

Adapting Economic Appraisal for Resilience and Equity

Lessons from the Pacific for New Zealand's Transport Networks

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Working with what we have
Resilience for the Future
Whakamāhinga ki ngā mea kei a tātou:
He manawaroa mō ngā rā anamata
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The rigorous foundation of New Zealand's transport planning

- The MBCM has evolved over time, grounded in robust economic theory and empirical evidence.
- The blind spot: Frameworks designed for high-volume mobility may struggle to capture the full system-continuity value of isolated, climate-exposed lifelines.
- How do we account that low traffic reflects remoteness, not lack of need?



The discounting dilemma in fragile contexts

Standard Approach

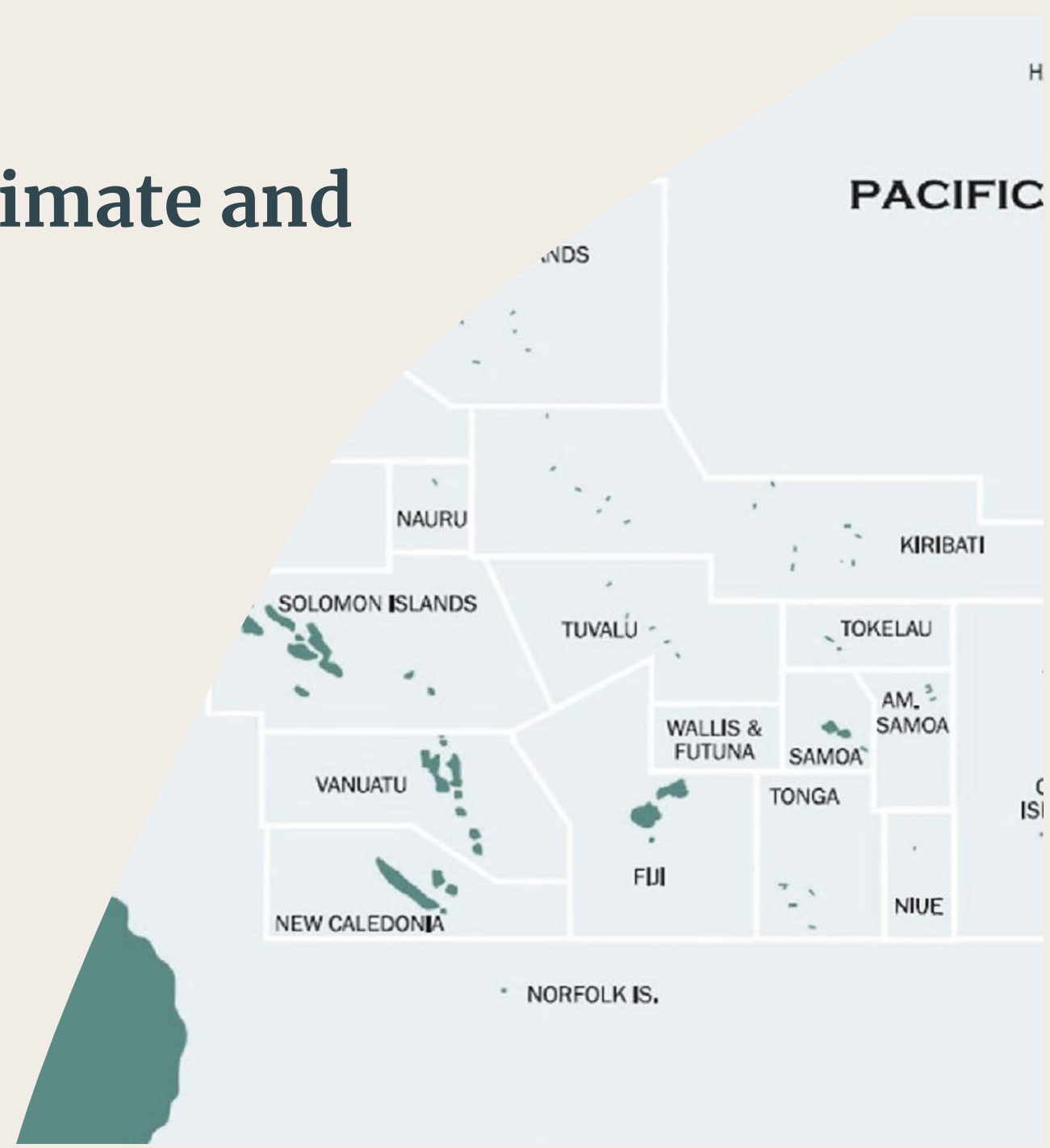
- High discount rates (historically 10-12%) favour quick win short-term returns.
- Prioritises high-traffic volume benefits (time savings, vehicle operating costs).

