

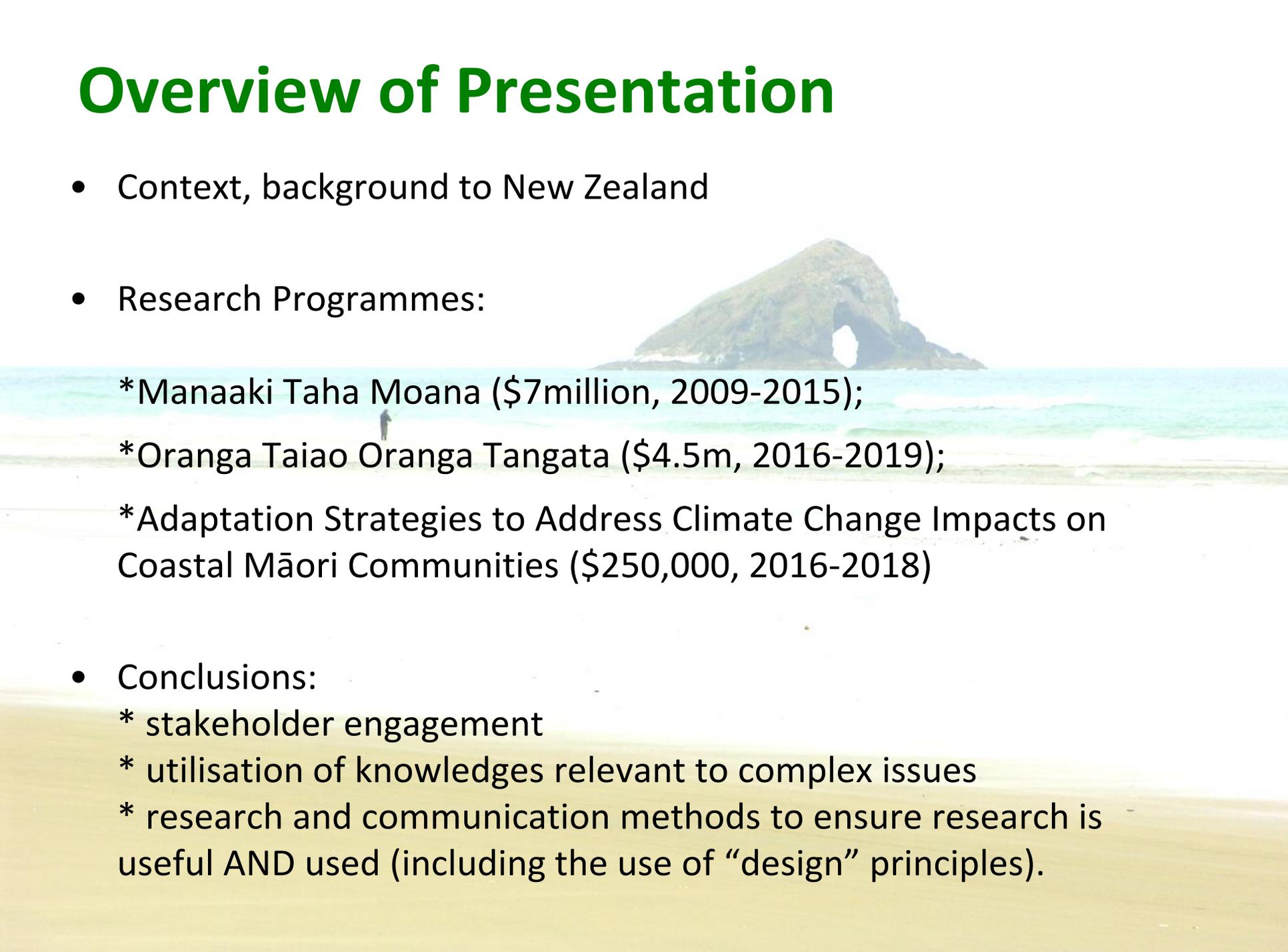


Engaging with Local Communities to Address Complex Coastal Management Issues: Cross-Cultural Collaborative Research in New Zealand

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Overview of Presentation

- Context, background to New Zealand
 - Research Programmes:
 - * Manaaki Taaha Moana (\$7million, 2009-2015);
 - * Oranga Taiao Oranga Tangata (\$4.5m, 2016-2019);
 - * Adaptation Strategies to Address Climate Change Impacts on Coastal Māori Communities (\$250,000, 2016-2018)
 - Conclusions:
 - * stakeholder engagement
 - * utilisation of knowledges relevant to complex issues
 - * research and communication methods to ensure research is useful AND used (including the use of “design” principles).
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- A scenic view of a beach with a large rock formation in the background. The rock formation is a prominent feature, with a natural archway visible. The ocean is a vibrant blue-green color, and the beach is a light tan color. A small figure of a person is visible on the beach in the distance.

