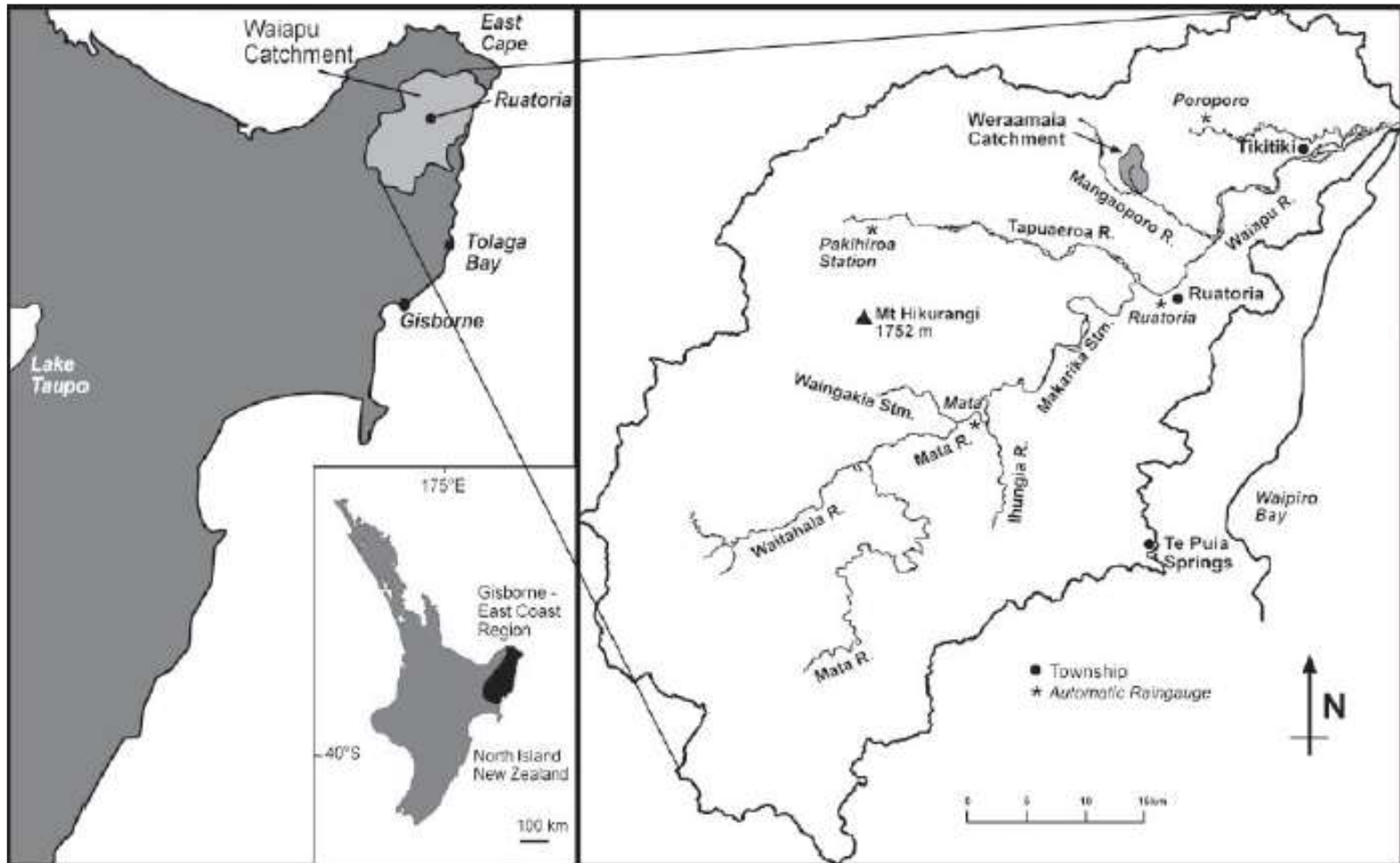


Climate change, soil erosion and community resilience in the Waiapu Catchment, New Zealand

