

RESILIENCE
TO NATURE'S
CHALLENGES

Kia manawaroa –
Ngā Ākina o
Te Ao Tūroa

TE TAI WHANAKE

Growing a stronger, more resilient Aotearoa.

📍 Te Papa, Wellington 13 & 14 May 2024

Community resilience

Every community in Aotearoa New Zealand faces some form of natural hazard risk, and many face multiple and compounding threats. What are the successful strategies to prepare our diverse communities for sudden events such as earthquakes and tsunamis, as well as slow-building threats brought on by a changing climate.

Speakers:

- Caroline Orchiston, University of Otago (*Chair*)
- Lucy Kaiser, GNS Science | Massey University
- Denise Blake, Te Herenga Waka Victoria University of Wellington
- Jon Procter, Massey University
- Loic le De, Auckland University of Technology
- Sylvia Tapuke, Scion
- Gradon Diprose, Manaaki Whenua Landcare Research
- Joanna Fountain, Lincoln University

Inclusive urban resilience: lessons learned and ways forward

Loic Le De, AUT

Loic.le.de@aut.ac.nz

Inclusive urban resilience: participatory workshop
to define a research agenda



Participation

CALD

Communication

Equity/equality

Volunteers

Te Ao Māori

Research Themes

RESILIENCE
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National
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How to most effectively enable our diverse urban dwellers to become advocates for resilience?

How the global discourse on inclusion influences inclusion practices at the local level?



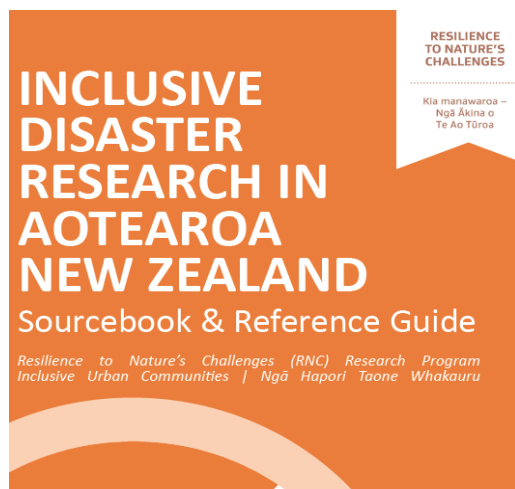
How do whānau conceptualise tūrangawaewae in urban contexts?



How to support citizen volunteers for disaster resilience?



Compiling work on inclusion



Capturing evidences of inclusive resilience



Recommending actions for inclusive resilience

Policy Briefs

- Communication
- Te Ao Māori
- Gender
- Disability
- Participation
- Youth/Children

Key Lessons

How the global discourse on inclusion influences inclusion practices at the local level?

- Inclusion beyond ‘vulnerable/priority groups’: intersecting factors and context shape vulnerability
- Practitioners struggle to implement the discourse on vulnerability and inclusion
- Avoid a ‘mechanistic’ approach to inclusion and ‘politicise’ inclusion by redressing power relationships

How do whānau conceptualise tūrangawaewae in urban contexts?

- Multi-generational diffusion into urban settings created a duality in how whanau conceptualise what turangawaewae means for them in both ancestral and contemporary terms
- Urban dwelling whanau give greater emphasis to whanau-based linking in their notions of what turangawaewae means, often adapting generational concepts into reliable urban solutions
- Whanau concepts of what it means to be resilient often centre around how well they are able to maintain continuity of both their daily needs and their whanau-based identities

How to support citizen volunteers for disaster resilience?

- Technical training is important but ‘soft skills’ are critical too.
- Balance between a blueprint/standardised programme and community ownership
- More visibility and grounding: partnership developed with EM groups/NEMA

Ways forward...

- Community-based initiatives and empowering local people for resilience building
- How can we improve the EM 'system' for better preparedness and response?
- Silent disasters: on bridging gaps between drowning prevention and disaster risk reduction

Self-determined story-telling

Presentation to Te Tai Whanake Symposium,
Wellington.
14th May 2024

Presented by:
Sylvia Tapuke



3 RNC2 Weather & Wildfire Value Chain Projects



4 Level of engagement desired

AC: Add a sticky note with names and email addresses at the level of engagement desired for each relevant project. Describe how you want to be engaged (e.g. email updates/newsletter, website, network, regular meetings/workshops).

5000 Spectrum of External Engagement



6 Next steps

- 1. Identify the key stakeholders and their interests.
- 2. Determine the level of engagement required for each stakeholder.
- 3. Develop a communication plan.
- 4. Implement the communication plan.
- 5. Monitor and evaluate the engagement process.
- 6. Report back to the stakeholders.



5 Pathways to implementation

AC: For each project, which pathway is most appropriate for achieving your goals? What information could you contribute? How have you achieved this in a project?



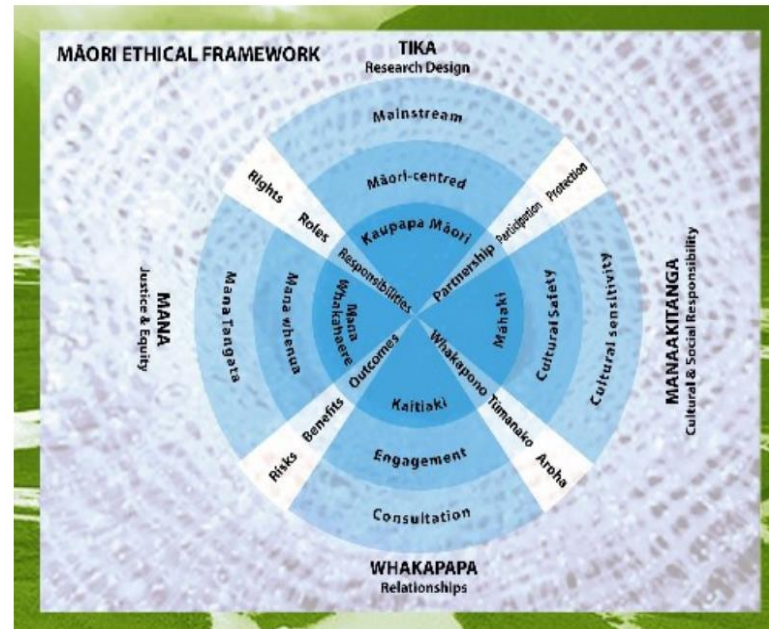
Project	Inform	Consult	Involve	Collaborate	Information needed from RNC2, by whom
AC: Resilience the Weathering	Sticky Note	Sticky Note		Sticky Note	Sticky Note
Developing a climate change strategy	Sticky Note		Sticky Note		Sticky Note
Performance of infrastructure and systems	Sticky Note		Sticky Note	Sticky Note	Sticky Note
Wind dynamics through CBD		Sticky Note			Sticky Note
Development of weather warnings and flood warning systems			Sticky Note	Sticky Note	Sticky Note
Work on heritage sites and their	Sticky Note	Sticky Note	Sticky Note	Sticky Note	Sticky Note
South Island: How to manage the building from 2020, 2025, 2030	Sticky Note				Sticky Note
Design: How to manage the building from 2020, 2025, 2030		Sticky Note			Sticky Note

Literature Review: Māori Digital Innovation



(Postlethwaite, 2021)

Figure 1: Maori ethical framework-Nga Tikanga Paihere



(Statistics NZ & Hudson, 2018 cited in Postlethwaite, 2021, p 11)

(Cram & Kennedy, 2010)

