: Communities, infrastructure, natural environments, business and industry, health sectors, international dimensions etc
- **Land use planning** is key
- Approaches which encompass hard and soft solutions, defend-adapt-retreat, and consider low regrets, and flexibility
- Engagement and working together to build a **common vision and long term view**

“Human civilization is built on the premise that the level of the sea is stable, as indeed it has been for several thousand years”.

NY Times, 2016