Fragile Contexts

- Undervaluing long-term resilience (e.g., a cyclone-proof bridge).
- Bias against low-traffic, isolated communities.
- Struggles to justify the high upfront cost of climate adaptation and avoided future losses.

A living laboratory for climate and remoteness

- Acute transport vulnerability
- Extreme climate exposure (cyclones, sea-level rise)
- High geographic isolation with limited network redundancy
- A stress test environment for standard economic evaluation parameters



Three observations to bridge economic rigour and equitable access



Policy & Equity: Fiji

- Adapting legislation to fund access explicitly

Risk & Baseline: Samoa

- Refining the Do Minimum to reflect climate reality

System-Level Value: Tuvalu

- Integrating mode-neutral planning for dispersed populations

Fiji's constitutional mandate for transport access

- Transport access recognized as a legal right, not just an economic utility.
- Requirement to take reasonable measures within available resources.
- The Challenge: How to fund rural road and jetty maintenance, particularly where they are un-economic?

"Right to reasonable access to transportation"

34.(1) The State must take reasonable measures within its available resources to achieve the progressive realisation of the right of every person to have reasonable access to transportation.

(2) In applying any right under this section, if the State claims that it does not have the resources to implement the right, it is the responsibility of the State to show that the resources are not available.....

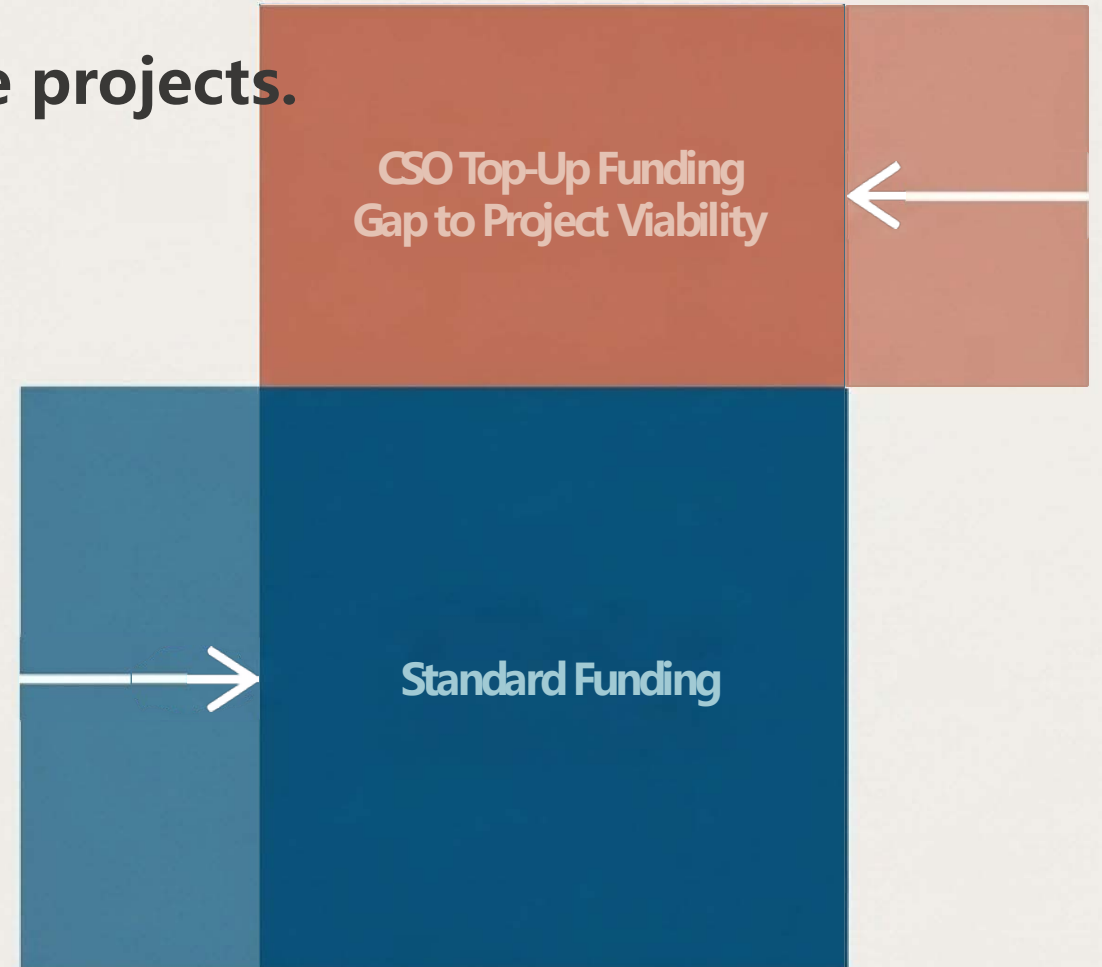
Rights of persons with disabilities

42.(1) A person with any disability has the right –

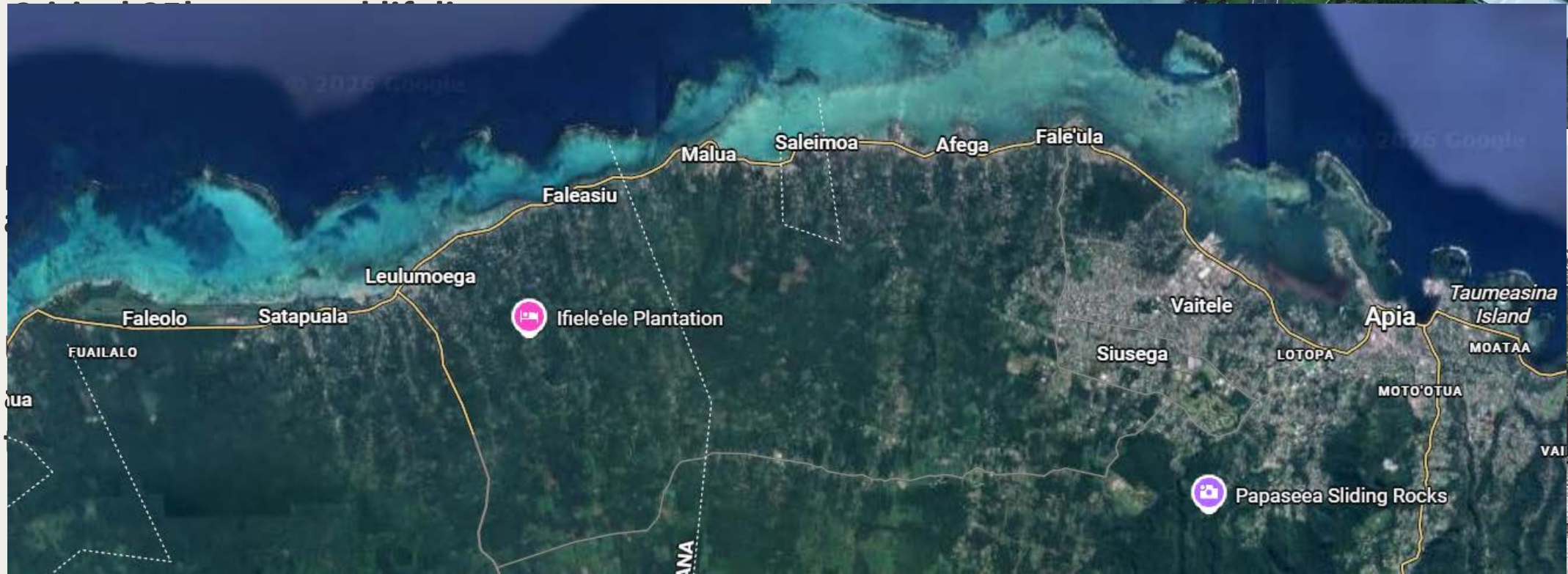
(a) to reasonable access to all places, public transport and information;"

The Community Service Obligation mechanism

- Explicitly separates welfare-driven investment from economically viable projects.
- Maintains economic discipline while satisfying social and constitutional equity.

