

Kia Manawaroa – Ngā Ākina o Te Ao Turoa

Phase II 2019 -2024

National
SCIENCE
Challenges

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RESILIENCE
TO NATURE'S
CHALLENGES

.....
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National Science Challenges – Key principles

- **Mission-driven**
- **Māori as key partners** and mātauranga integration
- **Science excellence** – innovative, internationally relevant, has impact
- **Collaboration** – bringing the best research team together
- **Stakeholders and end users** engaged from the outset

An aerial photograph showing a wide, muddy river. On the left bank, a large, light-colored landslide of earth and rock has occurred. On the right bank, a road is completely submerged in floodwater, with a white truck and a blue trailer partially visible. The surrounding area is lush with green trees and vegetation.

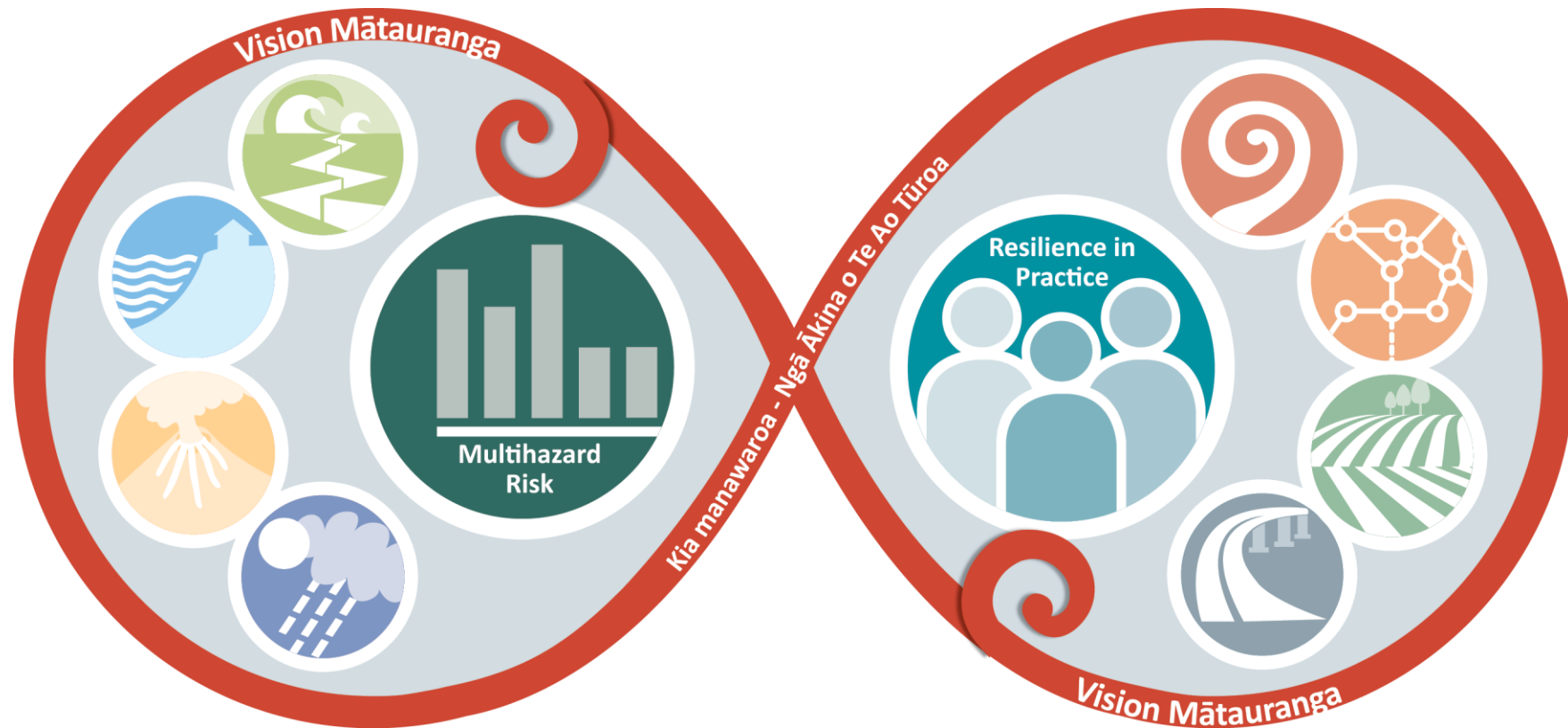
The Resilience Challenge Mission

We work with **stakeholders and end-users** to generate **new co-created research** that **communities, organisations and agencies** can use to improve New Zealand's **natural hazard resilience**

Phase 1 Science Highlights

- New **resilience indicators** developed with iwi and hapū
- Science-informed Hawke's Bay **coastal adaptation strategy**
- Development of a **resilience guide** for the **national electricity distribution network**
- Case studies with **winegrowers** and **sheep & beef farmers** in Kaikoura/North Canterbury to develop **rural resilience**
- A **Wildfire Hazard Index**, to allow wildfire hazards to be compared with those from other perils.

