Climate Narrative Scenarios Comparative Report

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Background

According to UTAS's funding agreement with NEMA, the objective of the project is to improve access to climate change information to aid decision making. The UTAS project will do this by developing regionally consistent qualitative climate change scenarios across three localities.

To understand regional climate change hazards, the University of Tasmania (in affiliation with the NESP Climate Systems Hub) has engaged the Glenelg Hopkins CMA (in Victoria) to assess climate change risks for biodiversity, while the ACT assesses climate change risks for fire, heatwave, and smoke. In a separate project, the Huon Valley Council will develop plausible future scenarios of compounding climate events in the context of a locally developed liveability framework.

Each project involved the development and application of locally relevant climate change scenarios. There is an opportunity to compare scientific methods, stakeholder engagement processes, scenario products, what worked well, what could have been done better, and lessons that could inform 'good practice' principles. Each project has been asked by the University of Tasmania to produce a short report (less than 20 pages) on these aspects.

In addition to this, Informed.City will provide a report on their work building qualitative future climate scenarios which summarise their experience developing and using qualitative future climate scenarios for local decision making.

The reports will have a similar structure to facilitate comparison. An independent comparison report, including a broader literature review of climate scenario development and utility, will be published by the NESP Climate Systems Hub.

The Case Study

Purpose

The purpose of this case study is to highlight the how integrated qualitative scenarios, mostly developed for the financial sector, have been used to enable end users to explore climate risk and opportunity. This example serves a prompt for researchers to identify how, or even if, quantitative climate data should be used when exploring climate scenarios.

Project Delivery Team

This case study is based on work carried out by Informed.City, a climate change consultancy.

Methodology

Approaches and assumptions

Climate scenario development is inherently a process of working within uncertainty, not eliminating it. In our experience, addressing concerns about uncertainty and limited guidance required a balance between rigour, transparency, and usability. This means that the methodology is robust and grounded in science and logic; we are clear about assumptions, uncertainties, and data limitations; and that the scenarios are actually helpful for the people who need to use them.

Most importantly we often remind stakeholders that scenarios are not forecasts, they are provocations. This framing encourages users to test decisions across a range of plausible futures, rather than assume a single predicted outcome.

Climate hazards

The climate hazards were identified from both physical and transition risk drivers. The hazards of particular interest were drawn from driver ranking workshops with each client. As many of the scenarios were developed for the banks a wide range of sector-specific hazards were explored (e.g. that were relevant to residential real estate, commercial lending, agricultural and industrial lending etc). Of particular interest was:

Acute and chronic physical risk drivers: Coastal hazards including permanent sea level rise, changes to storm surge depth and return rates, coastal erosion, pluvial and fluvial flooding, heatwaves, changes to winter temperatures, growing degree days, livestock heat stress, atmospheric rivers, tropical cyclones, and large storms.

Transition risk drivers: Carbon pricing, insurance availability, national and international regulatory changes, tariffs (e.g. carbon border adjustment mechanism) technological innovation, insurance risk, climate-related litigation, market demand changes, "climateflation" (the inflationary pressures generated by the physical impacts of climate change), "fossilflation" (increasing prices for oil and gas contribute to inflation in energy and transportation), and "greenflation" (including the costs associated with developing and deploying new green technologies and policies aimed at decarbonisation).

Additional theory and/or frameworks used

A range of theories and frameworks were utilised. Importantly, the climate-related scenarios were based on the integration of physical and transition risk drivers. This was a regulatory requirement for climate-related disclosures (XRB 2024). However, regardless of regulatory requirements this integration ensures the scenarios were more fit for purpose, as they recognise the interplay between physical and transition risk.

The scenario development process drew on several additional frameworks. Guidance was provided by Professor Thomas J. Chermack, an expert in scenario planning and organisational change at Colorado State University, whose work has helped shape the theoretical foundations of scenario-based strategic foresight (Chermack 2011). The STEEP framework (Social, Technological, Economic, Environmental, Political) was used to identify and cluster external drivers of change, ensuring scenarios reflected a broad spectrum of systemic influences (Rastogi & Trivedi 2016).