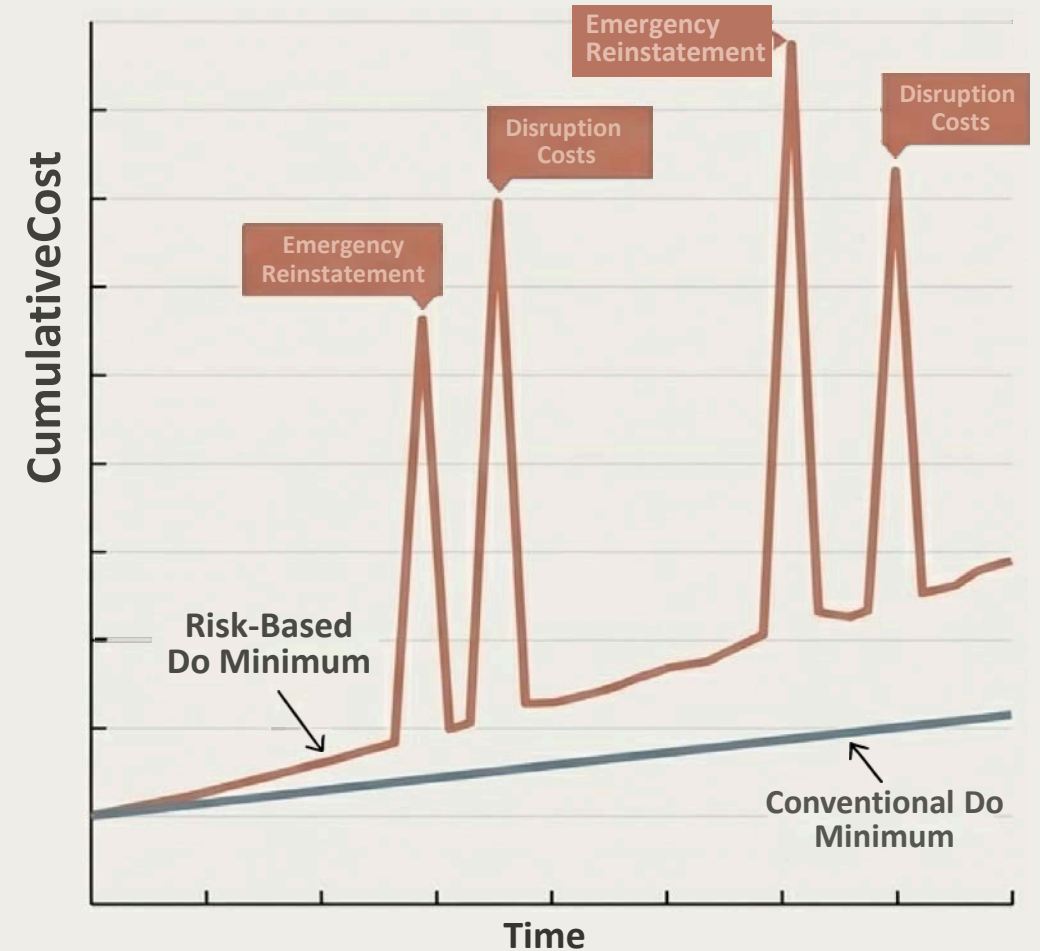


Samoa's West Coast Road and the cost of inaction



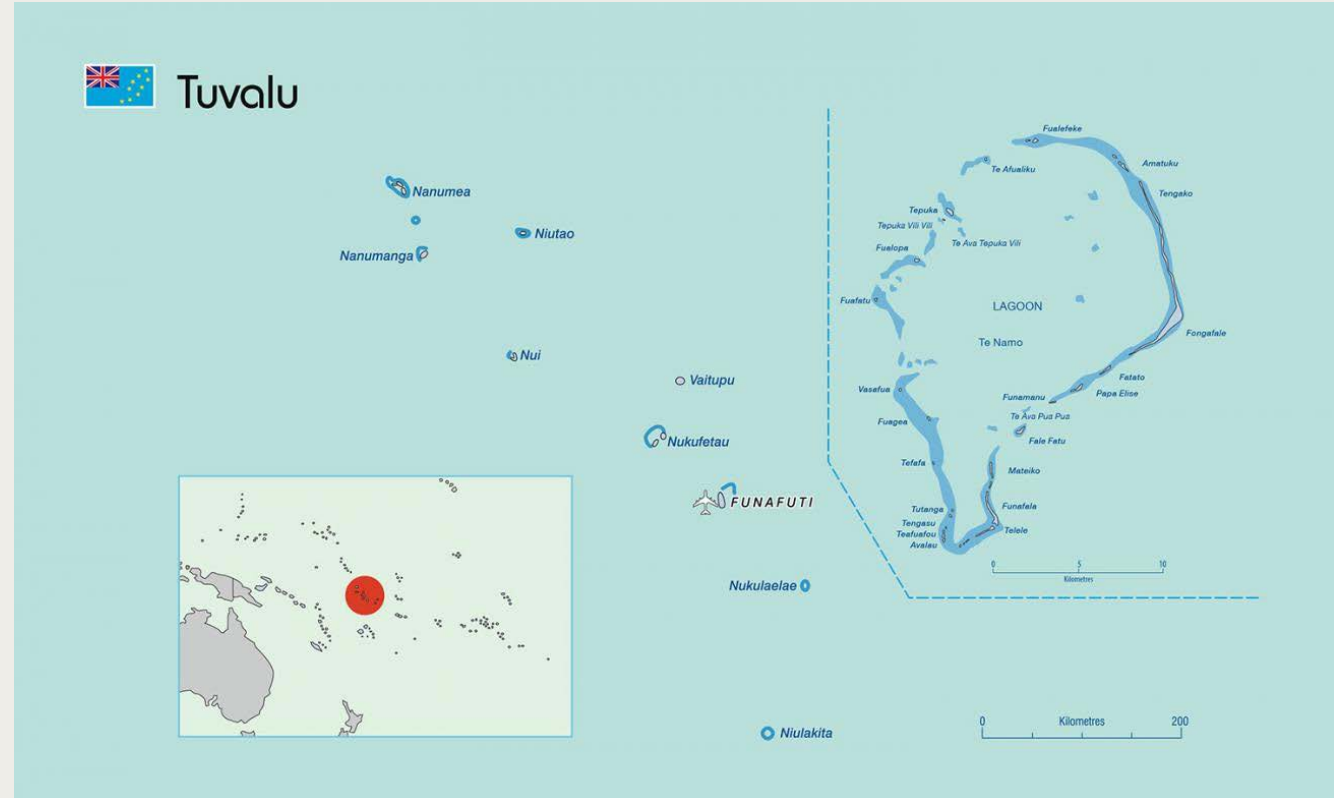
Redefining the baseline with risk-based appraisal

- **Explicit Climate Hazards:** Factoring probability and severity of cyclones and sea-level rise into the baseline.
- **Quantifying Avoided Loss:** Capturing the true cost of prolonged isolation, the true cost of prolonged isolation, emergency reinstatement, and the cost premium of urgency.
- **Decision-Path Analysis:** Evaluating the total cost of delayed intervention versus proactive replacement.