Cultural values (Smith, 1999)	Researcher guidelines (Cram, 2001)	Te kaupapa a te whānau – whānau researcher guidelines
Aroha ki te tangata	A respect for people – allow people to define their own space and meet on their own terms	<ul style="list-style-type: none"> Engage in cultural 'rituals of encounter', guided by whānau Allow whānau to define their space and meet on their own terms Whakawhanaungatanga – it is important for whānau to make linkages and connections with each other and with the researcher(s) Respect the fluidity and diversity of whānau
He kanohi kitea	It is important to meet people face-to-face, and to also be a face that is known to and seen within a community	<ul style="list-style-type: none"> It is important for the researcher to be known and be seen by whānau
Titiro, whakarongo... kōrero	Looking and listening and then maybe speaking. Develop understanding in order to find a place from which to speak	<ul style="list-style-type: none"> Allow whānau to set the agenda for the research, including the pace at which it proceeds and decisions about: <ul style="list-style-type: none"> What is the whānau's story? What do whānau want to speak to? What is the role of researchers within the space that whānau claim?
Manaaki ki te tangata	Sharing, hosting, being generous	<ul style="list-style-type: none"> Enable whānau to participate in the research (e.g. budget for whānau travel) Provide food and refreshments during research encounters Allow for appropriate koha for whānau Enable whānau to move in and out of their [research] space
Kia tūpato	Be cautious – be politically astute, culturally safe, and reflective about insider/outsider status	<ul style="list-style-type: none"> Be cautious that our whānau are kept safe –that whānau are left in the same, or a better, space than before they engaged in the research Allow whānau the time and space to practice their own tikanga (e.g. karakia) It may be important for the whānau to know of support services that can offer them ongoing support for any issues and concerns raised during the research

Self-determined storytellers...

Legal and cultural responsibilities to
land/water

Exercise kaitiakitanga and connectivity
with land/water, people, and knowledge

Have the capacity and resources to tell
their own stories

Collective perspectives and experiences
leading to knowledge creation

Acknowledging self-determined stories

E TE IWI. TOUTI MAI RĀ

MĀORI CULTURAL FOOTPRINT

NGĀI TAI KI TĀMAKI
Tapuwae o Nuku - Tapuwae Ariki - Tapuwae o Tai
Tapuwae o Nuku - Tapuwae Ariki - Tapuwae o Tai

Workshop Wānanga MCF Series

Come join us to build awareness and resilience to preserve and protect cultural tāonga, learn the role of digital technology and the effects of high impact weather and climate change.

PLEASE REGISTER VIA FORM

When: 9:00am to 4:00pm
Saturday 19th November 2022
Where: Umupuia Marae

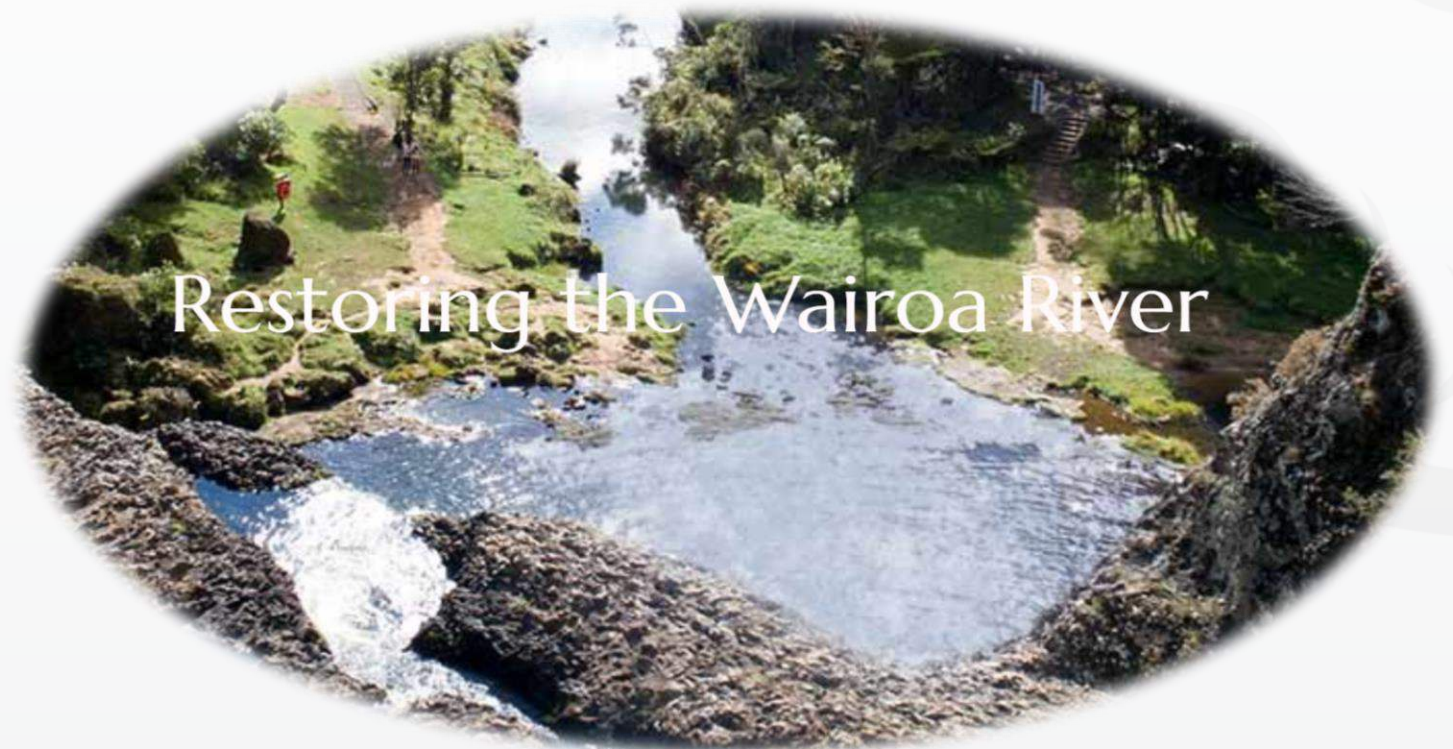
Kai will be provided

KEEP AN EYE OUT FOR MORE INFORMATION, INCLUDING THE AGENDA FOR THE DAY
ANY QUERIES PLEASE CONTACT ADMIN@NGAITAITAMAKI.IWI.NZ.

SCION

FACILITATED BY: KELVIN TAPUKE (NGĀI TAI KI TĀMAKI)
HOSTED BY NGĀI TAI KI TĀMAKI, LED BY SCION RESEARCH LTD. E MIHI ANA KI TE PŪTEA TAUTOKO; RESILIENCE TO NATURE'S CHALLENGE ĀKINA TE TŪ ENGAGEMENT FUND

SCIENCE Challenges



Restoring the Wairoa River

The value of self-determined stories for communities



Ngāi Tai ki Tāmaki, 2022

- Self-determined stories facilitate multi-literate and intergeneration learning settings
- Communities develop their knowledge-building strategies, e.g. Wānanga
- Communities can either determine or learn about their knowledge gaps
- Communities need the capacity and capability to work with others who can fill or support knowledge gaps

Communities have responsibilities to...

- Determine the **provenance** of their stories
- Establish access to their stories and decide on **permissions**
- Shape the **protocols** around how the stories can be used or recounted



(Local Contexts, 2019)

What does this mean for the research community and project leaders?

Self-determined storytellers **know their own stories, potential, and pathways** – *When ideating bids or proposals, communities can map out their resilience pathways and partners.*

Self-determined storytellers **know what their research needs are but may need support in hearing what other people know and how it connects to their stories** – *we need to innovate science solutions that are responsive to supporting community resilience.*

Self-determined storytellers **require researchers who can work alongside them very early and build authentic relationships.** *Science must resource engagement and partnerships to support the community-science relationship and contribute to community resilience.*



Ngāi Tai ki Tāmaki, 2022

Scion, Friends of Te Wairoa, RNC2,
Ngāti Kōhua, Ariki Creative; 2024



Mihi maioha ki a...

