

# USE OF NATIONAL-SCALE SOCIO-ECONOMIC SCENARIOS TO REDUCE 'PRESENTIST-BIAS' IN CLIMATE CHANGE ADAPTATION DECISION MAKING

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## THE PROBLEM

Making decisions on adaptation requires long-term thinking. Presentist bias locks decisions into a particular path that reduces flexibility in the future. To address such bias we need tools that can canvass the effect of a range of adaptive pathways to reduce risks arising from three intersecting drivers of risk: the hazard, exposure to the hazard and sensitivity to the hazard (see Figure 1). All three drivers of risk change over time and cannot be predicted. Thus, scenarios of a range of plausible futures for climate as well as socio-economic outcomes are required so we can "stress test" decisions and adaptive pathways for different plausible risk profiles in all three dimensions in Figure 1.

The Shared Socioeconomic Pathways (SSPs) provide a useful global framework but lack the detail critical for understanding climate change risks at national and local scales.

National and sub-national scale climate and socio-economic scenarios are critical to understand exposure and sensitivity at local levels and to determine the feasibility and effectiveness of adaptation options and the evolution of risk over time.

## WHAT WE DID

We developed a framework for national-scale socio-economic scenarios for New Zealand, nested within SSPs, to inform national and local-scale studies of climate change impacts and implications, that have local:

- » Credibility;
- » Salience; and
- » Legitimacy (Cash et al., 2003).

These nationally and sub-nationally relevant elements are characterised through Shared climate Policy Assumptions for New Zealand (SPA-NZ).

Tables 1 illustrates the design of the national scenarios, comprising:

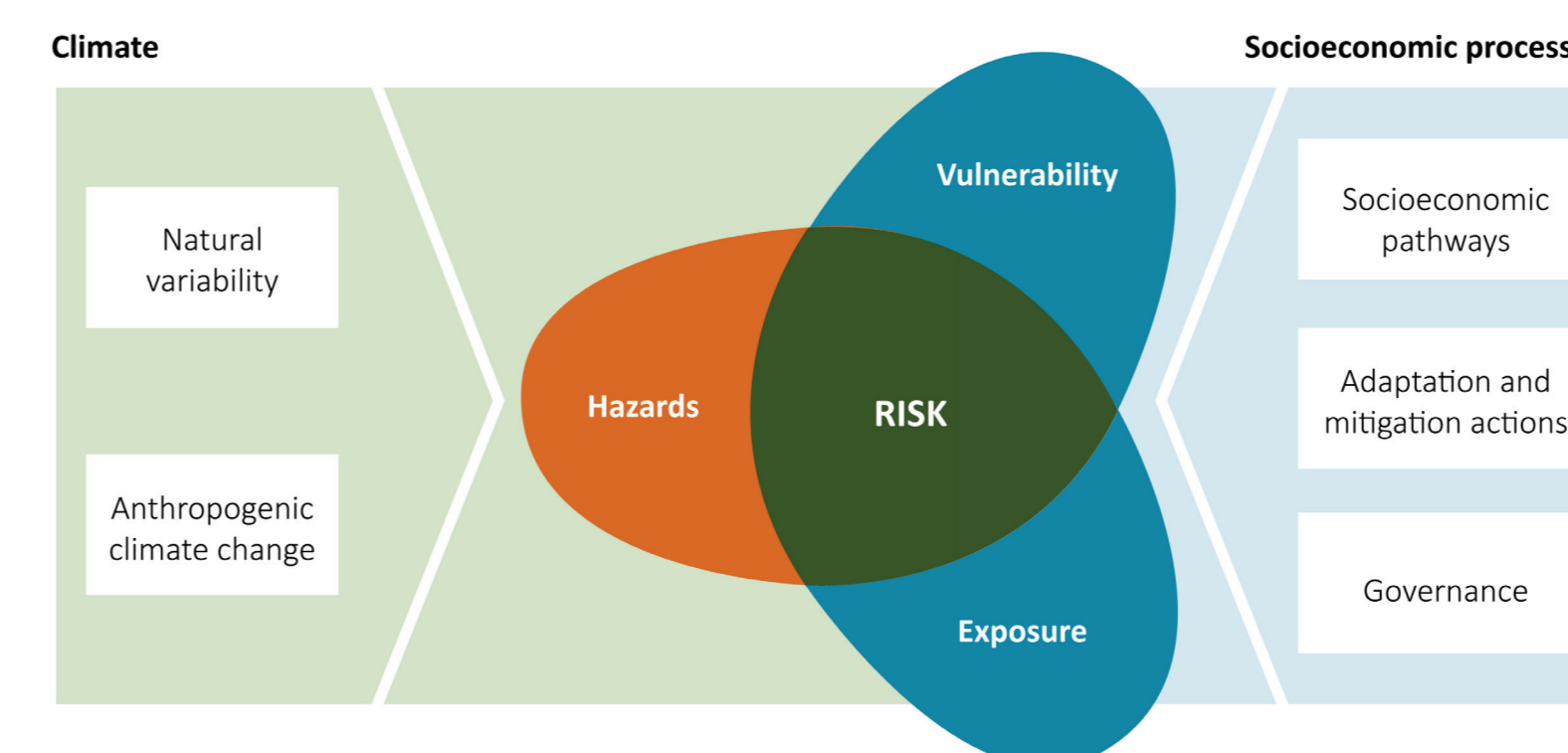
- » Representative Concentration Pathways (RCPs) describing the global atmospheric radiative forcing associated with varying levels of GHG concentrations;
- » Shared Socio-economic Pathways (SSPs) describing future global socioeconomic conditions including emissions of GHG (quantitative and narrative); and
- » Shared climate Policy Assumptions (SPAs) describing New Zealand-specific climate and non-climate policy settings that have a high potential to influence adaptive and mitigative capacity - Table 1 SPANZ.