Tim Barnard, Tui Warmenhoven, Pia Pohatu, Loretta Garrett, Tina Porou and Duncan Harrison



Waiapu Catchment



Environmental degradation

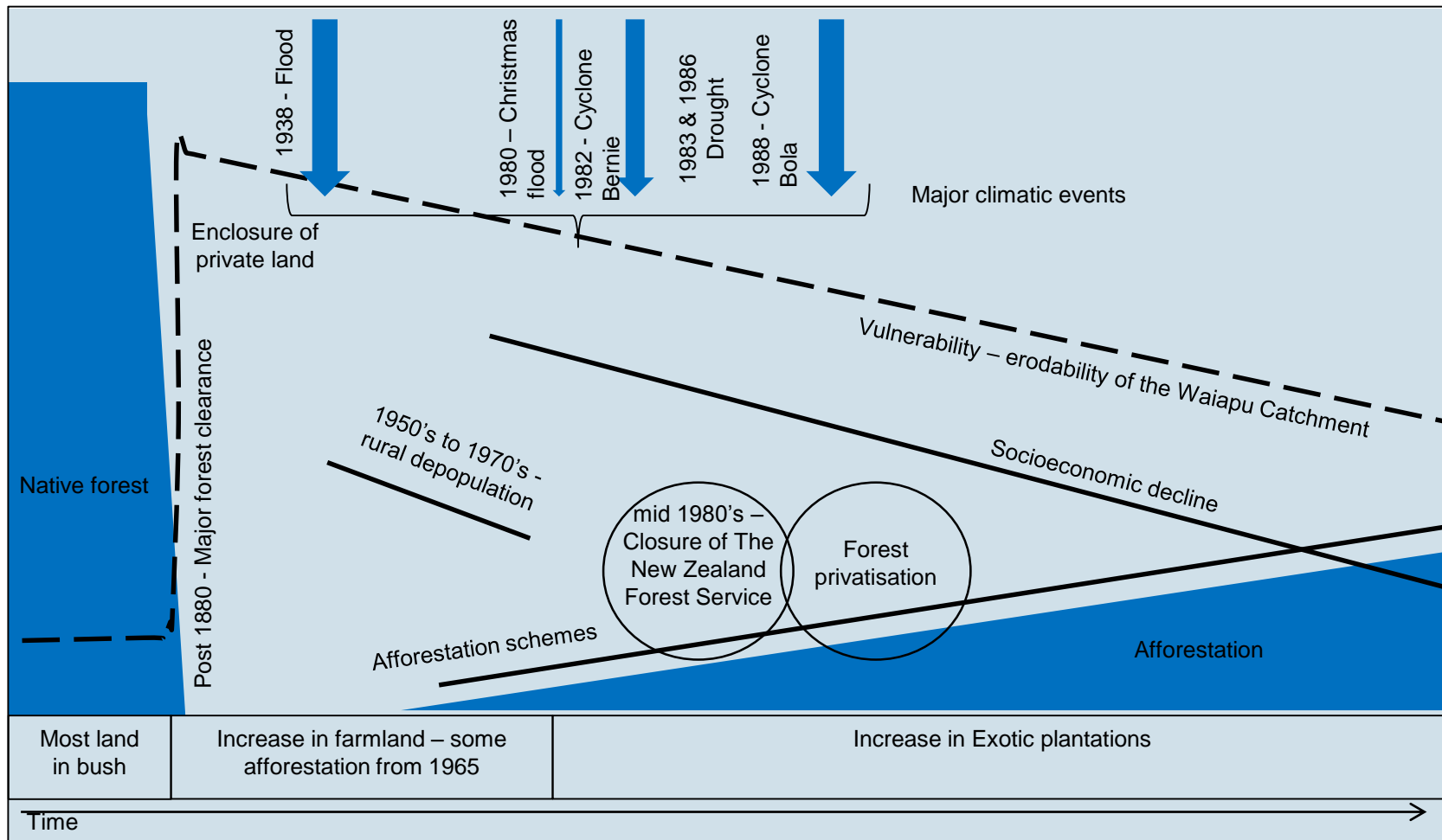
- Clearance of native forest over a century has resulted extremely high levels of erosion
- Waipapu River has the highest suspended sediment load of any NZ river (35 million tonnes per year)
- Damage may double by 2050 from erosion and sedimentation
- The East Coast Forestry Project has been established to help treat the most vulnerable areas
- Uptake of grants has been low for many reasons

