

Kaupapa Māori Climate Adaptation Matrix

A kaupapa Māori-aligned tool to identify and organise adaptation responses rooted in atua and mātauranga Māori. This matrix helps tangata whenua map and prioritise both immediate and long-term adaptation actions across environmental, cultural, social, economic, and physical wellbeing areas. Responses are framed within atua Māori context to support effective tangata whenua-led climate adaptation, planning and decision-making.

Ranginui		
Atua of the sky, weather systems, and rainfall. Climate change brings increasingly intense storms, rainfall, and shifting weather patterns, affecting balance, infrastructure, and isolating rural communities.		
Wāhanga (Category)	Climate Risks	Māori Mitigation / Adaptation Responses
A. Te Taiao (Natural Environment)	<ul style="list-style-type: none"> - Torrential rain causing road flooding - Storms destabilising forest canopies - Saturated slopes triggering erosion - Wind patterns drying surface soils 	<ul style="list-style-type: none"> - Community evacuation plan - Replant native canopy to support birdlife - Use maramataka to guide planting - Design ngahere catchment buffers - Monitor tohu of extreme weather and create early warning systems
B. Ngā Āhuetanga Hanga (Built Environment)	<ul style="list-style-type: none"> - Flooded rural roads and culverts - Roof damage to schools and health centres - Marae car parks waterlogged - Leaking wharenuī roofs - Power outages from storm events 	<ul style="list-style-type: none"> - Raise culverts and reinforce access roads - Retrofit community buildings with stronger natural materials - Install permeable surfacing around marae - Build underground storm shelters near communal buildings such as marae and papakāinga. - Elevate power infrastructure in flood-prone areas
C. Te Tangata (People)	<ul style="list-style-type: none"> - Kaumātua stranded by storm damage - Tamariki missing school during floods - Whānau needing emergency supplies - Hauora impacts from storm anxiety - Damp, cold conditions in kāinga post-storm 	<ul style="list-style-type: none"> - Set up whānau and community travel alert systems - Create emergency pātaka kai and resource hubs at marae - Maintain kaumātua contact lists - Deliver storm safety wānanga in kura - Provide solar kits to isolated homes
D. Te Tuakiri (Cultural Identity)	<ul style="list-style-type: none"> - Tangihanga postponed by unsafe weather - Rāhui placed on urupā after flooding - Wānanga and gatherings cancelled 	<ul style="list-style-type: none"> - Map and protect wāhi tapu from flooding - Document tikanga adaptations to weather shifts - Use tohu o te rangi in cultural education



	<ul style="list-style-type: none"> - Broken seasonal links to manu and rain cycles - Reduced access to whakapapa sites 	<ul style="list-style-type: none"> - Archive oral histories of weather disruption
E. Ōhanga me ngā Rawa (Economic & Resource Security)	<ul style="list-style-type: none"> - Rebuilding costs for marae and kāinga - Crop and orchard loss from rainfall - Denied insurance for high-risk zones - Livestock loss during flash floods - Delays in accessing repair funding 	<ul style="list-style-type: none"> - Create whānau, kāinga, papakāinga, hapū, iwi and marae resilience and repair funds - Invest in water-resistant infrastructure - Support livestock shelters and fencing upgrades - Secure insurance tailored for whanau, hapū and iwi whenua - Develop climate-adapted whānau enterprises

Tāwhirimātea – Atua of the Winds and Atmospheric Pressure		
Wāhanga	Short-Term Climate Risks	Mitigation and Adaptation Responses
A. Te Taiao (Natural Environment)	<ul style="list-style-type: none"> • High winds snapping or uprooting native trees • Canopy damage in ngahere reducing bird nesting and shade cover • Spread of wind-dispersed invasive weeds like gorse and pampas • Coastal sea-spray damage to salt-sensitive ecosystems • Disruption to bird flight and manu migration during storm cycles 	<ul style="list-style-type: none"> - Create whānau, kāinga, papakāinga, hapū, iwi and marae resilience and repair funds - plant native plants that are wind resistant and able to grow deeper roots for longevity • research taonga species capable of living in high wind areas with fragmented canopies • investigate and plant species that disburse pollen in high wind environments
B. Ngā Āhuatanga Hanga (Built Environment)	<ul style="list-style-type: none"> • Roofs lifted or damaged on kāinga and marae buildings • Power and communication outages from fallen trees and poles • Debris damaging windows, solar panels, fencing or pou whenua • Access roads blocked by storm-felled trees or surface debris • Temporary evacuation due to cyclone-level wind alerts 	<ul style="list-style-type: none"> • reenforce structural foundations to withstand higher winds • Investigate insurance costs and maintenance for risk of high wind damage to marae and buildings • Investigate high wind resilient building materials and designs
C. Te Tangata (People)	<ul style="list-style-type: none"> • Injury from airborne roofing iron, branches or storm debris • Interruption to wānanga, school, or work due to unsafe conditions • Stress or fear during prolonged or repeated storm warnings • Isolation from key services due to blocked roads or cut power • Increased respiratory illness from dust and storm-borne particles 	<ul style="list-style-type: none"> • Invest in social support for whanau to access mental health services due to climate and natural hazard impacts • Access whanau funding sources and packages for natural disaster funds • Migration away from high-risk papakāinga areas • Investigate opportunities for whanau to support community



		who can support in natural hazard emergencies
D. Te Tuakiri (<i>Cultural Identity</i>)	<ul style="list-style-type: none"> • Karakia, pōwhiri, or tangihanga disrupted by unsafe wind conditions • Storm damage to pou whenua or cultural landmarks • Wānanga and hui cancelled due to cyclone conditions \ 	<ul style="list-style-type: none"> • Identify alternative locations for tangihanga, including burials • Assess the cost of pou whakairo and taonga in whare tupuna that could be replaced in event of natural disaster • Develop alternative platforms for learning opportunities for whanau and uri to access korero tuku iho so it is not lost (e.g. website, electronic and digital resources) • Record korero tuku iho from Kaumātua relevant to natural hazards and wind damage
E. Ōhanga me ngā Rawa (<i>Economic & Resource Security</i>)	<ul style="list-style-type: none"> • Damage to crops from windburn or lodging (e.g., corn or kūmara) • Mara kai structures (netting, frames, shade covers) destroyed • Power outages disrupt storage of cold and frozen kai or rongoā • Delays in transporting goods due to blocked roads or ferry cancellations • Increased clean-up and repair costs following wind events 	<ul style="list-style-type: none"> • Ensure crops and resources that are prone to natural hazards e.g. māra kai, horticultural and agricultural investments • Investigate alternative economic opportunities due to changing and shifting climate • Establish kai supply chains, especially for remote whānau, hapū and iwi