- RNC2
- NIWA
- GNS
- Heritage NZ
- University of Auckland
- Local Contexts
- Auckland Regional Council
- Scion
- Heritage NZ
- Ngāi Tai ki Tāmaki Friends of Te Wairoa Catchment Inc
- Ngāti Kōhūa
- Ariki Creative



*Moe mai rā, e te
rangatira, James
Brown.*

Bringing in our research and science skills and knowledge with humility and dignity

Opportunities for improving seismic resilience for Kura/schools

L. H. Kaiser, K. Tapuke, D. Johnston, & J. Becker (GNS Science/Massey University, Wellington, Aotearoa New Zealand)



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Quake**CoRE**
NZ Centre for Earthquake Resilience
Te Hiranga Rū



JOINT
CENTRE FOR
DISASTER
RESEARCH

Research Design

The rohe/region has been **impacted by multiple disaster events** recently and is at risk of future events such as tsunami

Building on previous work- **kura e tai āniwhaniwha, seismometers in schools**

Ten kura/schools have been visited from Gisborne to Matatā between 2021-2024.

Information was collected from **hui/kōrero interviews** with school staff and invited members of the school Board of Trustees.

Topics included: **tsunami zones, evacuation practice, resources for teachers, planning at home, school response plans, stakeholder involvement, and capability development.**



Research Objective

To: understand the challenges and opportunities for enhancing tsunami and earthquake preparedness and response in Te Tairāwhiti/ Waiāriki Kura Kaupapa Māori/ schools,

share best practice information and research on seismic and tsunami preparedness with schools, and;

support local, rohe and Hapū capacity, capability and professional pathways in the seismic research and emergency management sectors.



Learnings

- Response to the 5th of March 2021 events
- Evacuation
- Communication
- Equity and access for isolated communities
- Trust in information

Summary

- “It’s just what we do”
- Continued investment needed to support locally and culturally relevant knowledge, capacity and capability
- Sparking interest in science and hazards for curious minds, supporting the ahikā
- Genuine co-creation
- Current/future projects:

Hazard, risk and impact modelling for fast moving landslides Endeavour, QuakeCoRE, MBIE SSIF





Ngā mihi nui!



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Understanding & Engaging Minoritised Communities

Assc Prof. Denise Blake



Minoritisation

- A useful term for describing **intersectional forms of discrimination.**
- It **acknowledges** the **active processes** involved in **differential allocations of power, resources and, ultimately, health and disaster resilience.**

People who inject drugs



People living in Petone with long-term health conditions



Sex workers



Vietnamese people & disaster awareness

Single parents & preparedness



Experiences of racism for emergency managers



Exploring Mobility Impairments in Aotearoa's Disaster Management: How Do People with Mobility Impairments Experience the 4Rs of Disaster Management?

Mobility impairments

Low-income student renters





Social processes that create social and occupational stigma:

- **being judged as different**
- **being stereotyped based on those differences**
- **being labelled as other to any 'norm'**
- **and being subjected to thoughts and actions based on perceived discrimination.**



Internal shame is how a person views their own behaviours or attributes, for example, illicit drug use.

External shame is when a person believes that their 'issue' would lead to a negative response if they were made public.

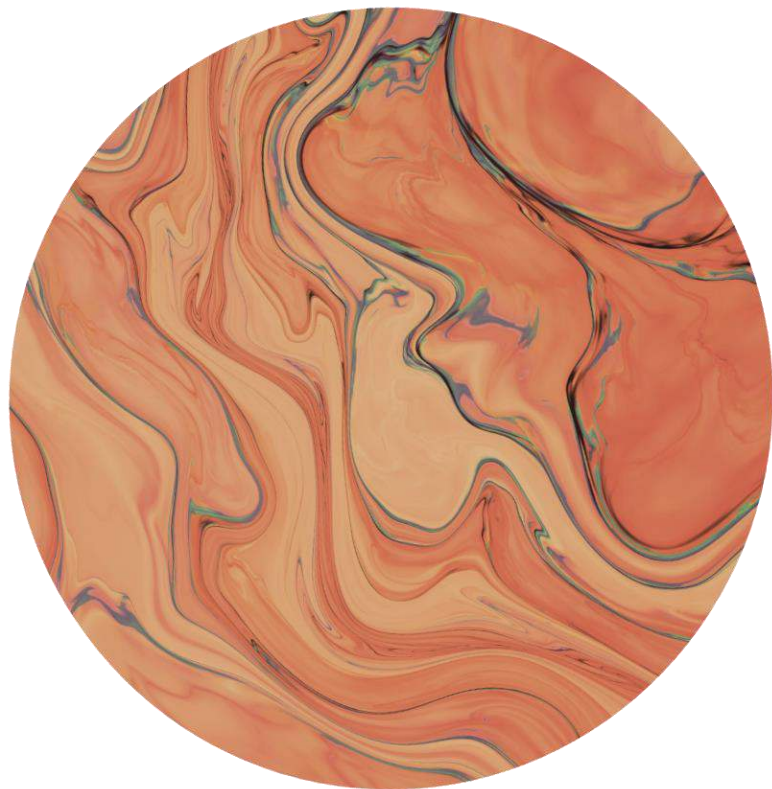


**As seen through stigma,
discriminatory practices can
prohibit attainment or access
to key social determinants of
health, such as the forces and
systems that shape the
conditions of life and enable
recovery following a disaster.**



Successful strategies to support our minoritised communities in disasters

- **Understand yourself** and how **you engage** with minoritised communities.
- We are **not neutral, disengaged or impartial** to wider social issues, including colonisation, poverty and inequity.
- Be transformational and contribute to the **social, emotional, spiritual, and physical wellbeing** of **ALL** communities.



**Nāku te rourou
Nāu te rourou
Ka ora ai te iwi**

Food (in)security and resilience in Aotearoa

Gradon Diprose, Manaaki Whenua –
Landcare Research



Manaaki Whenua
Landcare Research

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ECONOMY

Food security at the heart of our cost of living crisis

If we believe the cost of living crisis is more than a momentary blip, we need policy that will strengthen bioregionalism

by Dr Catherine Knight 23/01/2023

TE AO MĀORI NEWS National Regional Politics Entertainment Indigenous Sport P

National | Food

New survey reveals food insecurity still prevalent

UPDATED Wednesday, 1 May 2024 • By Mare Haimona-Riki



in 2023 compared to 2021.