Phase 2 Research Programme 2019-2024



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Outcomes we seek

New Zealand's Resilience to Natural Hazards is Enhanced

2030+

Social and economic distress is reduced when events happen

Land use planning avoids the worst hazard risks

Sustainable design limits infrastructure damage

Our productive economy and industry are responsive and adaptive to natural hazard risk

2030

Unified leadership means risk treatment options are optimised

Māori aspirations for resilience, and kaupapa Maori research are fulfilled

People are enabled and incentivised to take resilience actions

Sustainable access to insurance

2024

Improved quantification of New Zealand natural hazard risk

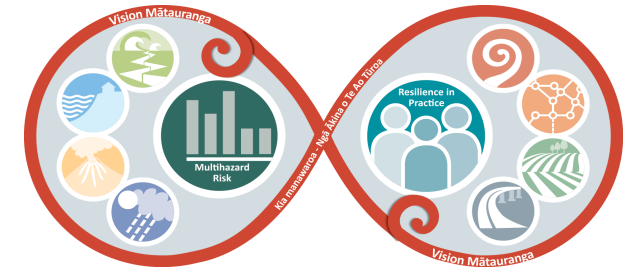
Novel resilience tools and guidance are useful and useable

Increased Māori participation in resilience decisions and incorporation of kaupapa and mātauranga Māori

Accelerated take up of research

Collaborative, integrated resilience science is valued by key end users

Two major themes



The **Multi-hazard Risk Model** comprises exciting **new research** to advance our understanding of **natural hazard processes** (such as earthquakes / tsunami, volcanoes, coastal hazards, and high-impact weather and wildfires).

The **Resilience in Practice Model** comprises **social, economic and cultural research** to develop **tools and methods** to ensure new resilience knowledge becomes part of **daily decision making in New Zealand**.



Ten Research Programmes



Rural



Urban



Māori



Built



Resilience in Practice



Earthquake
Tsunami



Coastal



Volcano

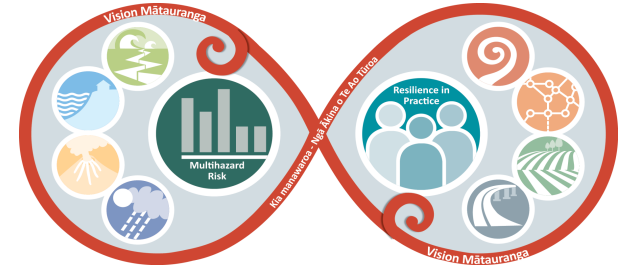


Weather



Multihazard
Risk

Phase 2 Projects of Interest...



**Multihazard
Risk**

Multi-hazard risk Model

- Coincident and cascading hazard and risk
- Social and economic impacts estimation (realistic scenarios/improved resilience investment business cases)
- Coastal change and inundation
- High-impact weather scenario for Auckland
- Models for infrastructure component performance across a range of natural hazards
- Expanded geographic coverage and capabilities of infrastructure network models
- High resolution regional and urban interdependency models



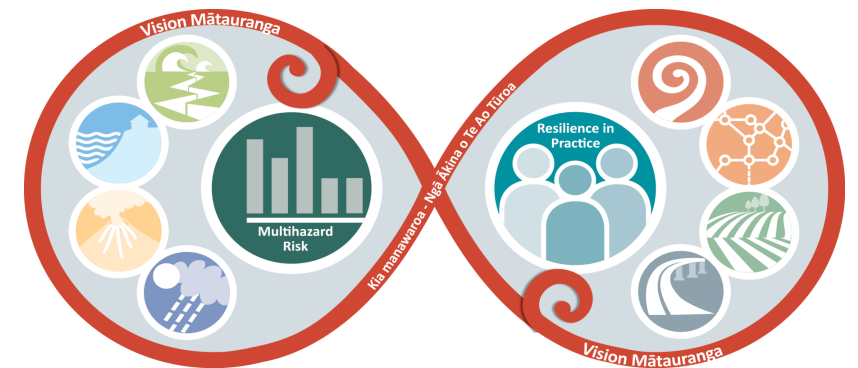
**Resilience in
Practice**

Resilience in Practice

- Innovation spaces for testing resilience policy choices
- Kaupapa Maori research
- Financial Incentives for resilience investment
- Effective risk communication
- Adaptation and transformation
- Livelihood resilience

Phase 2 opportunities

- **Strengthened** and integrated mātauranga and kaupapa Māori
- **Integration** and coordination across themes
- **Partnering** for impact and implementation



Getting Connected

Project Level

- Local case-studies, piloting tools

Challenge Themes

- Theme-specific stakeholder groups
- Partnership with 'boundary organisations' eg. AF8, ECLAB
- Resilience science to policy forums

Challenge Level

- 'End-Users' Group
- Kahui Maori
- Independent Science Advisory Panel