

Understanding the national risks from climate change

NZ Food Safety & Science Research Council
Industry Futures Forum

18 November 2025

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He Pou a Rangi
Climate Change Commission

Presentation outline

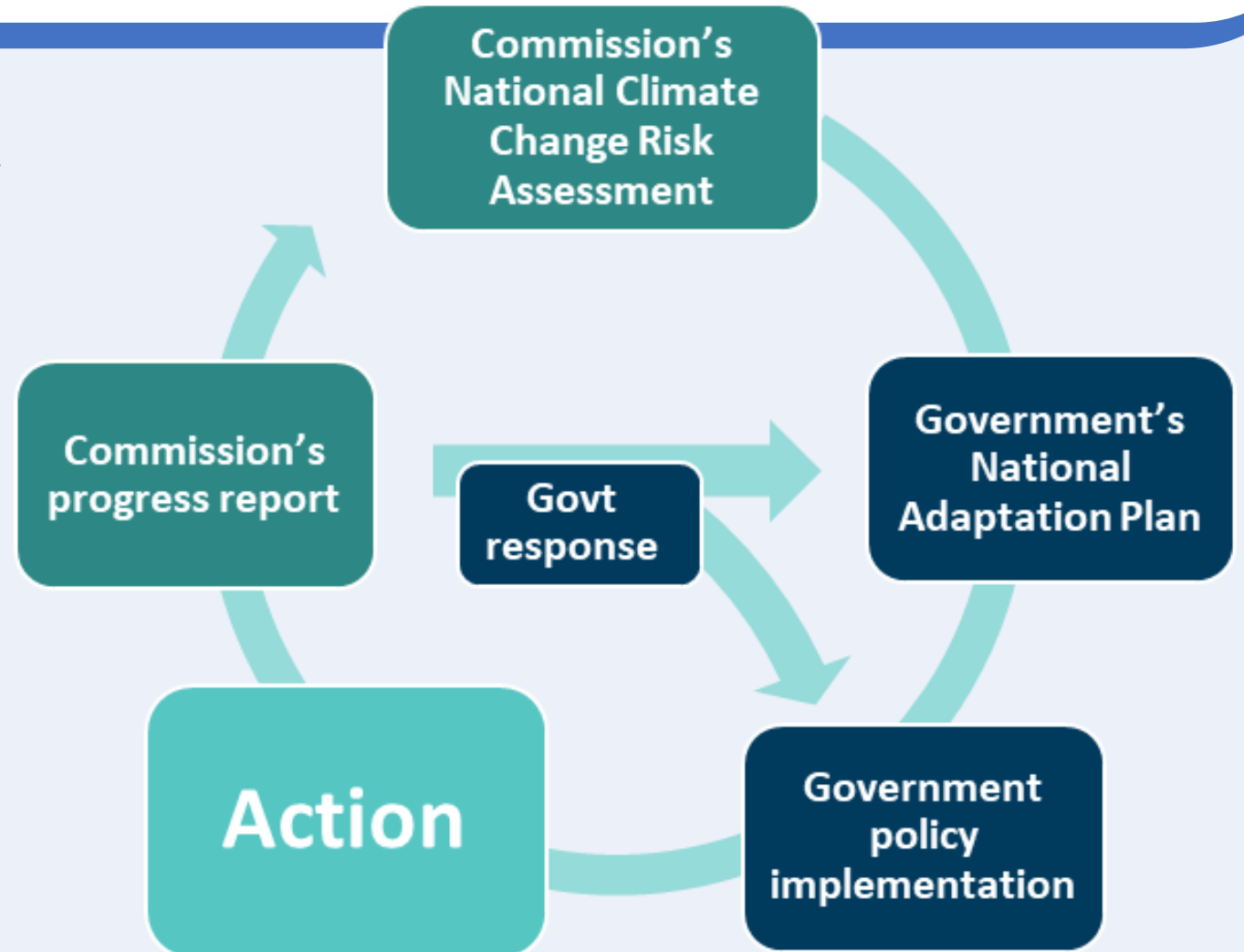
1. Intro to the national climate change risk assessment
2. What we talk about when we talk about climate risk
3. How we have assessed and prioritised risks
4. Risks relevant to food safety
5. Key insights from our preliminary analysis
6. Questions and discussion

1 Introduction to the NCCRA

Identifying the most significant risks facing the country from the current and future effects of climate change

The Commission's adaptation role

- Independent Crown Entity
- National level role
- Assess risks, provide advice and monitor



Our tasks in the risk assessment

- Assessing the risks to Aotearoa New Zealand's economy, society, environment, and ecology from the current and future effects of climate change.
- Identifying the most significant risks to Aotearoa New Zealand, based on the ***nature of the risks, their severity, and the need for coordinated steps to respond*** to those risks in the next 6-year period.