FOOD & DRINK

New Zealand faces over 50% increase in food prices in 2023

JAYDEN HOLMES 1 MARCH 2024 8:55AM

f t

Stuff

NZ NEWS / QUIZZES / SPORT / WORLD / LISTEN

Nearly one in five kids are living in food insecurity, research shows

Hannah Martin May 01, 2023 • 05:00am

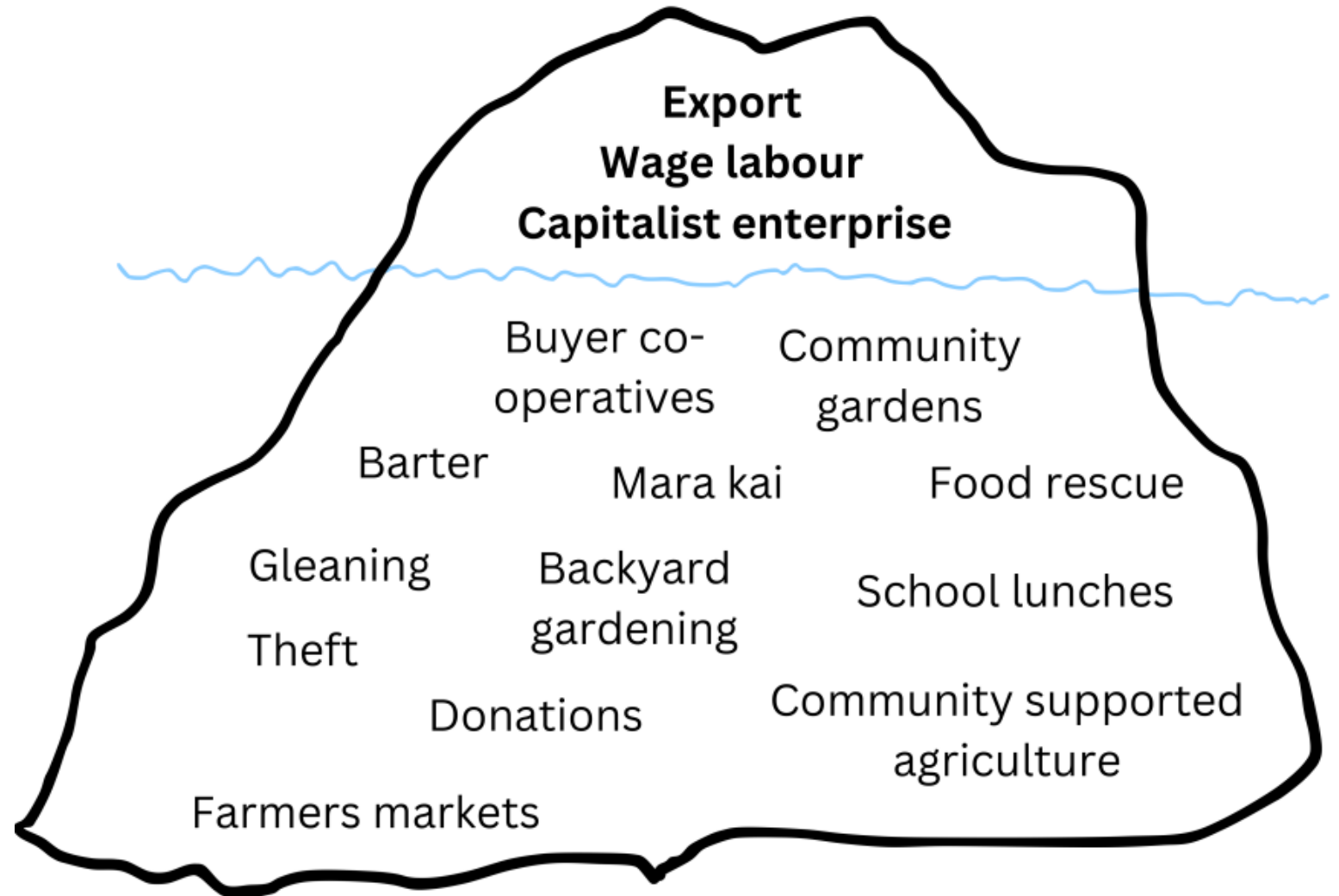


Share



Resilient systems characterised by:

- Redundancy
- Diversity
- Autonomy
- Distribution and geography
- Connectivity
- Governance





What is food rescue?

Collecting and redistributing edible food that would otherwise end up in the landfill, as animal feed or be composted

3 broad ways food rescue operates in NZ:

- Community hub
- Free store
- Mixed model





Debates about food rescue

Critics argue:

- Can be used to justify welfare retreat and austerity
- Only addresses symptoms rather than underlying causes of both food waste and food insecurity
- Mis-directed charity that distracts from wider food system change

Advocates suggest:

- We need **both** revolutionary change and food redistribution now
- Food rescue is a useful practice 'in the meantime'
- Food rescue may prompt changes in wider food systems and people



Previous Govt's action on food insecurity

2020 - Ministry Of Social Development invested \$32M over 2 years to address food insecurity. This included funding for 3 national organisations:

- New Zealand Food Network
- Kore Hiakai Zero Hunger Collective
- Aotearoa Food Rescue Alliance (AFRA)

Food rescue social return on investment



How do we know we're having an impact?

We measured it

And found out that for every \$1 we invested in food rescue we generated \$4.50 of value



Measuring the impact of food rescue: A social return on investment analysis

Grace Clare^a, Gradon Diprose^b, Louise Lee^c, Phil Bremer^a, Sheila Skeaff^d, Miranda Miroso^{a, *}

^a Department of Food Science, University of Otago, Dunedin 9054, New Zealand

^b Manaaki Whenua - Landcare Research, Wellington 6143, New Zealand

^c Independent Researcher, Carterton 5713, New Zealand

^d Department of Human Nutrition, Dunedin 9054, New Zealand

^{*} Corresponding author. E-mail address: miranda.miroso@otago.ac.nz



SROI findings

Impact themes:

1. Food rescue creates re-distributive infrastructure in place
2. Rescued food is becoming vital to many social service providers operational models
3. Food rescue can help shift stigma and whakamā associated with food insecurity
4. Food rescue connects two matters of concern – waste and social justice



Food rescue and disasters

Food rescue groups were very busy after recent extreme weather events

- Played a key role in 'filling the gaps' during and after events
- Worked with local partners (e.g. marae and Civil Defence) to provide food and supplies to emergency accommodation/welfare centres
- NZFN coordinated storage and delivery across the country from major donors – supplementing the 'official response'
- **Food rescue is already playing a role, in emergency response and recovery – this could be more strategic**



The future of food rescue?

Food rescue is probably here to stay...

- How could food rescue play a more strategic role in emergency management and national food security?
- How can food rescue support wider food system shifts?

References



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- Diprose, G., and Lee, L. (2021). Food rescue as collective care. *Area*, 54: 144-151.
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- Healy, S., Chitranshi, B., Diprose, G., Eskelinen, T., Madden, A., Santala, I., and Williams, M. (2020). 'Planetary Food Commons and Postcapitalist Post-COVID Food Futures'. *Development*, 63: 277-284.
doi.org/10.1057/s41301-020-00267-9

(Re)creating resilient communities?: long-term recovery pathways in Kaikōura

Joanna Fountain,
Associate Professor, Lincoln University

Te Tai Whanake, 14 May, 2024



LINCOLN
UNIVERSITY
TE WHARE WĀNAKA O AORAKI



Community resilience

The collective ability of a neighbourhood or geographically defined area to deal with stressors and efficiently resume the rhythms of daily life through cooperation following shocks (Aldrich & Meyer, 2015, p. 255).

- Community resilience is both an *outcome* and a *process* which builds community capacity from within
- Strengthening ‘soft’ infrastructure is as important as ‘hard’ infrastructure
- Communities are culturally, socially and economically diverse, with different needs and access to resources



Cyclone Gabrielle left thousands displaced in Hawke's Bay. Photo: RNZ / Angus Dreaver

<https://www.rnz.co.nz/news/national/484422/cyclone-gabrielle-where-to-donate>



The clean-up in Wairoa following Cyclone Gabrielle continues. Photo: RNZ / Jonty Dine

<https://www.rnz.co.nz/news/national/484465/wairoa-residents-still-coming-to-terms-with-destruction-of-cyclone-gabrielle>