The architecture was developed using project-specific research workshops, stakeholder groups as case studies, and a national workshop involving researchers, stakeholders and national influencers.

Quantitative elements were provided using global databases and an integrated assessment model that captures New Zealand-relevant issues, e.g., specific commodity prices. Qualitative elements were elicited at workshops and reviews of existing scenario literature.

	SSP1	SSP2	SSP3	SSP4	SSP5
RCP8.5			<b>Unspecific Pacific</b> no mitigation, fragmented world, reactive NZ (8.5-3-A)		
RCP6.0					<b>Homo economicus</b> global growth with little mitigation, NZ does minimum but adapts smartly (6.0-5-D)
RCP4.5			<b>Kicking, screaming</b> fragmented world that mitigates through power blocks, NZ dragged along (4.5-3-A)		<b>Clean leader</b> global growth, significant mitigation, NZ leads, strategically exploits competitive advantage (4.5-5-F)
RCP2.6	<b>100% smart</b> global cohesive sustainability focused world with ambitious mitigation, with NZ riding front wave (2.6-1-F)				<b>Techno-garden</b> global ambitious mitigation in a cohesive rich world focused on economic gain, NZ keeps economic focus (2.6-5-B)

**Table 1. Full RCP/SSP scenario matrix, and the RCP/SSP/SPA-NZ combinations chosen for the initial set of New Zealand-specific scenarios.**



**Figure 1. Characterisation of climate change risks as confluence of three drivers. Figure from Renwick et al. (2016) based on IPCC (2014).**

## CHALLENGES

- » For a geographically-remote independently-minded country, national-scale scenarios cannot simply 'downscale' SSPs;
- » Methodological challenges and transaction costs of multi-disciplinary teams, mixing qualitative and quantitative elements, should not be underestimated;
- » Compounding effects when the research interacts with stakeholders, for whom specific implications have greater currency than precision of data and methodological rigour.