Social and economic impacts

- The Catchment is of huge cultural significance to the local Māori community
- The people of the region have been subjected to a number of shocks – economic, environmental and social over a number of years
- The community is one of the poorest in New Zealand
- Environmental degradation has contributed the decline in wellbeing and prosperity



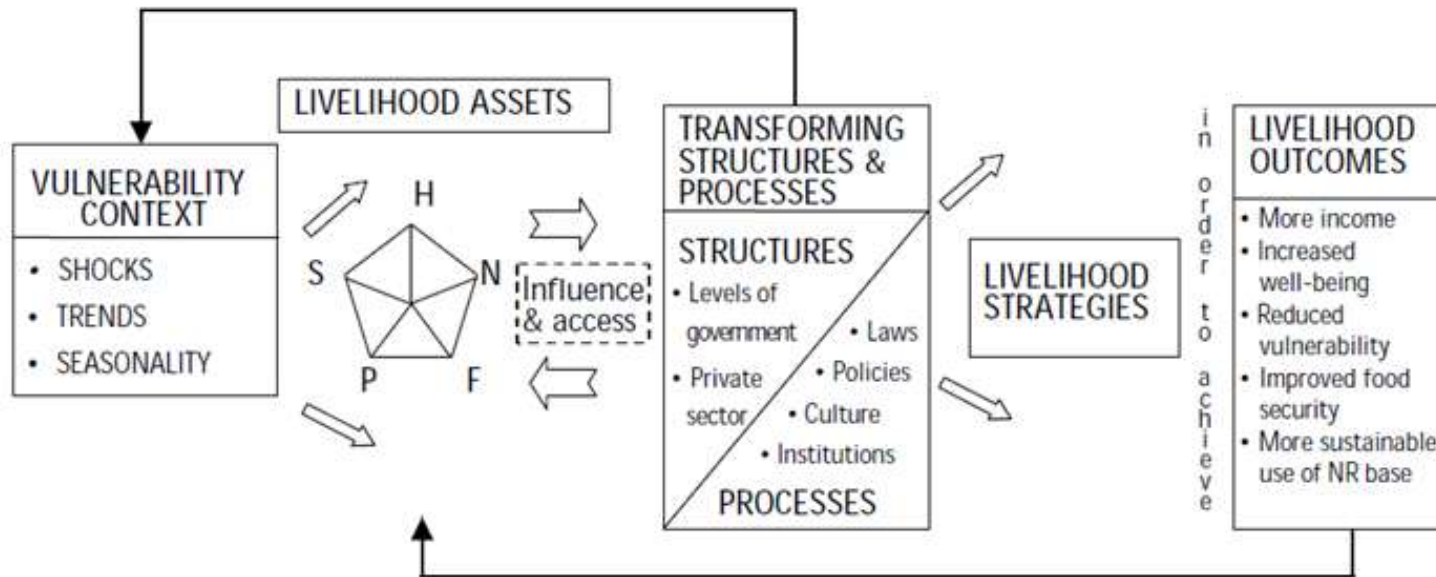
Shocks to the community



Sustainable Livelihoods Framework

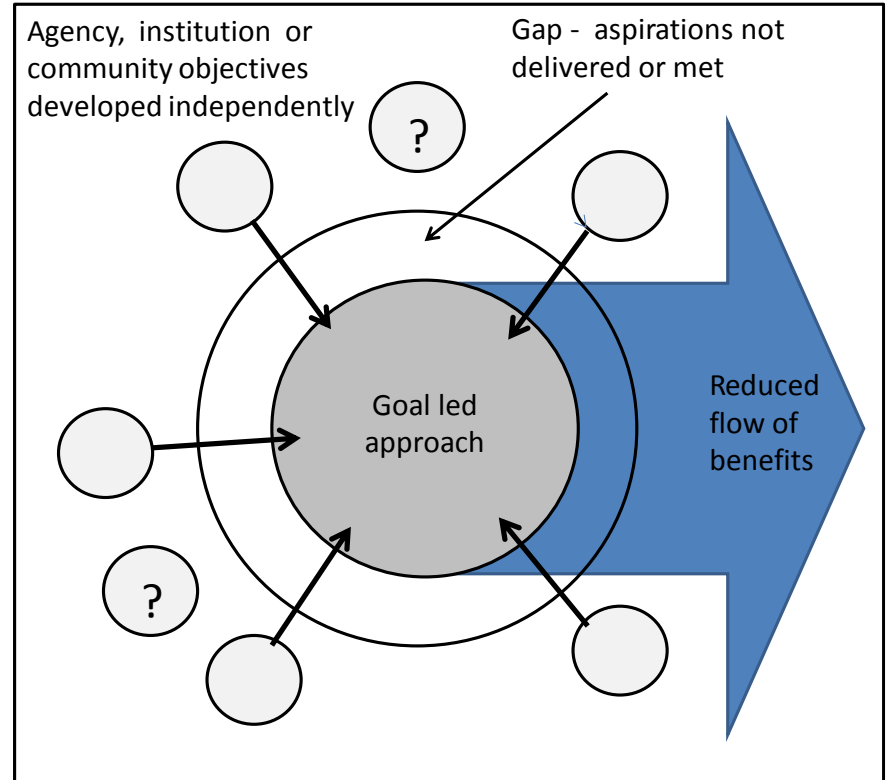
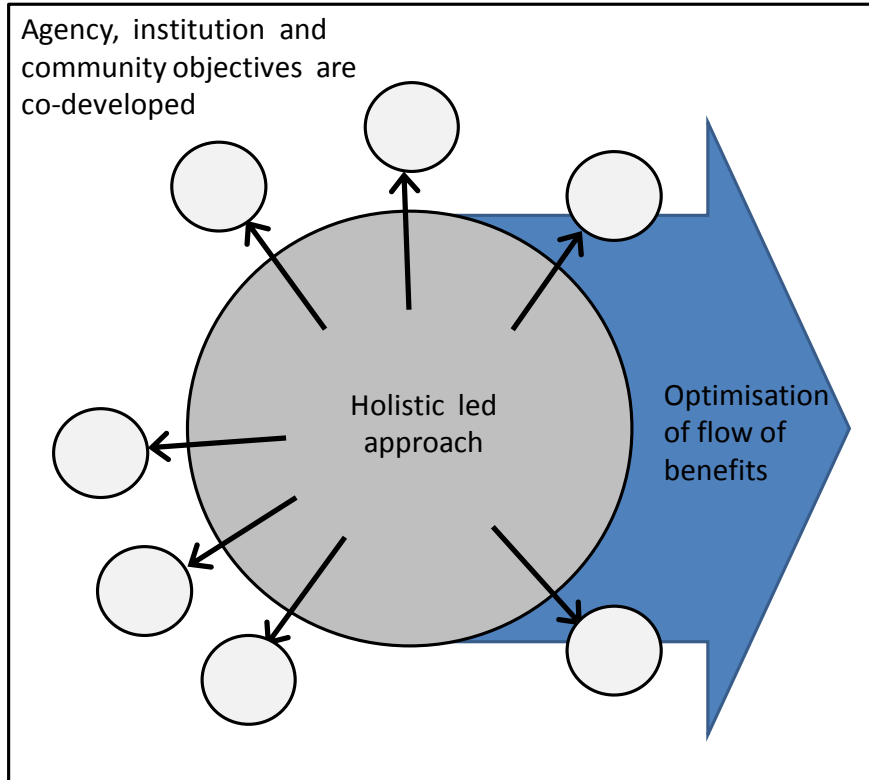
Key

H - Human Capital	S - Social Capital
N - Natural Capital	P - Physical Capital
F - Financial Capital	



Sustainable livelihoods framework (FAO and ILO, 2009).