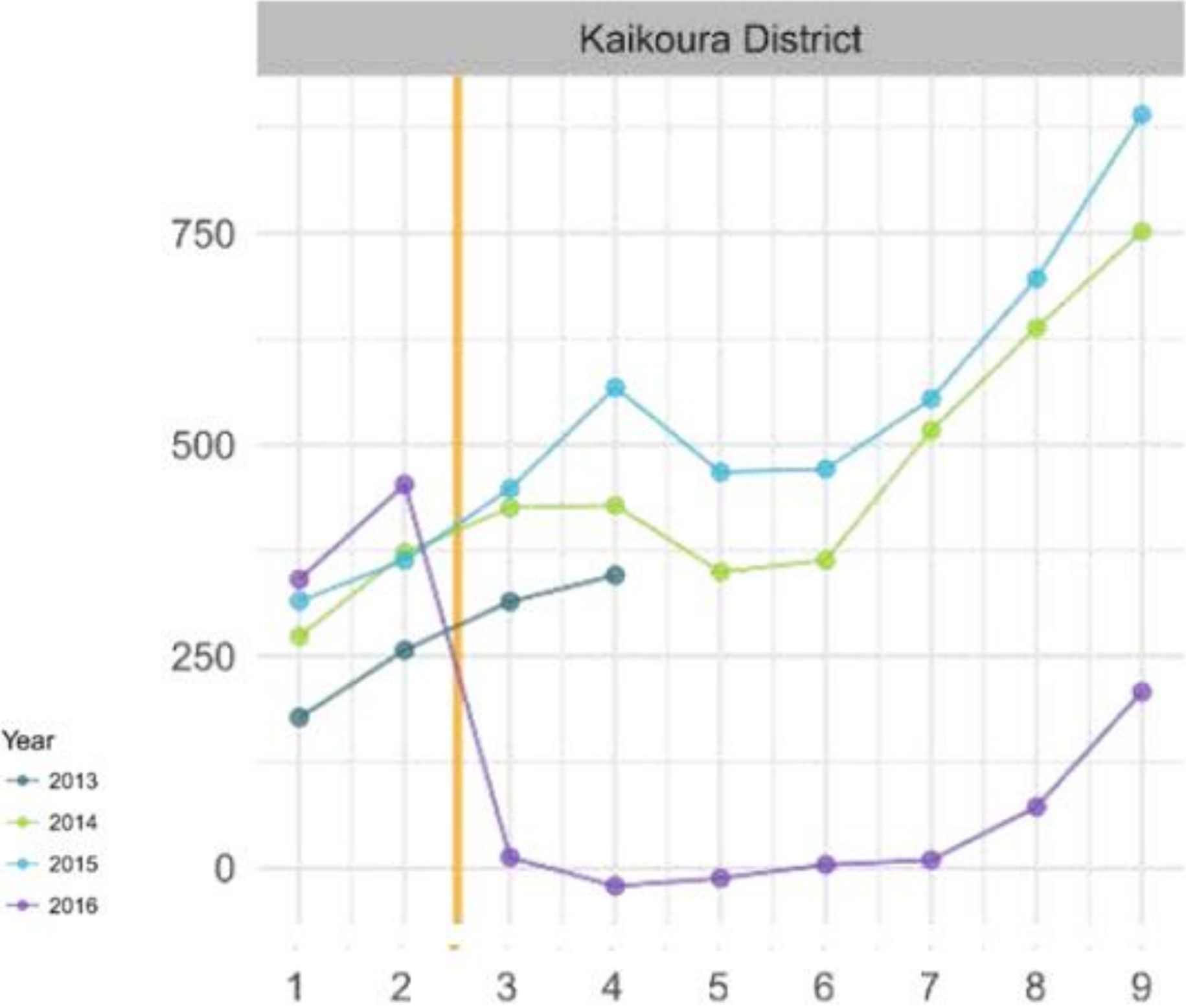
Community resilience

- Central attributes of a resilient community include social, economic, cultural and institutional factors, e.g.,
 - Knowledge and education;
 - Resident involvement in decision making;
 - Communication, planning and organisational skills;
 - Network development capability;
 - Diversity of local economic activities
 - Social capital
- Ideally, a community will have high stocks of social capital *in reserve* to be drawn on in particularly challenging times



<https://www.facebook.com/photo/?fbid=10163283406298849&set=p.10163283406298849>

Kaikōura



McDonald et al., (2017). Economic impact of the 2016 Kaikoura earthquake: A report prepared for the Ministry of Transport. Wellington, NZ: Ministry of Transport, p. 34

Quakes may be mortal blow for Kaikoura's tourism industry

Charlie Mitchell and Adele Redmond • 11:44, Nov 17 2016



IAIN MCGREGOR/FAIRFAX NZ

"This town is built on tourism," a tourism operator said as tourists queued to leave the small town.



IAIN MCGREGOR

Stranded tourists park up in Kaikoura.



Photos: Jo Fountain

<https://www.stuff.co.nz/travel/destinations/nz/86518555/quakes-may-be-mortal-blow-for-kaikouras-tourism-industry>



Community Response

- Takahanga Marae sheltered and fed the displaced
- Government relief package announced within week
- Christchurch-Canterbury tourism representatives flew in to advise and support. Key messages
- :
 - Don't do things too quickly
 - You can't market your way out of this – not BAU
 - Use enforced 'down time' to reassess destination, markets and tourism products



The marae served more than 10,000 meals over the past week. Photo: RNZ / Max Towle
<https://www.rnz.co.nz/news/national/318520/%27we%27re-here-to-help,-we%27ll-help-anybody%27>

Community Recovery: Tourism

Me and my boss, we were both having to front the camera and we were both “It’s just got to be positive, positive, positive”, because there is going to be a lot of negative [stories] ... but there are just so many positives every day.



Kaikoura still looking pretty as a postcard (Photos: courtesy of Andrew Spencer Photography)



Locals enjoying the market and sunshine (Photos: courtesy of Andrew Spencer Photography)

Community Recovery: The Hospo Project

We all went into it on an even basis, for the betterment of us all and the betterment of the town ... because if you didn't provide a good service or good food, then you'd get found wanting further down the line.

I think it took the individualists out of it – “I want everything” ... and brought everyone into the group and down to size

May 2017: project launched: 22 restaurants/café providing lunch and dinner to 300 recovery workers via contracts with NCTIR/Compass

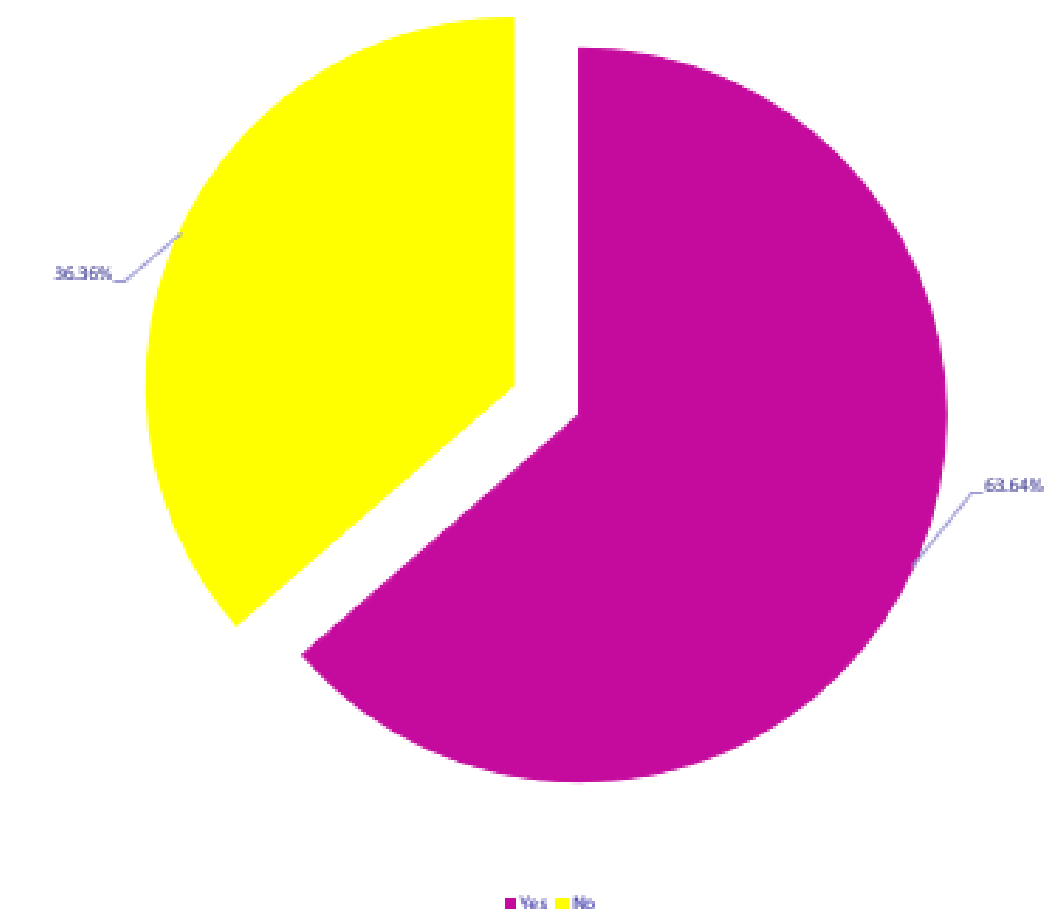
- Lunch providers– worked together closely, bulk-ordered food, sub-contracted delivery, met regularly
- Dinner providers – set price for dinner (\$25) on a roster system

Goal: increase business cash flow, retain staff, reduce mental stress around financial and loss of market

Benefits beyond expectations: built networks, and collaborative relationships



Would you still be operating if you did not participate in this project?