Scenario framing was also informed by the Task Force on Climate-related Financial Disclosures (TCFD), specifically its Guidance on Scenario Analysis for Non-Financial Companies, which offers a practical structure for incorporating plausible future climate states into organisational planning (TCFD 2020). In addition, insights were drawn from Scenario Planning for Climate Change by Nardia Haigh, which provides a structured approach for aligning foresight methods with climate strategy (Haigh 2015).

Data sources

Most of the climate scenarios were framed using qualitative narratives. Climate-related data, where relevant, was used to frame the architype and/or provided for specific narrative insights. For example, if the architype (global temperature guardrails) was 1.5°C the outlier of climate model information, under a 1.5°C world was used. This would ensure that the scenarios were based on scientific information. The source of this climate data varied, ranging from client-funded downscaled CMIP6 spatial models to publicly available datasets (i.e. CSIRO or NIWA).

Stakeholder Identification and Engagement

The stakeholders were organisation specific. The level of engagement varied, depending on the client's allocation of internal resourcing. Some organisations provided staff from all sector areas, whereas others were limited to a selected handful of interested parties.

Stakeholder motivation

Stakeholder motivation to use climate scenarios has grown significantly in recent years. In New Zealand, the most significant motivator for their use has been the mandatory climate disclosure regime, which requires large entities to describe their use of scenario analysis (XRB 2024). This has made scenarios a compliance-driven necessity and prompted stakeholders to seek structured approaches that align with regulatory guidance. Regarding local government in NZ, only one council, Auckland City, is captured under the climate disclosure regime. However, the increased optics of corporate climate scenarios has also resulted in somewhat of a halo effect, encouraging local governments to develop their own.

In Australia, the mandatory disclosures regime has just commenced (AASB 2024) and is driving private-sector use of scenarios. The requirement is for captured entities to develop at least two climate scenarios to test the business model. At the Australian local government level, it is the larger and more climate-aware local governments who are exploring scenarios. Anecdotal insights show that the more councils are aware of the complexity of climate risk, the more likely they are to embrace climate-related scenarios. Often the motivation for scenarios has come from the encouragement from a climate change knowledge broker (e.g. a consultant or research institution). Australian councils who have used climate scenarios include City of Onkaparinga, Sunshine Coast Council and the City of Gold Coast.

Co-Design Process

The process was always led by the consultant, who brought deep expertise in both climate change and scenario development. However, the degree of co-design varied, largely defined by the internal resourcing and capacity of the partnering organisation. In cases where stakeholders could dedicate time and personnel, the process involved multi-stage co-design, with participants engaged from framing through to scenario testing. In other cases, involvement was more consultative, with key touchpoints for input and validation.

Workshops

Agenda/program/schedule

The scenario development workshops involved between 8 and 25 participants, depending on the size and nature of the organisation. In some cases, where resourcing allowed, pre-driver workshops or discussion groups were facilitated prior to the key driver workshop.

The workshops were usually facilitated in the organisations' meeting rooms. A typical driver workshop would take between 4-6 hours, depending on the number of participants, amount of pre-work that had been carried out and the complexity of the organisation.

A central step in the process was the identification and ranking of scenario drivers. This was usually initiated through workshops or interviews, where participants surfaced potential future influences across domains. These were then structured using the STEEP framework (Social, Technological, Economic, Environmental, Political) and ranked based on two criteria:

1. **Impact** – the degree to which the driver could affect the organisation or relevant sector; and
2. **Uncertainty** – the level of unpredictability in timing, direction, or magnitude.

Drivers that were both high-impact and high-uncertainty were selected as primary scenario framers. These were used to define the axes or diverging themes of each scenario narrative. Lower-impact or more predictable drivers were used to provide texture and realism to the storyline.

The selection of specific scenarios was typically shaped by a combination of regulatory guardrails and sector-relevant archetypes. In jurisdictions such as New Zealand, disclosure requirements under the climate reporting regime provided a clear expectation that scenarios span a range of physical and transition futures, including at least one aligned with a low-emissions (1.5°C-consistent) pathway; one that was above 3°C; and one other scenario (XRB 2024). This created a structured frame within which scenario selection could occur, ensuring alignment with recognised global narratives (e.g. NGFS, IEA, SSPs) while still leaving room for local interpretation and emphasis.