Alignment of aspirations and agency goals



Holistic led versus goal-led approach adapted from ([Garrett, et al., in prep](#))

Aspirations

- The research team collected 95 aspirational indicators e.g.
 - The restoration of native biodiversity and in some cases, for their utility value
 - Knowledge of the natural environment and sites of cultural importance
 - Increased economic wellbeing and prosperity for all in the community
 - Poverty eradication
 - Mana motuhake
 - A healthy and well educated community
 - Access to the resources the community needs
 - Restored ecosystem services and natural resource assets
 - A vibrant hapu and whanau community and well-used Marae

Mapping Assets

- With local researchers they were mapped to the MPC&I and grouped by Capital:
 - Social Capital
 - Cultural Capital
 - Human Capital
 - Natural Capital
 - Financial Capital
 - Physical Capital

An index to assess the health and benefits of the global ocean

www.nature.com/nature/journal/v488/n7413/full/nature11397.html ▼

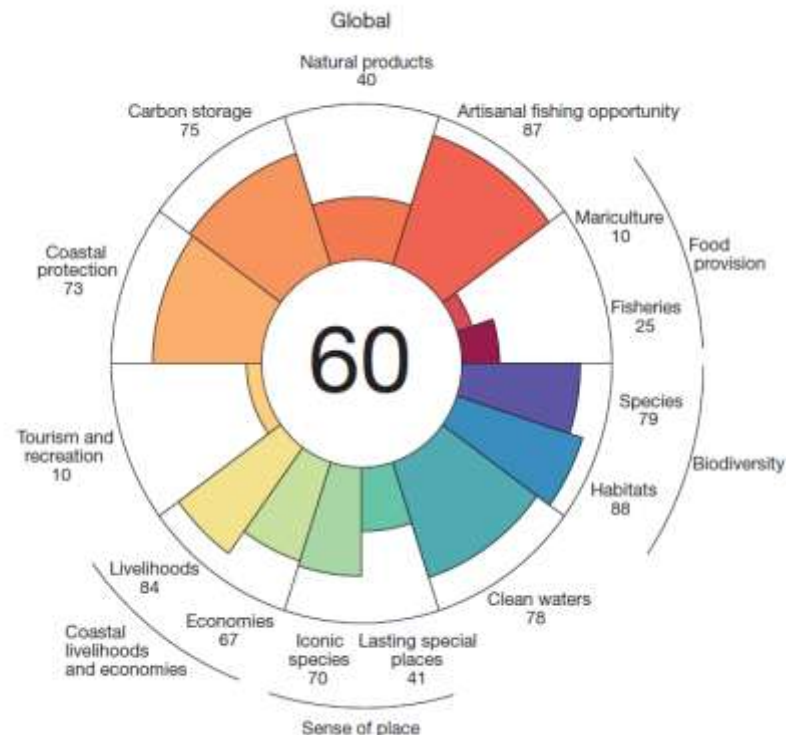
by BS Halpern - 2012 - Cited by 130 - Related articles

Aug 30, 2012 - Here we provide a robust framework to **assess ocean health** and motivate better data collection to strengthen future iterations of the **index**.