Context: Aotearoa/New Zealand

- NZ is made up of coastal islands.
- 5th largest EEZ km² in world.
- Present level of engagement of Māori in NZ's sustainability monitoring/decision making low, under-resourced and uncoordinated.
- Increasing government calls for greater Māori involvement in research, decision making, and policy, especially in regards to “sustainability” and environmental-related research and decision-making.
 - Increasing “co-governance” clauses in Treaty settlements.



Aotearoa/
New Zealand

ISEE conference,
Washington DC



Coastal Issues New Zealanders Must Face

- Coastal development, intensification of (dairy) farming, poor regulatory controls and monitoring of catchments and coasts → pollution, loss of biodiversity, ecosystem services eroded, cultural links to coastal environments fragmented with dire social and cultural consequences (not to mention environmental!).

Impacts of Changing Climate:

- Erosion of beaches and collapse of some coastal infrastructure during storms already evident in many areas.
- Increased flooding due to rise in groundwater over land less than 10m above the current sea level.
- Last IPCC report found that New Zealand's capital city – Wellington – has places where coastal flooding can become 1000 times more frequent by 2100 for a mid-range future climate scenario.
- Additionally, north of Wellington, extreme wave height during storm events is increasing nearly 10x as much as sea level.

Indigenous People Are Greatly Impacted

- Indigenous Māori communities collectively hold land as sources of ‘cultural identity / mana’ (prestige); private property values are not based on market monetary values. Preservation of such Māori values in the face of major coastal changes is a significant challenge.
- Degradation of land and waterways is damaging to and for Māori .
- These are complex coastal challenges
- Adaptation strategies must deal with the inherent uncertainties!
- Must take into account the differing ways that diverse stakeholder groups understand such “messy” problems.



- Must effectively communicate and engage with local communities, to identify and implement culturally-appropriate and effective adaptive strategies.

Manaaki Taha Moana: An Overview

- Aim: maximise the development of iwi/hapū capability to restore and enhance coastal ecosystems and their services, so that by 2020 there is a real improvement in the status of these ecosystems throughout New Zealand. At all stages, developing tangata whenua capabilities is a condition of the programme.
- Collaborative team of Māori researchers, scientists, local kaitiaki (guardians) & kaumatua (elders) with grassroots knowledge of coastal issues.
- Committed to utilising and building upon Mātauranga Māori AND Western Ecological Science in a mutually mana-enhancing respectful manner.
- Tangata whenua (local Māori) are actively involved in guiding the development of research questions & the research design and methods.



2 x MTM case studies with iwi/hapū: Tauranga Moana and Horowhenua coast



Tauranga Moana Case Study: MTM

- Port activities/
dredging
- Development
- Sedimentation



- Erosion
- Loss of kaimoana
(seafood)



- Pollution/eutrophication

Horowhenua Coast Case Study: MTM



Cows in Lake

- Wetland drainage
 - Unsustainable farming
- Coastal development



Invasive weed, hornwort

Tree planting with local kaitiaki



Spraying hornwort in wetlands

- Dune erosion
- Loss of kaimoana (seafood)
- Severe pollution/ eutrophication of waterways



Participatory Action Research Approach

- Our research takes a holistic approach that considers the social, cultural, economic and ecological factors associated with ‘coastal health’.
- This integrated approach is complementary to the holistic way that indigenous Māori people consider interactions with the environment, and thus frames our approach to the research.
- When working with indigenous communities who have close connection with their local environment, it is critical that a participatory approach is utilised.
- Action research to implement solutions to real world problems – necessitates involvement of decision makers/‘stakeholders’.
- Critical that various methods are utilised.