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What we talk about when we talk about “climate risk”

Risks as "the potential for adverse consequences"

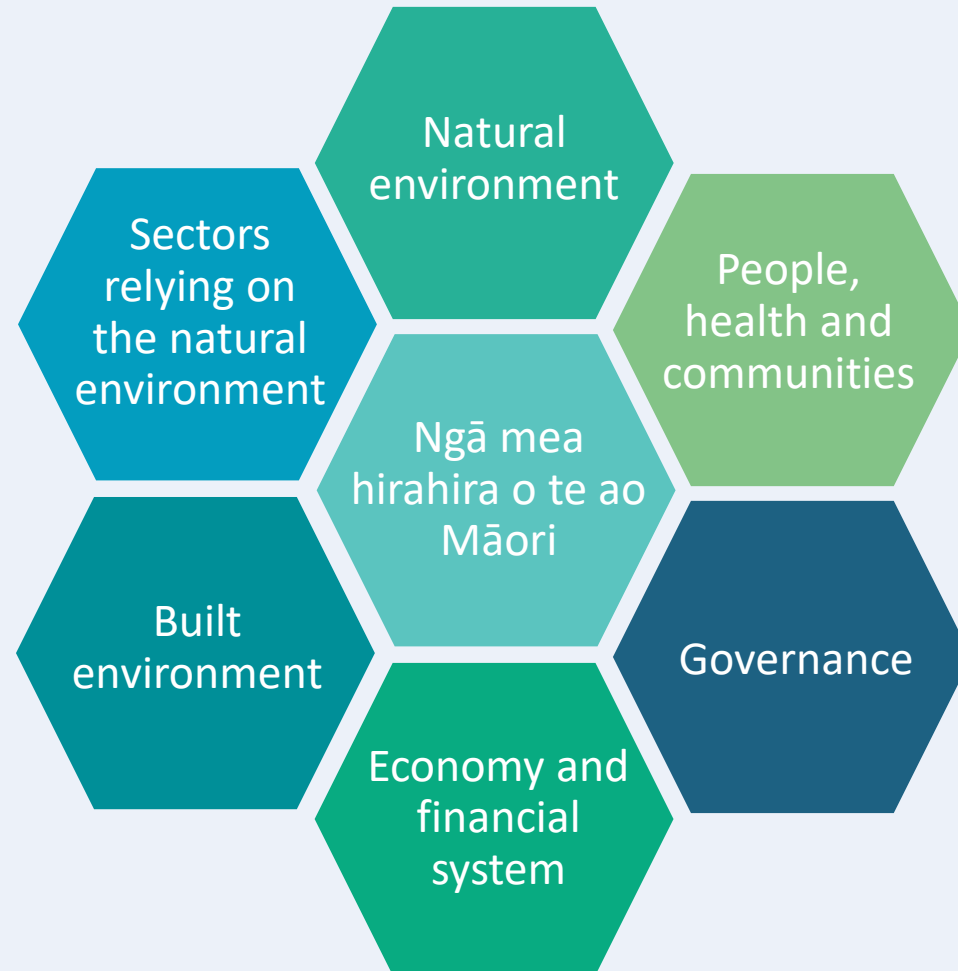
How we think about climate risks



Diagram adapted from the Intergovernmental Panel on Climate Change AR6 WGII Summary for Policymakers