Community Recovery: Diversification

- Lack of diversity in economic recognised as a key vulnerability
- Diversification of economy a key goal of *Kaikoura Long Term Plan 2021 – 2031*

• *It's ... about economic development and moving Kaikoura forward and move away from seasonality and working with other businesses to keep them open all year round. We need an all year round economy*

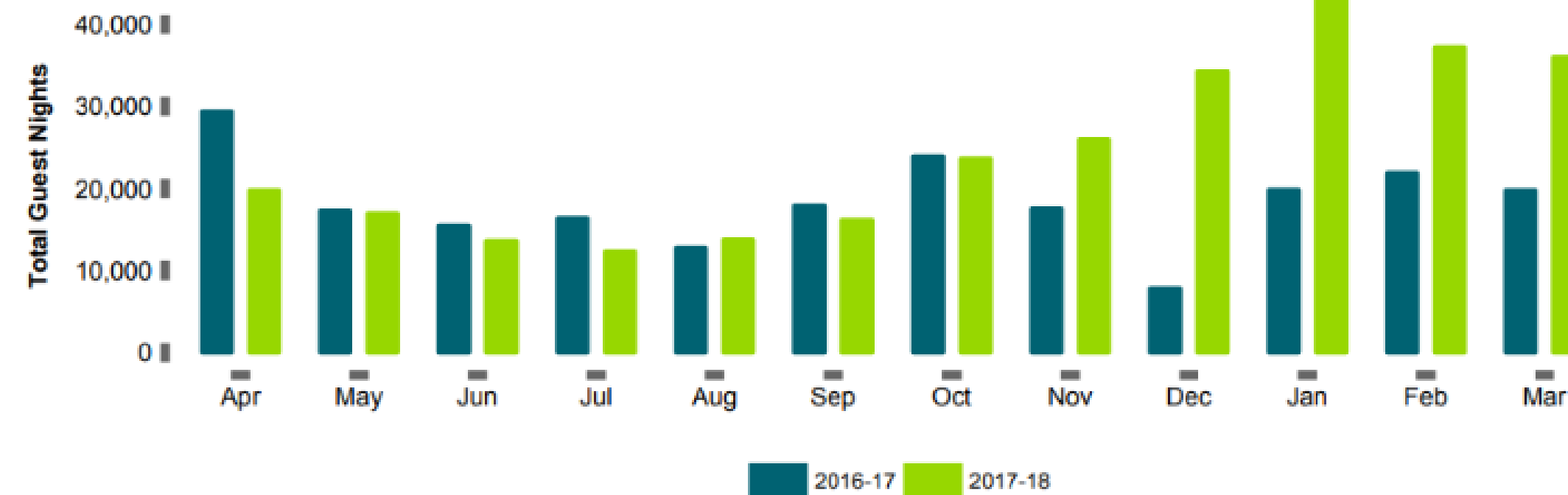
For our resilience ... food and food branding is really important for Kaikoura... We have some amazing production that happens here, and there's a lot of stuff that's hidden here as well



Photos: Jo Fountain

Community Recovery

4. Monthly Total Guest Nights



Source: Accommodation Survey

<http://www.mbie.govt.nz/info-services/sectors-industries/tourism/tourism-research-data/rto-factsheets/documents/rto-factsheet-destination-kaikoura.pdf>

“You saw Kaikōura flying in formation, absolutely... there were no dissenting voices ...“here’s our plan; here is what we are planning to do.”

I think the reputation has been strengthened ... We can absolutely hand-on-heart say that Kaikōura has come out of this stronger and better.

We’ve proven that we can actually survive this, we’ve learnt a lot of stuff about ourselves, about each other, and about the community. And the cool think is the wildlife is still here – the tourism product is still here – and the people are still coming! We feel very, very blessed really.

- Fountain, J. & Cradock-Henry, N.A. (2020). Recovery, risk and resilience: Post-disaster tourism experiences in Kaikoura, New Zealand. *Tourism Management Perspectives*, 35. <https://doi.org/10.1016/j.tmp.2020.100695>
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Reimagining Kaikōura as a more resilient community: the reality five years on

The narrative presented to this point tells a largely positive story of a community pulling together, facing adversity, and coming through the ordeal with stronger networks and shared values – reality somewhat different

Kaikōura tourism sees light after Covid but may need domestic focus

Adam Burns local democracy reporter • 12:34, Apr 07 2022



TRAVEL

Kaikōura most tourism reliant region, Aucklanders outspend Australians



By [Thomas Bywater](#)

6 Jul, 2021 05:00 AM ⌚ 3 mins to read

The pandemic forced Encounter Kaikōura to review how it could bring in more domestic visitors.

SUPPLIED

ra businesses

Jody O'Callaghan • 05:00, Nov 13 2021



Tourism: a mixed blessing

- Tourists came back - a return to 'business as usual'
 - Hospo project - Push for free market, rather than roster, but new networks remain
- Kaikōura remains ***peripheral***:
 - remote, fiscally constrained rural community with limited resources and over-reliant on tourism:
 - Low income, seasonal, 'non-progressing jobs'
 - lack of career paths
 - Perception of higher prices
 - Crowded high season environment
 - Reliance on international workers

there will be a certain drifting off... but that network is just sitting there behind the scenes so you know that you can pick up the phone and say 'look, I need that from you, and that from you'

*It's really hard when we talk about tourism, because obviously we do rely on [it, but] **for me personally it's not my favourite way of a town making money**, so in some respects, [with] the earthquake and now Covid; I quite like the change of focus.*

We're all in this together?

- Divisions within the business and tourism community
- Not everyone had equal access to decision makers or financial support
 - Big tourism players: *“they’ve got a voice on the council, they’re on the i-Site committee... they go to all the big events”*
 - Focus on marine tourism, with perception that this undermines efforts land-based tourist operations
 - Some received government support – others were deemed ‘non-viable’
- Some mana whenua felt that the wider community had forgotten their response efforts and were excluded from many discussions



*For us smaller operators who haven't got reserves behind us we just felt forgotten.... We had got to the point where **we knew we didn't count**; there was only a handful of businesses that counted..*

Concluding thoughts

- The concept of resilience is often used without considering dynamics of power, inequity and politicisation of the term (Uekusa & Cretney, 2022)
 - Inequitable distribution of resources and support
 - Overlooks existing barriers – of access, language – and historical/colonial injustices
- Social capital is generally seen as positive, but existing networks and social capital may be used to consolidate privileged positions, at others' expense
- Transformation, or widespread, systemic changes are often experienced after a disaster, before a system falls back to re-existing forms and structures, due to:
 - Scale & structures of decision making – hindered by governance structures
 - Return to 'old habits' – Political resistance to change

Concluding thoughts

- A resilient and regenerative tourism system must be: *“responsive and answerable to the society in which it occurs”* (Higgins-Desbiolles 2020, p. 617)

This includes considering a future less reliant on tourism

Fountain, J. & Cradock-Henry, N.A.(2023). We’re all in this together? Community recovery and resilience in Kaikoura following the 2016 Kaikoura- Hurunui earthquake. *New Zealand Journal of Geology and Geophysics*, 66, 162-176

Climate change may make Kaikōura's famed sperm whales a rare sight

Amber Allott · 18:30, Aug 09 2022



Kaikōura is famous for its year-round sperm whale population (file photo).