## REFERENCES

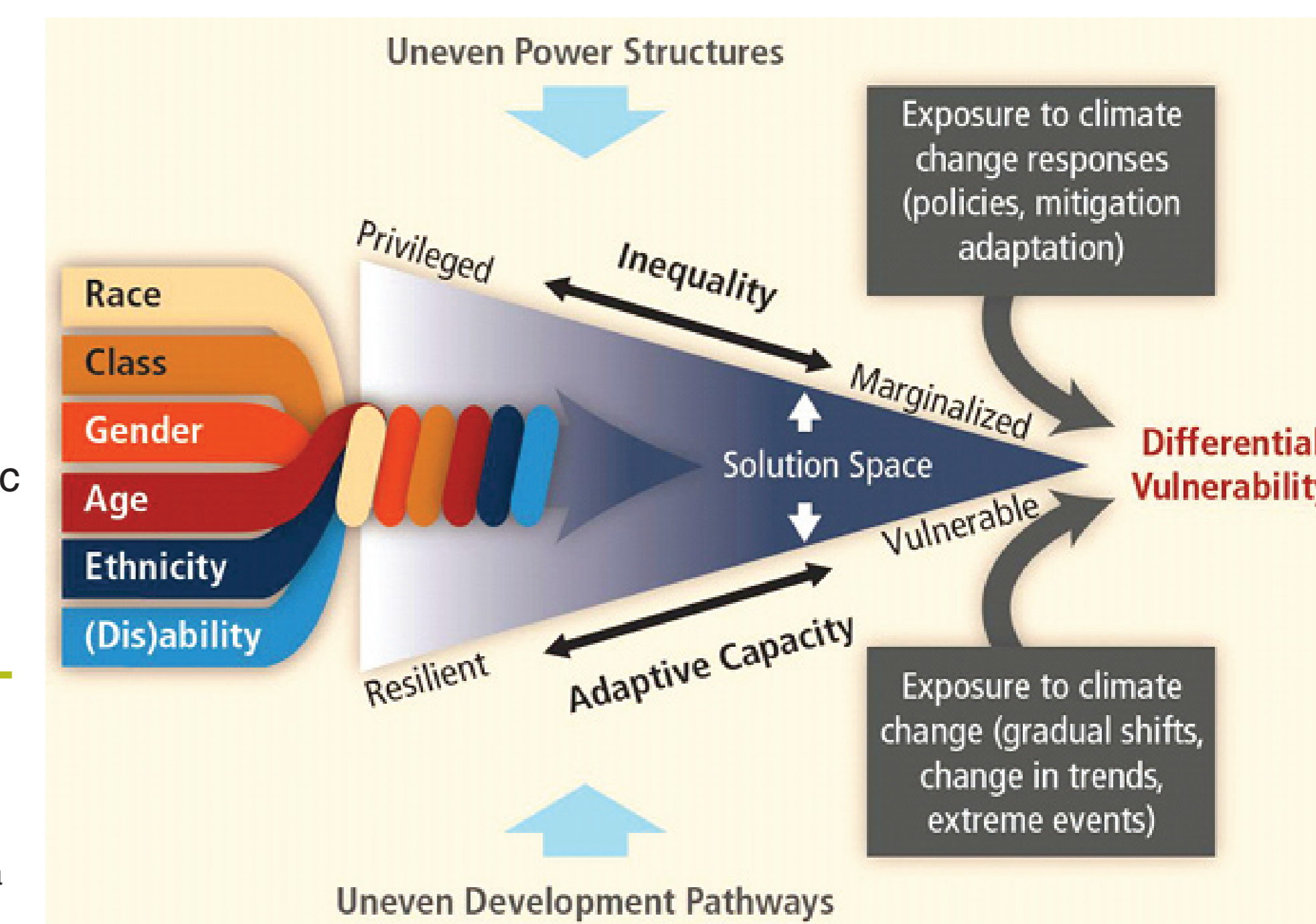
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## UTILITY OF THE APPROACH

- » Provides a relatively value-neutral place from which to explore the 'scenario space';
- » Avoids starting new case studies from scratch in an ad hoc manner with inconsistent assumptions;
- » Raises awareness of socio-economic determinants of climate-related risk and response options; and
- » Enables sub-national and highly context-specific exploration of climate risks and responses, thus greatly increasing the salience of information for local stakeholders.



**Figure 2. The Solution Space. Source: Developed by Petra Tschakert and IPCC WGII TSU (2014)**

## ACKNOWLEDGEMENTS

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