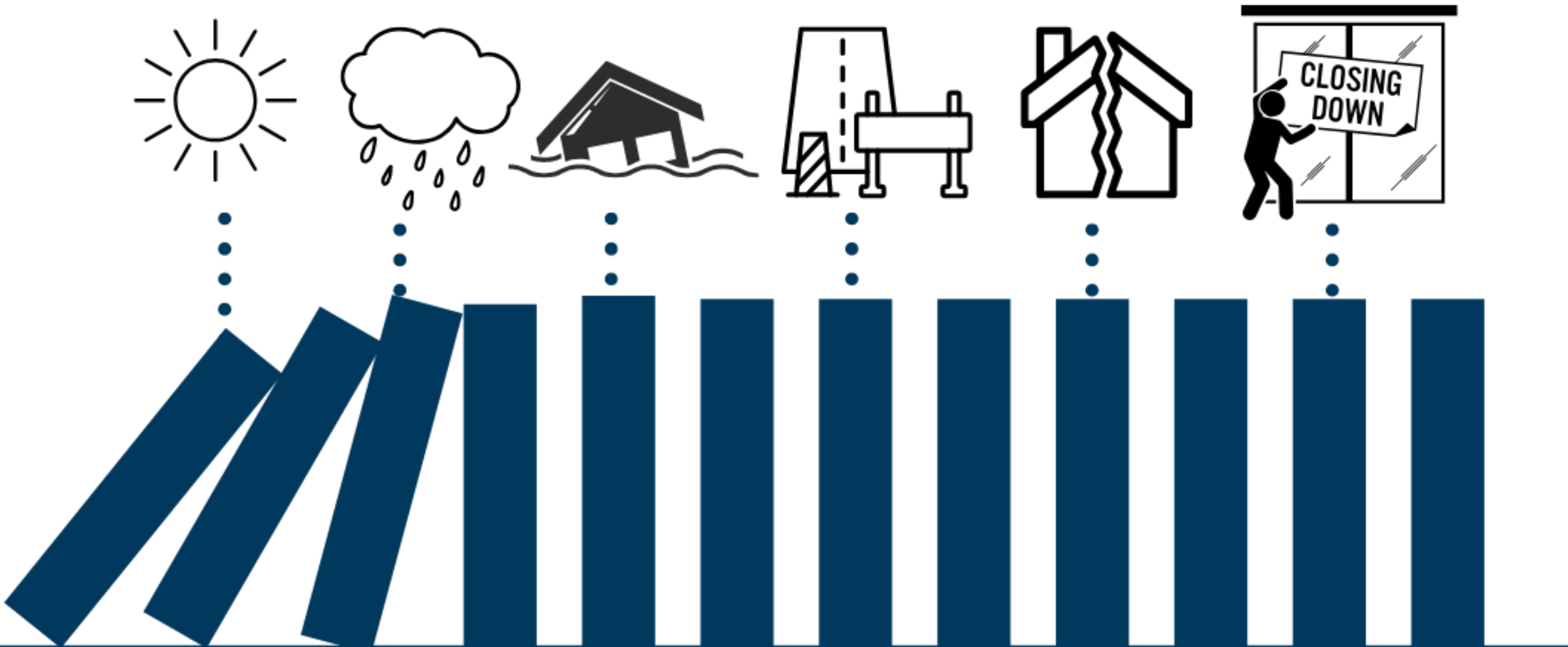
- **Risk** = the potential for adverse consequences
 - **Hazards** = climate-related physical events or trends (e.g. sea level rise, drought)
 - **Exposure** = who or what is exposed to hazards (e.g. people, places, things)
 - **Vulnerabilities** = factors that determine the impact (e.g. preparedness, recent events, available resources etc)
 - **Responses** = how actions to address climate change might not work as planned or could create other problems

We assess risks in seven domains



Examples of some of the risks we are analysing

Risks to...	...from or due to	Domain
Linear transport networks	Due to changes in temperature, extreme weather events and ongoing sea-level rise	Built Environment
Freshwater ecosystems	Due to changes in precipitation & temperature, extreme weather events and ongoing sea-level rise	Natural Environment
Social cohesion, community and cultural wellbeing	From displacement of individuals, families and communities due to climate change impacts	People, Health, and Communities
Access to taonga species, kai, and culturally significant plants	From climate change intensifying marine heat, acidification, extreme weather and sedimentation, and interacting with land-use pressures	Ngā mea hirahira o te ao Māori