MARTIN DE RUYTER/STUFF

Hundreds of seals starve to death in Kaikōura



Caroline Williams

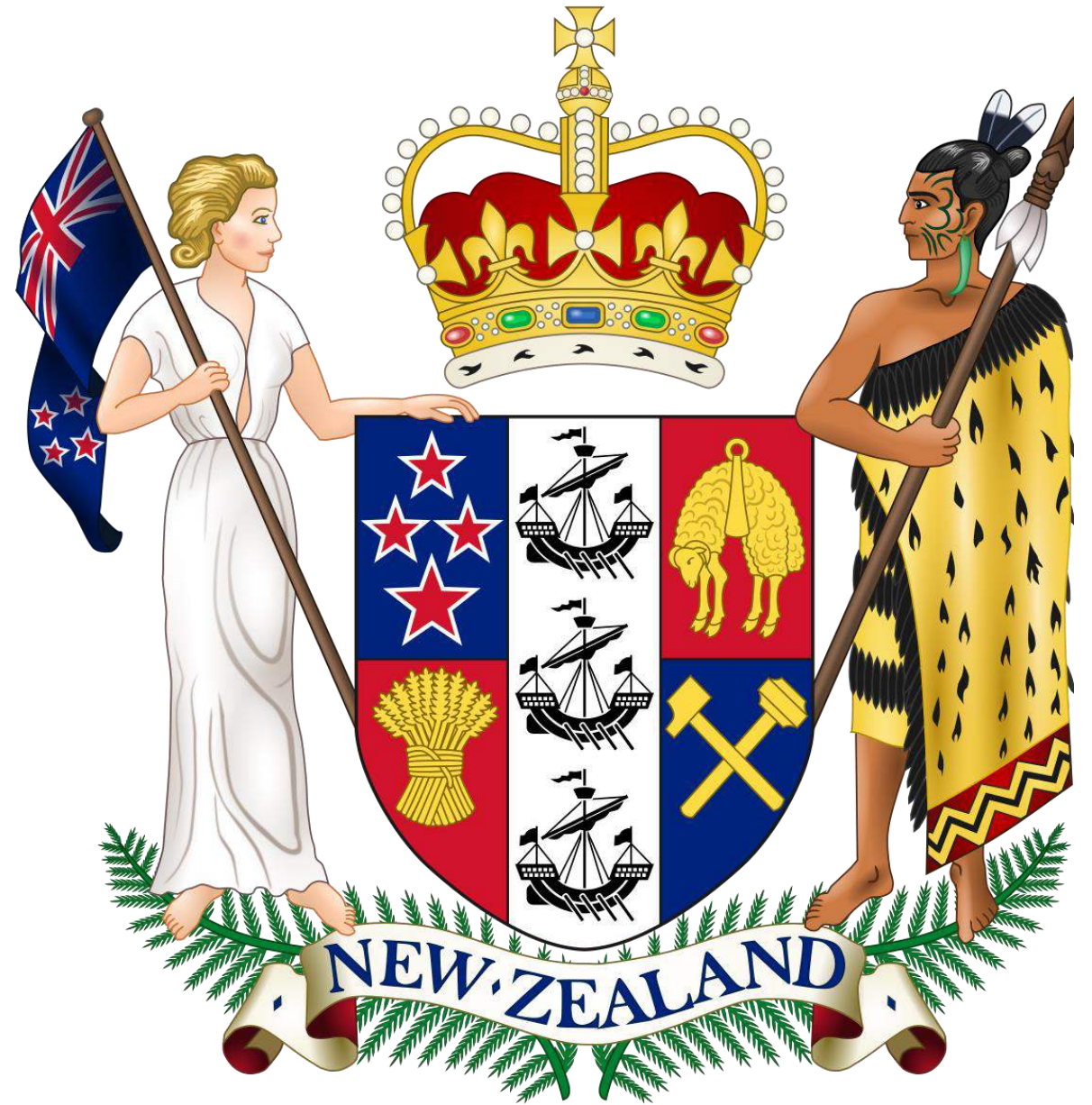
February 02, 2024 · 05:00am

Share

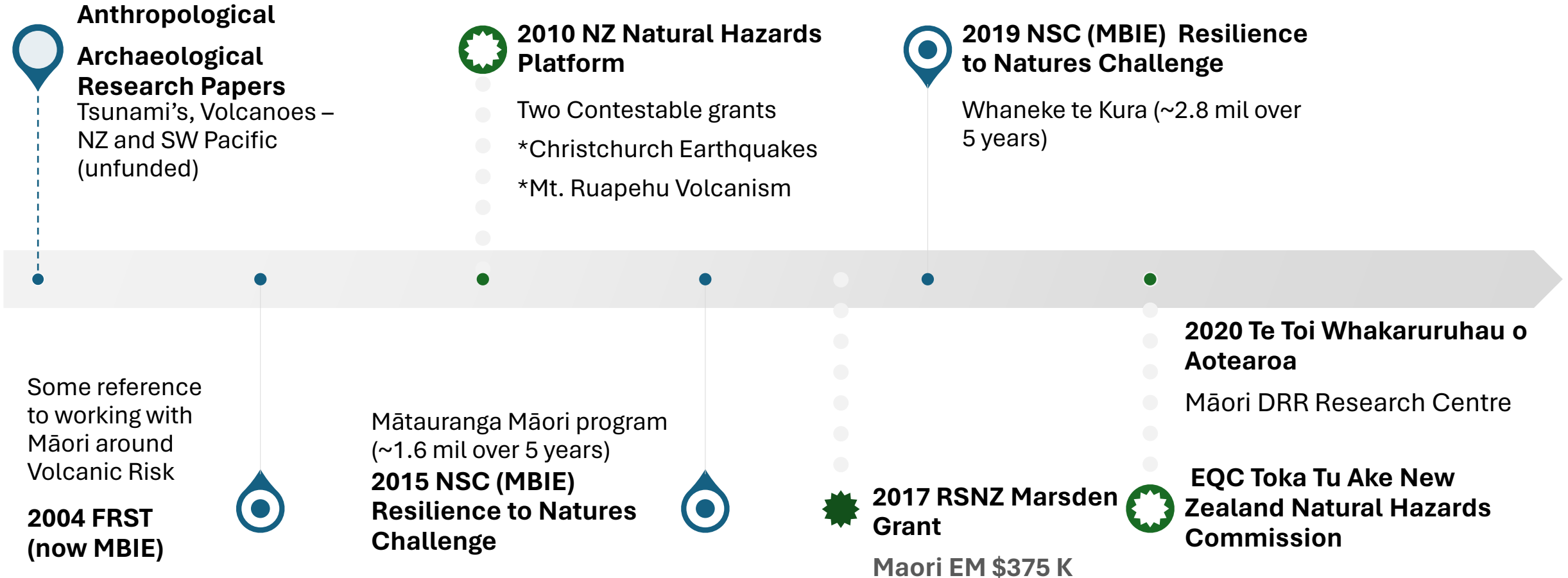
It's not clear why the seals are starving, however logical factors included depleting fish stocks and marine heatwaves, which can prompt fish populations to shift hundreds of kilometres.

Aotearoa New Zealand
– It's a partnership,
**our science should
recognize that
partnership**

*Building Resilience in our
Volcanic Communities*



Māori and DRR Research History in Aotearoa



- ❖ In comparison hazards and engineering research has occurred and received significant funding over the last 50 yrs
- ❖ NEMA, (MCDEM) has not funded research

Mātauranga -

not Science but Solutions Focused (*Prof. Mason Durie*)

- Long term
- Powerful at predictions - locally
- Holistic
- Focused on people's wellbeing
- Nonhierarchical
- Nonlinear

MĀTAURANGA MĀORI

Holistic
Accepted truths
Based on environmental encounters
Centrifugal thinking
Highlights similarities
Practitioners older
Time enhances knowledge
Steadily evolving

SCIENCE

Analytical
Skeptical
Measurement & replication
Centripetal thinking
Highlights differences
Practitioners younger
Time ages science
Knowledge constantly changing

How do we
operate with
two different
knowledge
systems?