Oranga Taiao Oranga Tangata

Healthy Environment Healthy People



Tauranga Case Study

- Aims to develop tools, knowledge and processes to empower iwi/hapū (tribes and subtribes) to be strong partners in the co-management of estuaries by providing improved knowledge, tools and processes.
- 5 inter-connected work streams:
 - ***Enhance Mātauranga Māori** through oral history research to contribute to cultural survival and wellbeing of iwi/hapū and their ancestral environments, by reclaiming indigenous knowledge and reframing it for application in a contemporary management context – leading to:
 - *develop a web-based ‘whole of catchment’ **Estuarine Cultural Health Index (ECHI)** through participatory action research that allows participants to develop hapū-specific indicators.

Oranga Taiao Oranga Tangata (cont.)

***Enhance ecological** understanding and modelling of **estuarine health**.

***Develop indicators of ecological health of estuaries.**

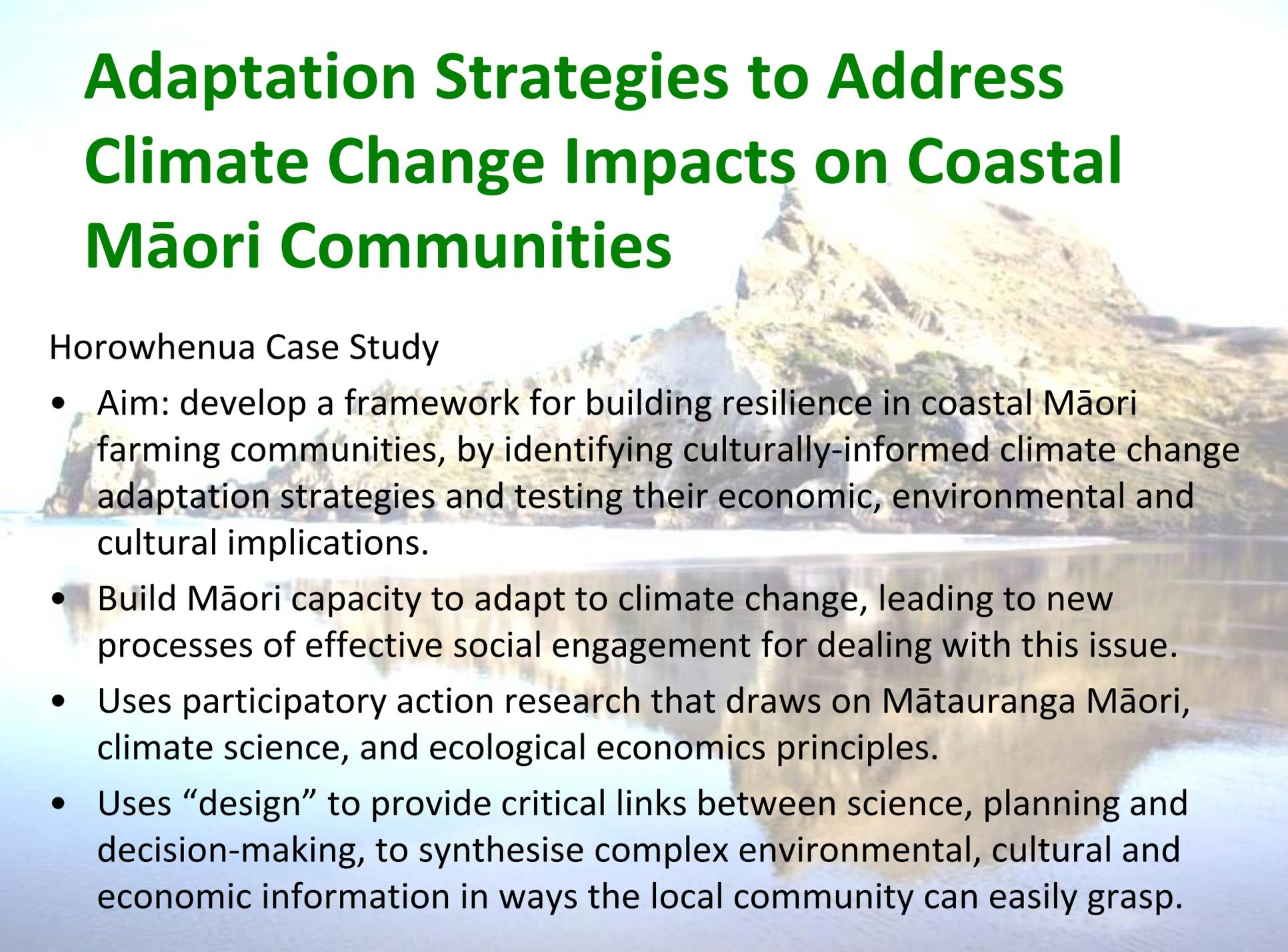
(how land-based economic activities impact on the estuarine ecology; responses of estuarine species to major stressors including sediments, contaminants and nutrients; and investigation of indicators of functional resilience of estuaries).