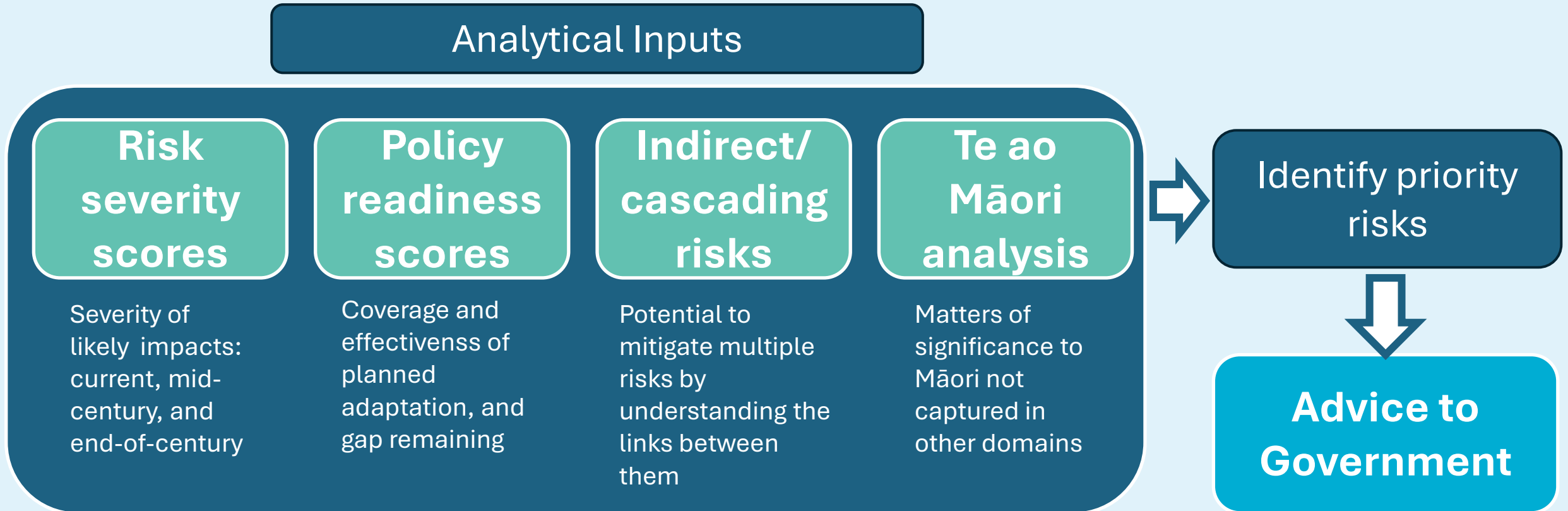


Cascading risks – when one thing goes, they all go

How we have assessed and prioritised risks

Considering risk severity, policy readiness, and indirect and cascading impacts

Generating advice to Government



4 Risks relevant to food safety

Risks to agriculture, horticulture, fisheries

Risks to productivity and output in food producing sectors



Pastoral
farming



Horticulture
and arable



Fisheries and
aquaculture

Risks with compounding or cascading impacts on food



Potable water – availability and quality



Linear transport networks, ports and airports
– movement of food products



Freshwater and terrestrial environments –
quality and abundance



Electricity transmission/supply – powering
operations



Physical and mental health – worker
availability and productivity

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Key insights from our preliminary analysis

Relevant to food safety and the food production sector

Pastoral farming

- **High exposure to hazards:**

- Farming is outdoors, depends on weather.
- Extreme events get the headlines, but gradual changes erode productivity
- Change in: - Temperature and rainfall (level and timing), - Pest and disease
 - ↳ Plant and animal performance ↗ production costs

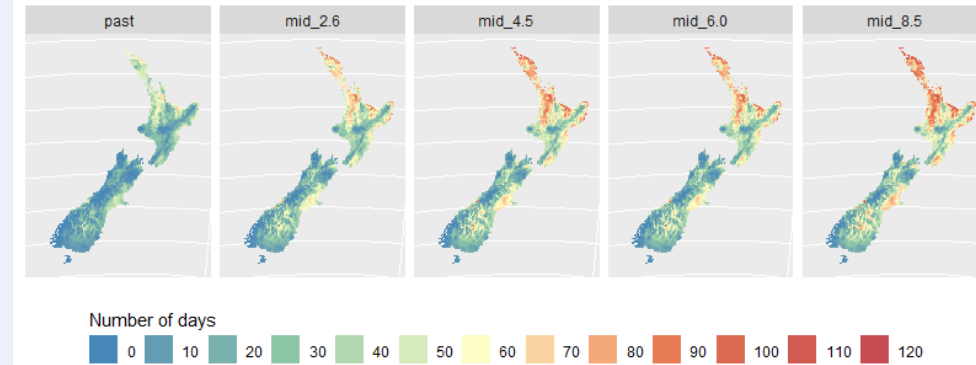
- **Sensitivity varies:**

- Grass growth is very sensitive to precipitation.
- Dairy less sensitive than sheep and beef.
- Timing of extreme events matters