How do we
build resilience
and recognizing
our changing
landscapes?

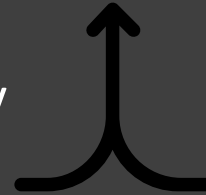
One advances and the other is diverted



Intertwined, woven together



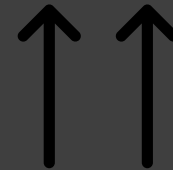
Merged equally



One is subsumed by the other

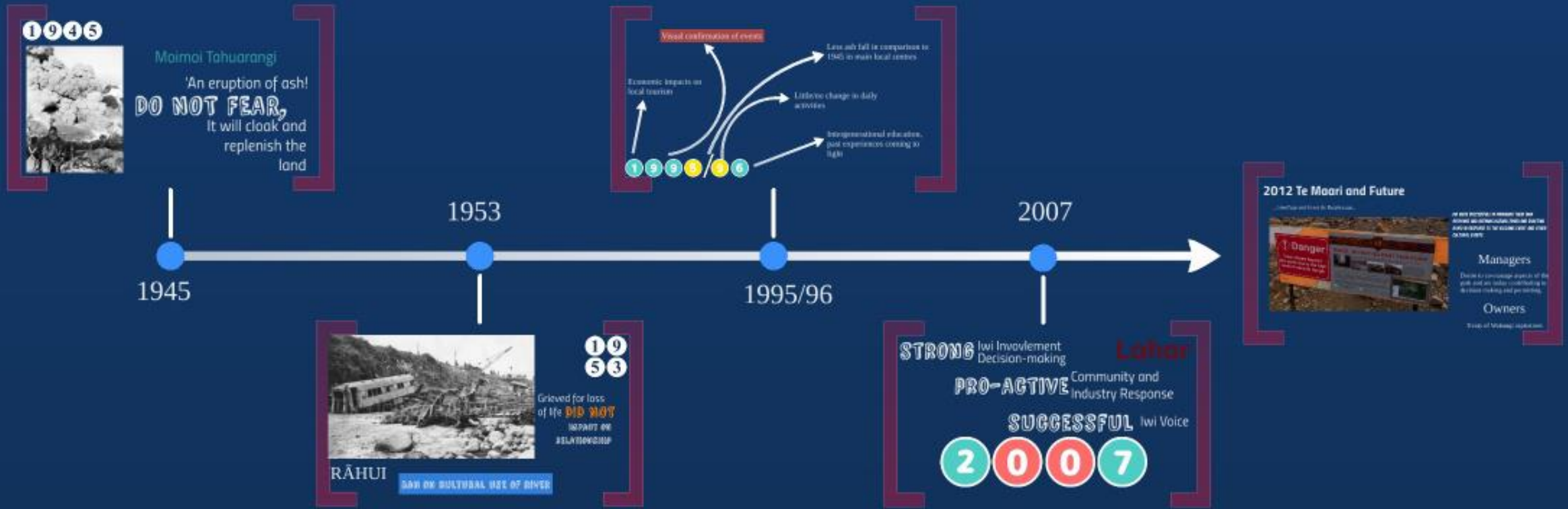


Parallel development



Different pathways of development





Ngāti Rangī
Paerangi – i – Te Whare
Toka

Te Matua o Te Mana

Our ancestor is not a volcanic
HAZARD

A living memory of
responding and
recovering to events

Recognition of differing motivations and perceptions



Learnings from working with iwi

- Strong sense of place and the changes that re-occur
- Aware of a range of potential outcomes
- Thinking, decisions and plans are longer term
- Forecasting is a traditional practice
- Story-telling is a powerful means to transfer knowledge
- There is no concept of hazard/risk, paramount is for the next generation to thrive and flourish

For the geoscientist

- Collaboration and equity/equality is important
- Work across generations
- Working with/Presenting Probabilities is easily understood
- Monitoring for decision making by Māori is ok



RNC Volcano embedded with stakeholders planning and practices To transfer knowledge and tools

National
SCIENCE
Challenges

Central Plateau Volcano Advisory Group (CPVAG)

- *Delivering new solutions for communications and monitoring*
- *New Hazard tools*

Council, Government, Business, Health, Iwi

Taranaki Seismic and Volcano Advisory Group (TSVAG)

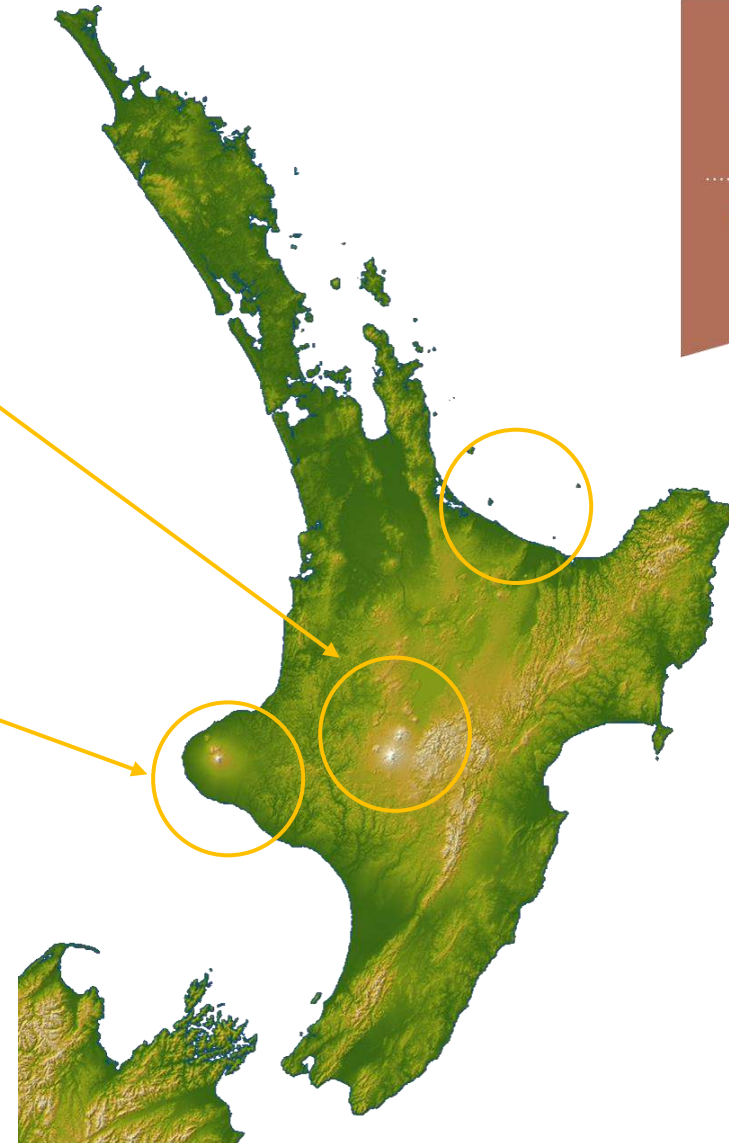
- *Driving change to develop response planning*
- *Transfer of new science into practical tools*

Council, Government, Community, Mātauranga

NZ Volcano Science Advisory Panel (NZVSAP)

- *Reviewing Science information – advisories*

Scientists (GNS & Academics)



RESILIENCE
TO NATURE'S
CHALLENGES

Kia manawaroa –
Ngā Ākina o
Te Ao Tūroa

Communicating complex concepts and models into practice

Advisory groups are collaborative held in local communities

Meetings are regular and focus on building awareness

Opportunity to codesign collaborative research

Focus on communicating across cultures

We strategically collaborate to build a pipeline of expertise to maintain capacity.



Iwi Aspiration - Māori volcano observatory

RESILIENCE
TO NATURE'S
CHALLENGES

Kia manawaroa –
Ngā Ākina o
Te Ao Tūroa

Matatuhi

Unlocking the forecasting potential of
environmental tohu via ensemble systems
models

Tohu and tohunga/matakite driven expert
elicitation