*develop an **Integrative Spatial Planning Tool (ISPT)** that considers 'ecological', 'cultural', 'economic' and 'land use' data; enables co-management partners to make informed decisions about activities in the Harbour itself, AND activities on land that affect the ecological health of the Harbour.

The ISPT hybrid GIS-modelling system will consist of interlinked modules that can run independently or simultaneously:

Modules for (i) Tauranga Economy; (ii) Land-Use; and (iii) Ecology.

Adaptation Strategies to Address Climate Change Impacts on Coastal Māori Communities



Horowhenua Case Study

- Aim: develop a framework for building resilience in coastal Māori farming communities, by identifying culturally-informed climate change adaptation strategies and testing their economic, environmental and cultural implications.
- Build Māori capacity to adapt to climate change, leading to new processes of effective social engagement for dealing with this issue.
- Uses participatory action research that draws on Mātauranga Māori, climate science, and ecological economics principles.
- Uses “design” to provide critical links between science, planning and decision-making, to synthesise complex environmental, cultural and economic information in ways the local community can easily grasp.

Use of Landscape Architecture / Design:

- Collaborative learning - 4th year students design **practical architectural solutions** for coastal problems with local hapū and research team.
- Wānanga/hikoi framework where expert seminars and visual presentations were held in the mornings, followed by a hikoi or walking/talking hui of the region and discussion in the afternoon.
- The wānanga approach (on marae) = immersion into Māori paradigms; transference of intricate cultural precepts through visual, spiritual/marae narratives, tikanga etc. Helped disseminate important MTM research info.
- This wānanga methodology worked extremely well for iwi kainga and other kaitiaki ; accelerated learning outcomes for students and kaitiaki, exceeded the research team's expectations.
- Wai-o-Papa Waterlands exhibitions to visually depict design solutions.





Wai O Papa is an MBIE NIWA Deep South National Science Challenge research project, which investigates how design can help Māori coastal farming communities adapt to the impacts of climate change.

The window depicts a range of cycles affecting the relationship between land and water in low lying coastal areas, from sea level rise over hundreds of thousands of years to the daily cycle of the tides. The photograph on the wall is of the Ohau River mouth, one of the project's case study sites.

Photograph: Martin Manning
 Graphs drawn by: Abdallah Richards.

Conclusions:

- “**Solutions**” must be holistic, practical, culturally-appropriate and adaptive.
- New forms of **holistic engagement** are required that **enable and empower** decision-making.
- **Design** principles foster participation and engagement, and aid communication.
- Utilise **a range of methods** to bring together iwi and hapū, stakeholders and research team, to foster **effective communication and co-production** of new **knowledge & capability** to identify and respond to coastal pressures.



Conclusions (cont):

- **Wānanga/Hikoi:** Researchers, Stakeholders, Local communities, Local Government TOGETHER walking and talking on land, sharing knowledge, co-developing research.
- **Design** principles aid to develop a new approach to resilience: Cyril Stanley Smith re Rising Currents exhibition (MOMA): 'humans need to adapt to new conditions; to do so we need to **change minds**; to change minds, art, images and design will lead the way, more so than politics or science'.
- **Participatory Spatial-Dynamic Integrative Modelling:** is visual, place-based, allows for variations in local conditions/knowledge.

Conclusions (cont.)

- Participatory action research enables researchers AND stakeholders to **utilise different knowledge and technologies** in a culturally-informed way that acknowledges **diverse values**.
- Coastal communities: allow for diversified land use and management practices that will **build community capability & resilience**.
- Consider **interdependence** of cultural, economic & ecological issues.

Cannot look at the health of the people without looking at the health of the environment, and vice versa! (OTOT)



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Thank you

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