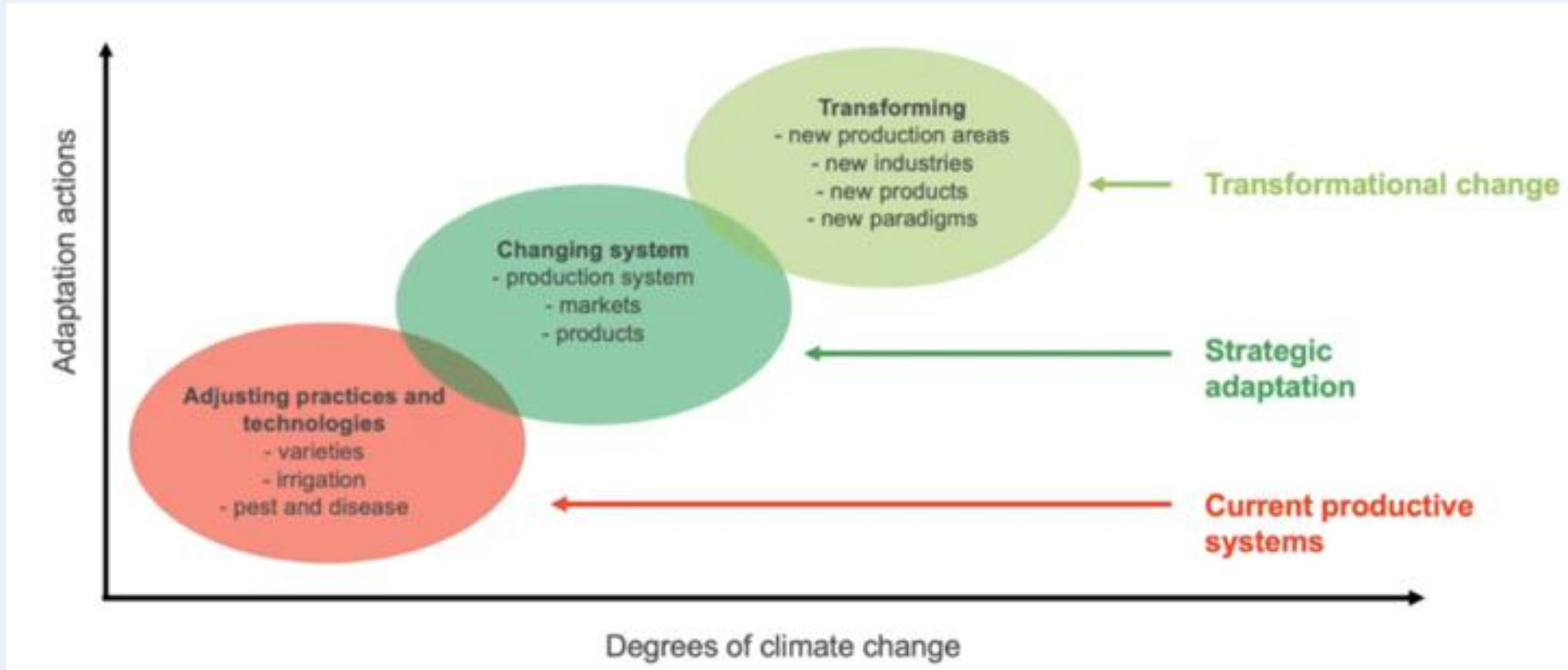
- **Current responses match pace of climate change**

- Can this be maintained?
- Tipping points may trigger land use change

Number of days above THI 72



Spectrum of adaptation



Agricultural adaptation spectrum (Cradock-Henry, adapted from Rickards and Howden 2012)

Horticulture and Arable

- **Some opportunities but barriers exist**
 - Capital cost, labour, water, markets etc.
- **High exposure to hazards:**
 - Extreme weather: droughts, floods, storms, cyclones
 - Rising temperatures → heat stress, sunburn
 - Warmer winters → reduced chilling hours for apples and kiwifruit
 - Pest and disease pressures expanding (e.g., Psa in kiwifruit)
- **Vulnerabilities:**
 - Reliance on rainfall or limited irrigation → higher drought risk
 - **Crop sensitivity:**
 - Kiwifruit → Heat stress
 - Apples & kiwifruit → Reduced winter chill threatens flowering and fruit set,
 - Grapes → Cultivar-specific responses to warming affect flowering, ripening, and fruit quality
 - **Flood plains can be valuable horticultural land**
 - Plants cant move like animals
 - Vulnerable to flood deposition
 - **Grower capacity: smaller operations less able to adapt to consecutive hazards**



Fisheries and Aquaculture

- **Oceans are exposed to an unseen toll**
 - **Hazards are intensifying**
 - A-NZ seas are warming faster
 - Marine heat waves exceed predictions
 - Increasing storms → sedimentation
 - Decreased circulation
- **Unexpected changes are occurring**
 - Effects on fisheries from biosecurity outbreaks, shifts in circulation are only known after they occur.
- **Risk compounded by other human activity**

'We're cleaning up their mess' - oyster farmers want Watercare to deal with sewage overflow