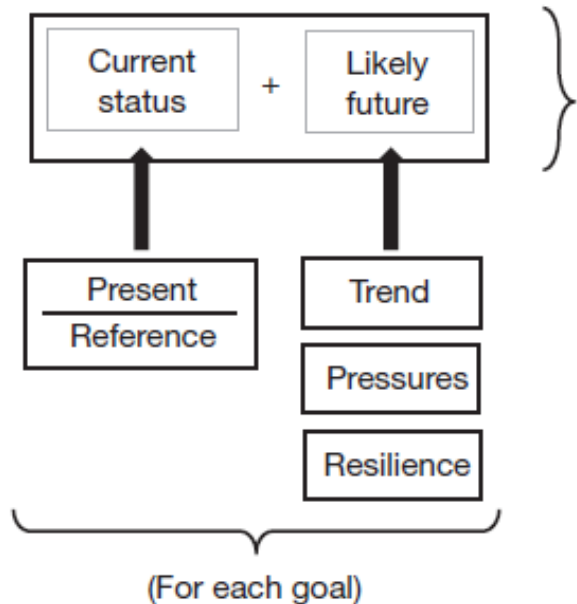


New Ocean Health Index Measures the Global State of the Seas

U.S. scores 63 out of a possible 100, study says.

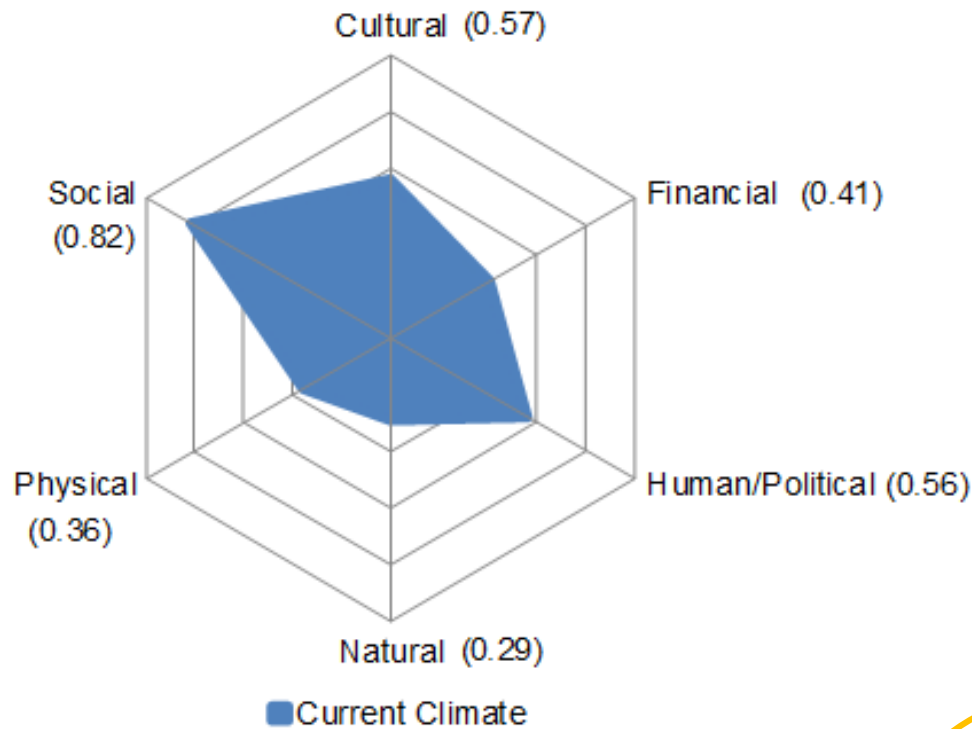


Livelihood indicator framework



Goal (Capital)	Sub-goal
Cultural	Conservation of biological diversity
	Cultural, social and spiritual needs and values
Financial	Credit access
	Flow of revenues
	Wages
	Security
Natural	Protective function
	Soil
	Water
Physical	Transport infrastructure
	Waste water infrastructure
	Water supply
	Communications
Social	Marae
	Cohesion
	Ngati Poroutanga Whanau/Hapu
Human/Political	Health
	Knowledge, skills and education
	Mana Motuhake