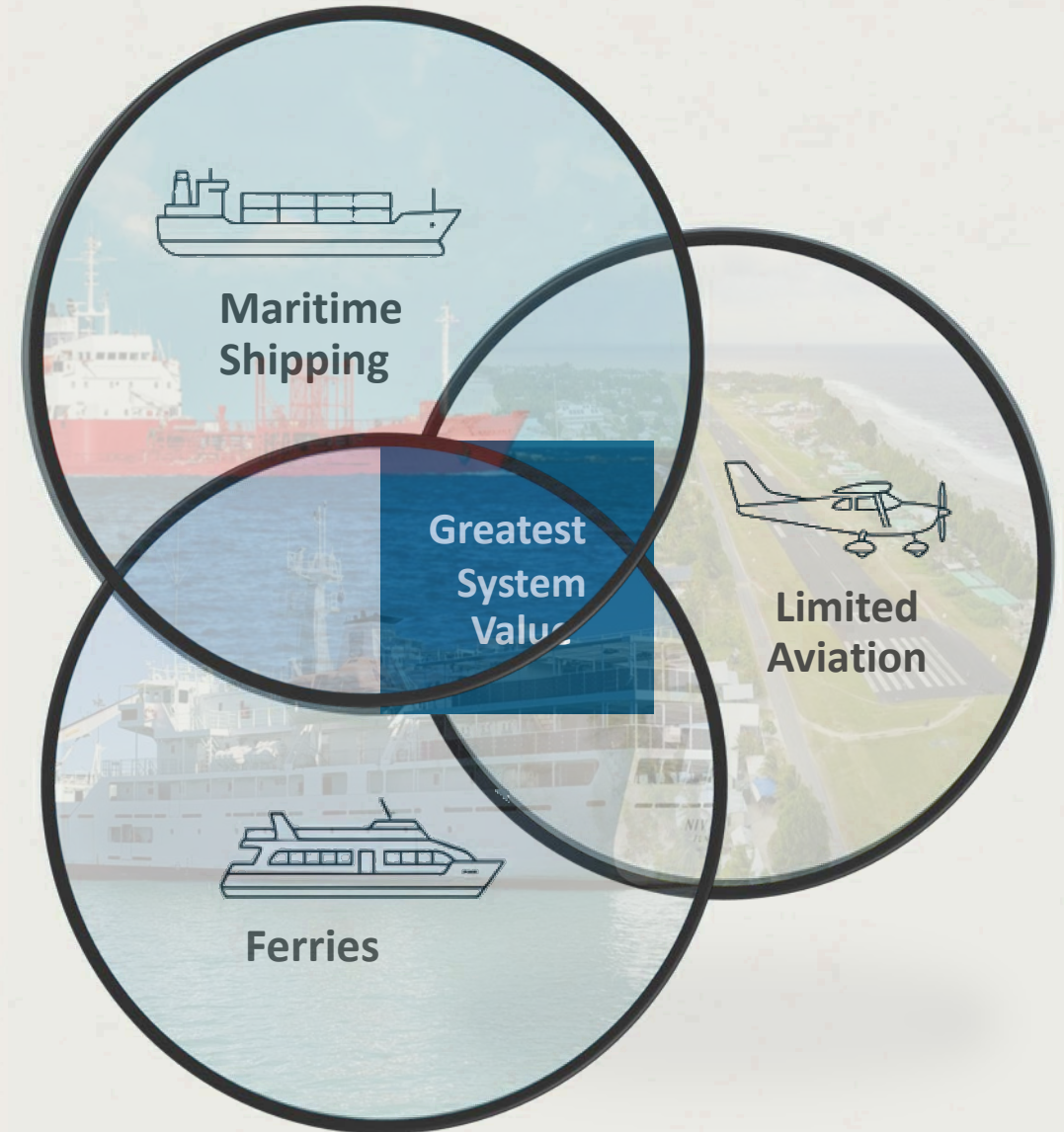
Tuvalu and the limit of single-asset evaluation

- Small, widely dispersed island communities.
- Dependence on transport for secondary education, food security, and healthcare referrals to Funafuti.
- **The Challenge:** Evaluating a single jetty or airstrip in isolation consistently returns unviable metrics due to tiny passenger volumes.



Shifting to holistic, mode-neutral system value

- Top-down integration: Testing network configurations across combined maritime and aviation modes.
- Bottom-up needs: Sizing services based on functional access to essential health and education, not just demand metrics.
- **The Shift:** From which project has the highest BCR to which combination delivers the greatest system value within fiscal constraints?



Mirroring New Zealand's rural and coastal challenges

- Increasing frequency of climate-related closures on our transport links.
- Isolated rural communities with limited or zero network redundancy.
- Low-density demand masking the critical lifeline function of the route.
- The growing tension between economic efficiency and maintaining essential service levels.



Actionable Refinement: Evolving the MBCM Do Minimum

- The MBCM discipline is correct, but the application must adapt to climate realities.
- Stop assuming historical reactive maintenance is a credible baseline for failing coastal assets.
- Explicitly incorporate probabilistic disruption and avoided loss into the Do Minimum.
- Ensure the baseline reflects realistic response pathways, including emergency access costs, or new reinstatement.

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The least cost option that provides a

minimum level
of service.

MBCM 2024 Definition

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Actionable Refinement: Leveraging the IDMF for system continuity

- Traffic volumes alone do not reflect the importance of a transport link.
- Recognise access, safety, and continuity benefits that accrue to small populations but carry high social value.
- Apply the IDMF to assess system performance and assurance, moving beyond isolated land-transport silos.
- Consider interdependencies with coastal shipping and aviation for low-redundancy networks.

Low
Traffic





Rigour and resilience are two sides of the same coin

- Standard CBA is not broken; its application simply requires greater contextual awareness.
- Resilience and equity are not externalities. They are core public goods
- By refining our baselines and embracing **system-level value**, New Zealand can continue leading the world in transport investment decision-making.