11:35 am on 2 July 2025

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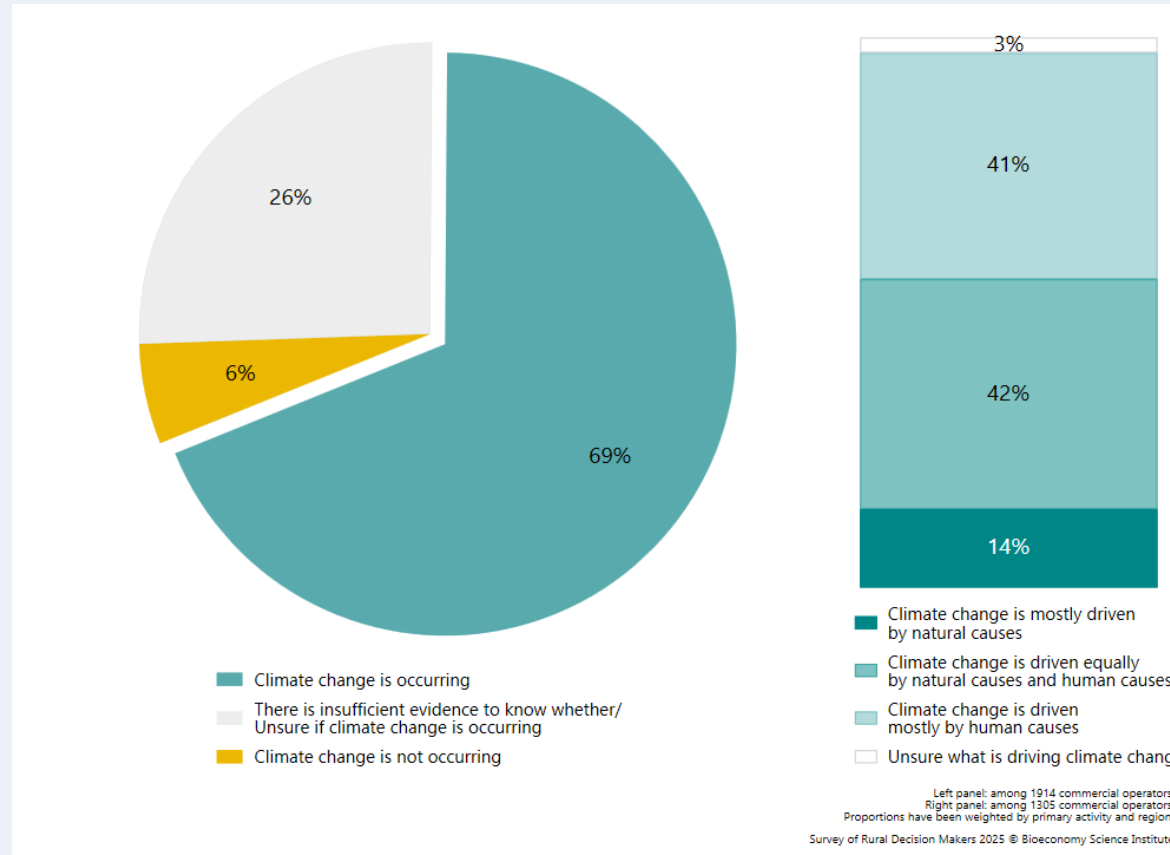