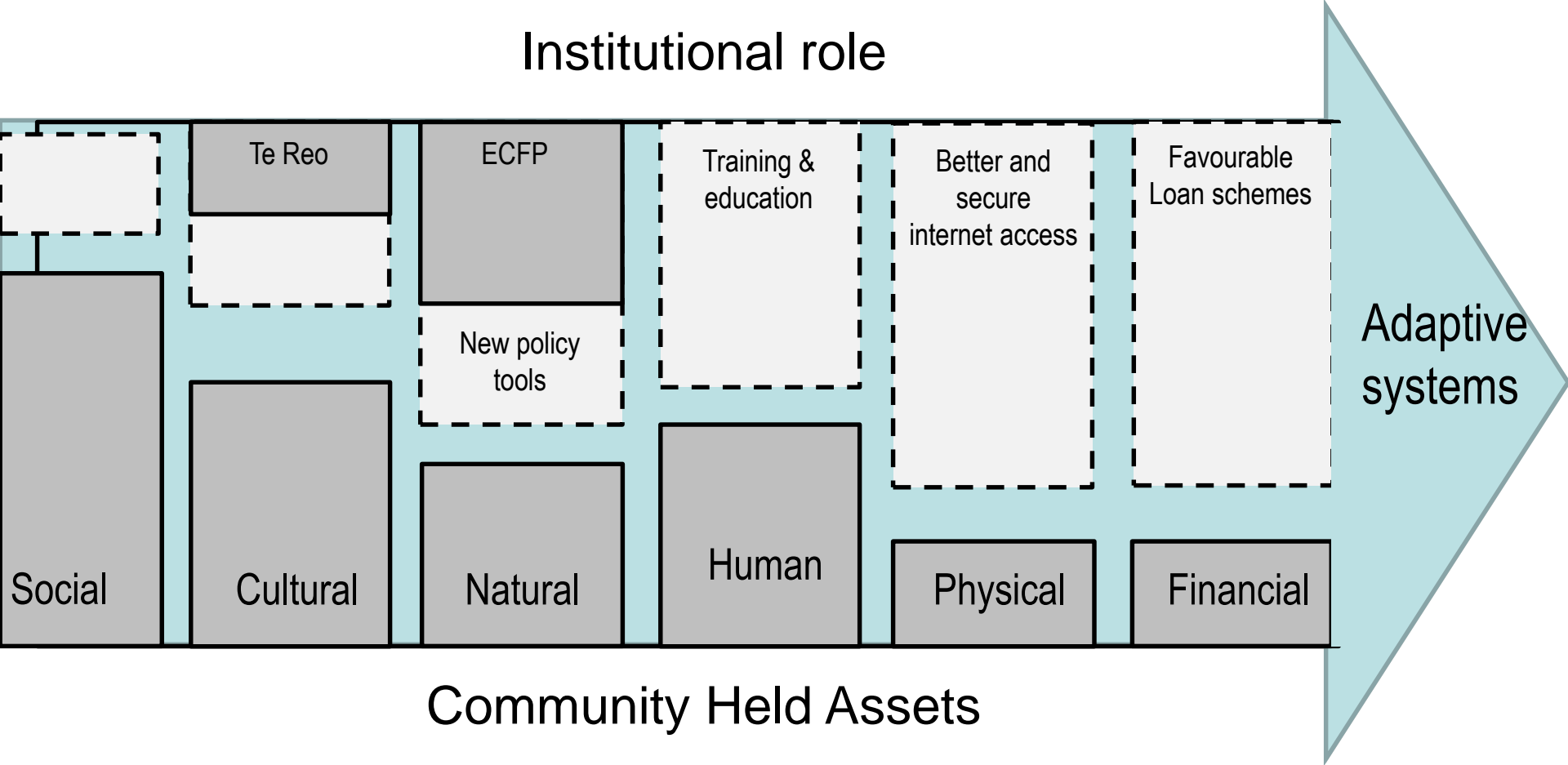
Results



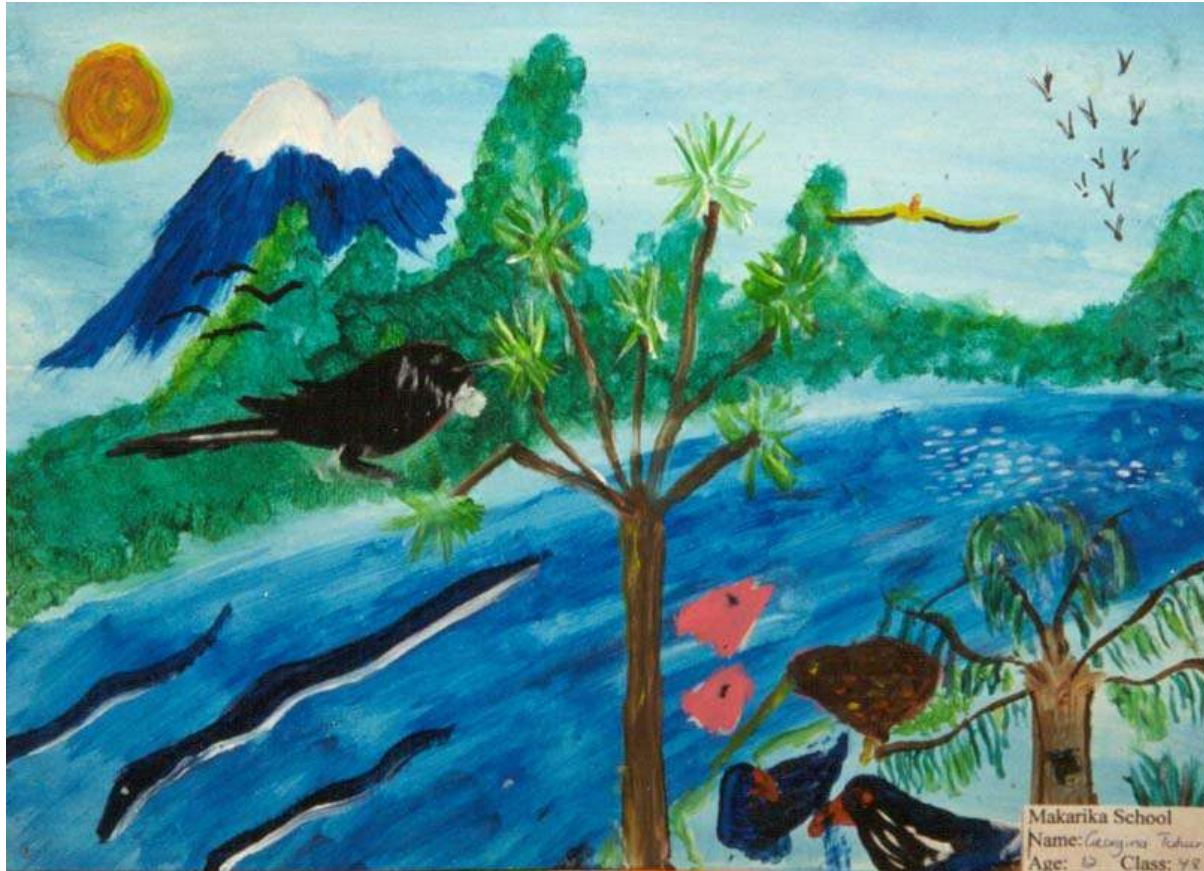
Capital	Current climate (%)	Climate change (%)	Difference (%)	Contribution of Goal Specific Regulation * (%)
Cultural	57	56	-0.57	0.24
Financial	41	40	-0.35	0.00
Human/Political	56	56	-0.29	0.00
Natural	29	29	-0.29	0.89
Physical	36	35	-0.74	0.00
Social	82	81	-0.45	0.00

*The positive input of policy (goal specific regulation) to the capital value under climate change (Note: does not take into consideration the present status and trend of individual indicators, only the maintenance of the current goal specific regulation with climate change).

Adaptive planning



Thank you ...



Warmenhoven, Barnard, Pohatu, et al. (2014). Climate Change and Community Resilience in the Waiapu Catchment. Report prepared for MPI, June 2014.