Victor Waters, Journalist
✉ victor.waters@rnz.co.nz



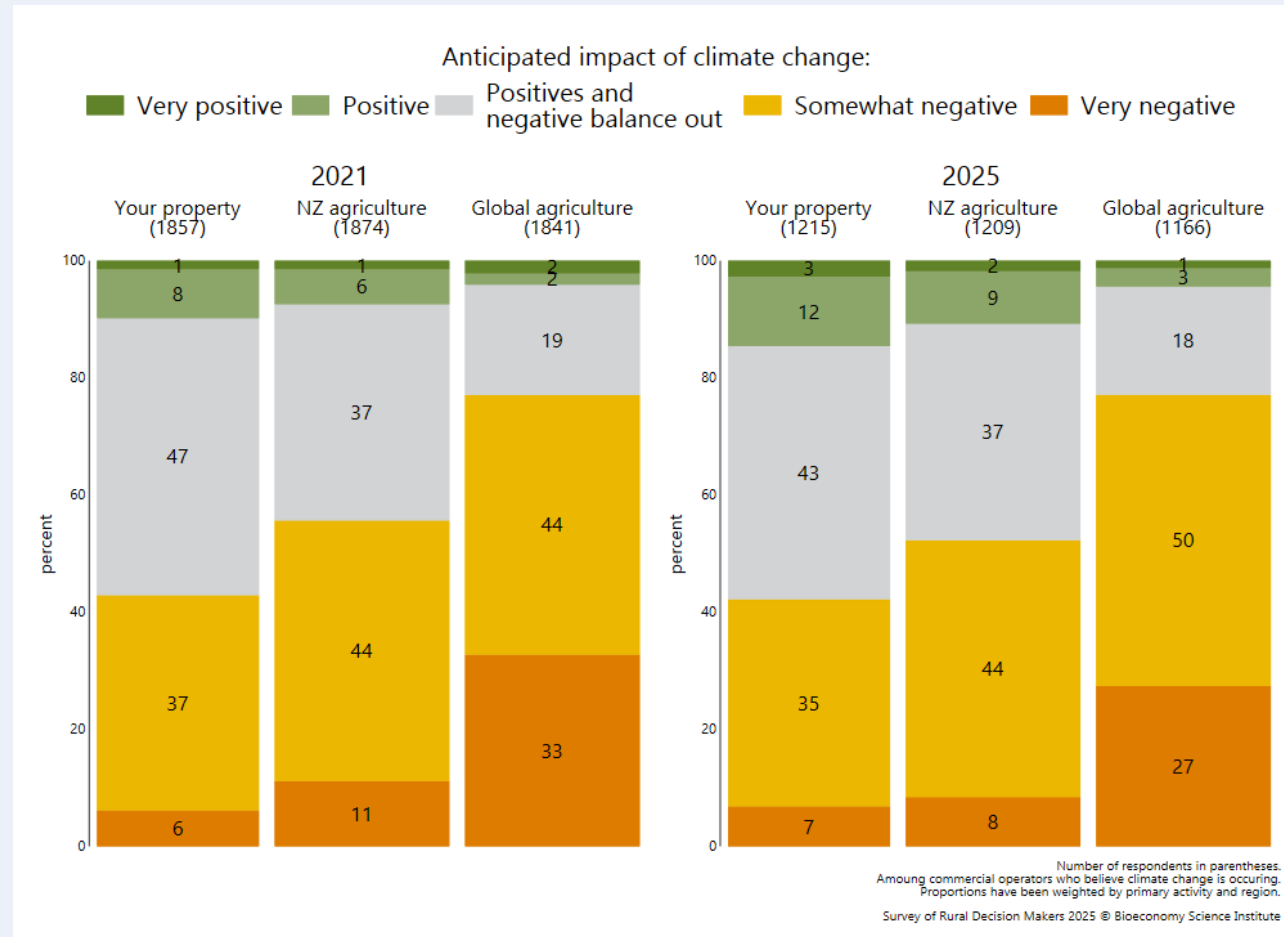
Survey of Rural Decision Makers

- “Belief” in climate change isn’t increasing



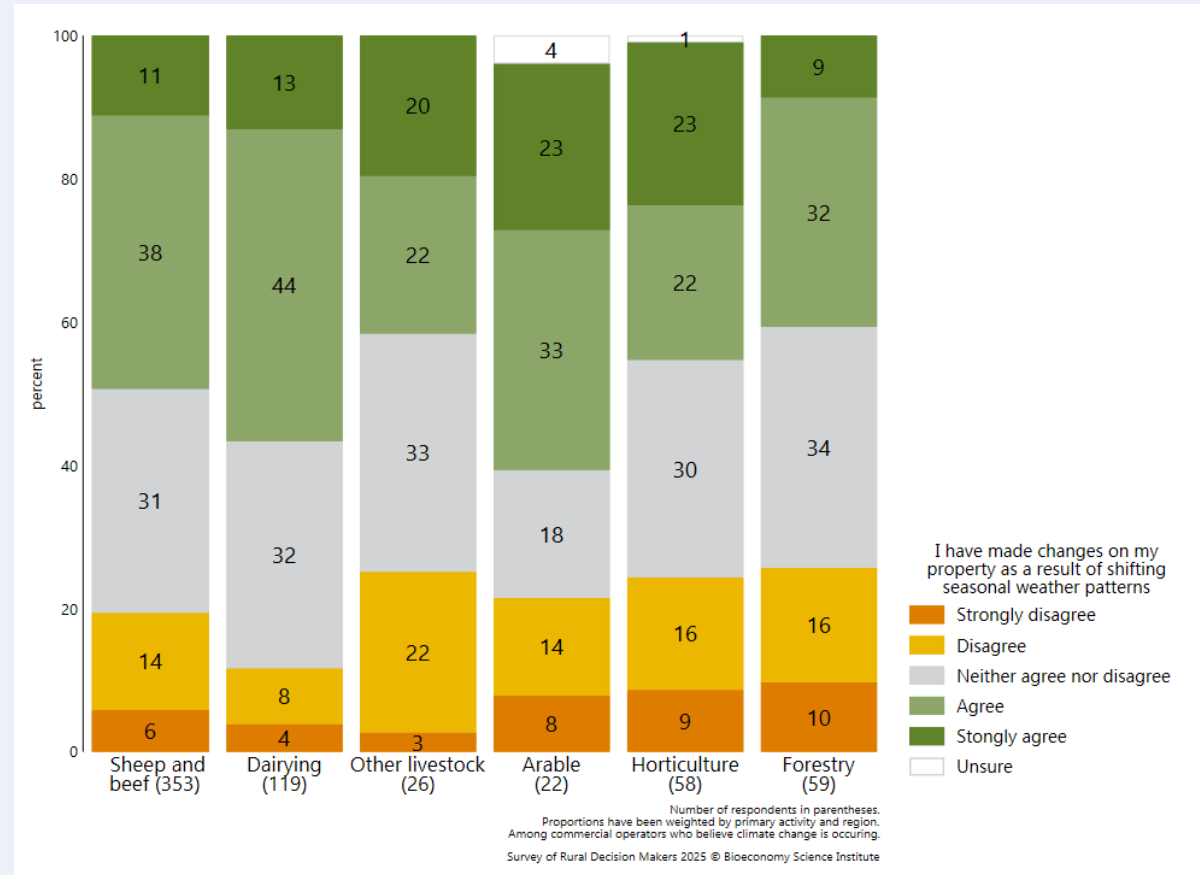
Survey of Rural Decision Makers

- She'll be right?



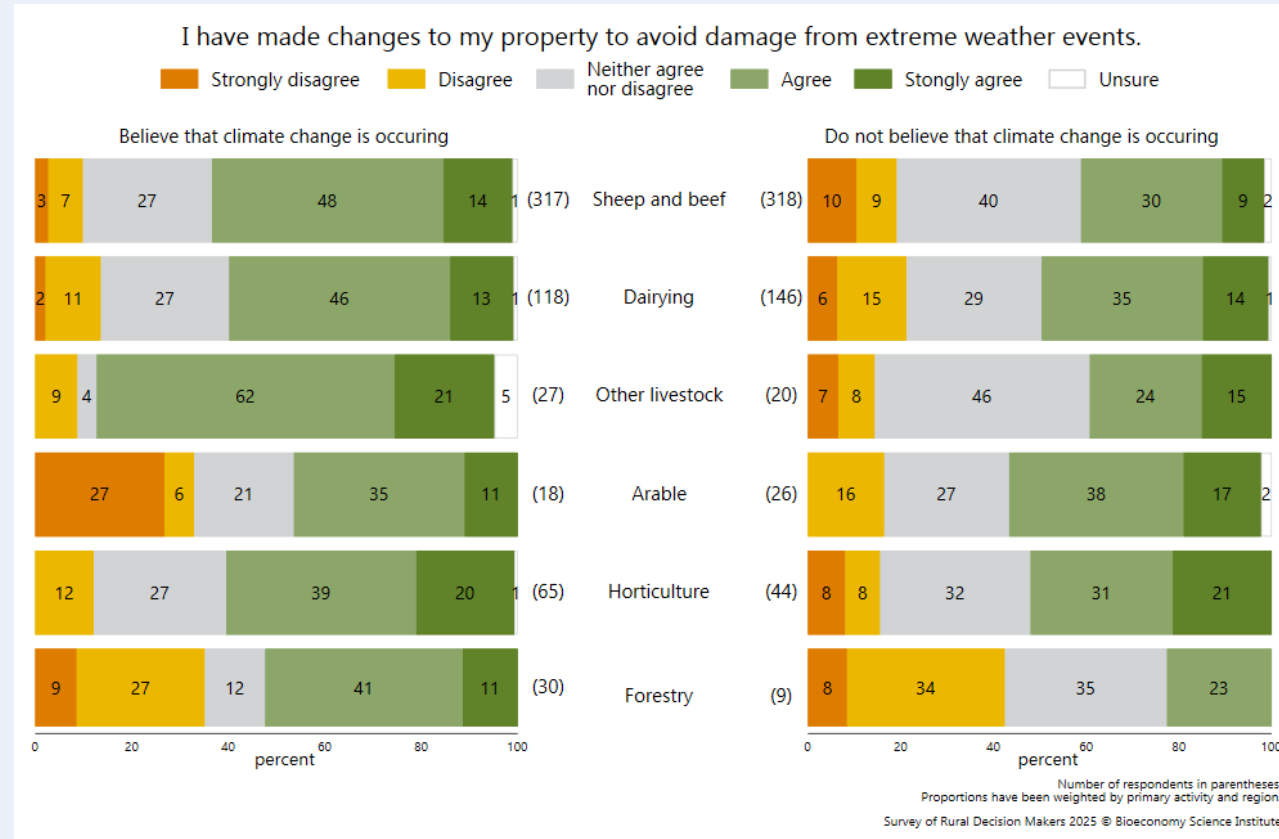
Survey of Rural Decision Makers

- Farmers and growers are making changes



Survey of Rural Decision Makers

- Changes might be affected by belief



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Questions and discussion

Thank you and next steps

Thank you for your participation!

The NCCRA is due to Minister in mid-2026


More information is available on our website

NCCRA-specific updates are available

Thank you



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