Within that structure, the content of individual scenarios was often developed through a combination of stakeholder workshops and sector-informed expertise. In co-designed processes, drivers were surfaced and prioritised by participants, such as changes in regulation, insurance retreat, energy disruption, or social equity concerns. In other cases, where workshops were not feasible or needed to be supplemented, consultants familiar with the sector context constructed scenarios based on prior knowledge of relevant thresholds, trends, and stressors. This blend of structured guidance and tailored development ensured that scenarios were both credible and decision relevant.

Post-workshop consolidation

The scenario drivers were teased out in workshops and then the scenarios themselves were written by climate specialists, who had scenario narrative expertise. The need for domain specialists helped ensure that the scenarios remained internally consistent and maintained a strong evidence base.

Following the identification of drivers in the workshops, the climate specialists mapped out the scenario logic in a hands-on and highly visual manner. Using butcher's paper, they worked through interlinkages between drivers, explored cause-and-effect sequences, and built narrative arcs to ensure that each scenario reflected a coherent and internally consistent story. This post-workshop process allowed facilitators to test the plausibility of each scenario direction and resolve any contradictions across key drivers.

Where resourcing allowed, subject matter experts were engaged during this drafting phase to provide insights into sector-specific dynamics, such as infrastructure resilience, energy transitions, or social vulnerability, and to review draft narratives. Their contributions helped reinforce the realism of each scenario, ensure alignment with known sector thresholds, and support the credibility of the final outputs.

Evaluation

Evaluating qualitative climate scenarios presents inherent challenges. Because scenarios are designed as provocations, not forecasts, their value often lies in the conversations they trigger, the insights they unlock, and the decisions they influence behind closed doors. As such, many of the most meaningful impacts are indirect or difficult to capture.

When carrying scenario development, we adopted a practical evaluation approach focused on internal peer review to ensure consistency, credibility, and relevance of the scenario content. When possible targeted engagement with end users provided informal but valuable feedback on how scenarios were received, understood, and used in decision-making. These reflections were often gathered through follow-up calls, emails, or integration into subsequent project phases.

In some instances, discussion groups and/or surveys were carried out to identify opportunities to improve the delivery style, content, and framing of future scenarios. This helped inform the ongoing development of scenario tools and processes.

The general feedback we have had from the end-users is that the scenarios were well received and provided a depth of insight that many had not previously seen. In some instances, the scenarios had profound impact, resulting in adjustments to business models.

Deliverables

Draft scenarios

The deliverables were three or four descriptive climate scenarios. The length of each of the scenarios was a maximum of three pages.

Scenario application

The primary objective of the scenario development and analysis is to explore how climate-related issues may impact an organisation's business model/strategy. This is an explicit requirement of the climate-related disclosures.

The scenarios are designed to be relevant for the organisation and as such they are only used by them. Organisations who are captured by the climate-related financial disclosure are required to share summaries of the scenarios. The full scenarios, detailed process, attendees and impact on the organisations business model must be shared with relevant regulators in confidence if asked to do so.

Future communication

The intended audience of the scenario documents are key decision-makers who are involved in an organisation's strategy. Traditionally this would be those at board or executive/management level. Additionally, the scenarios, or derivatives of them (e.g. drivers) are used by risk teams and those in exploring new markets/products.

Lessons Learned and Recommendations for 'Good Practice'

Lessons learned

Co-design with end users: Involving stakeholders from the outset, across planning, finance, infrastructure, and risk functions, consistently improved engagement and relevance. This approach helped align the scenarios with existing decision-making frameworks and built early ownership.

Upskilling the end users: Building scenario literacy, especially around drivers, thresholds, and feedback loops, led to significantly richer scenario development. To enable upskilling the stakeholders were provided with recommended reading prior to the risk driver workshop. This also improved the richness of drivers, and ultimately a richer scenario. Where end users understood the cascading nature of climate-related risks, they were more confident in identifying relevant drivers and imagining plausible consequences. This not only improved the quality of scenario outputs but also built internal capacity for ongoing use.

Use of narrative-based scenarios: Narratives made climate risks more tangible. By grounding the scenarios in real-world examples, stakeholders found it easier to explore uncomfortable or low-likelihood futures constructively.

Temporal scenario structure: An important design choice in our scenario work has been to establish a clear temporal flow, with emphasis placed on the next ten years as the critical window for decision-making. While each scenario extended to 2050 to align with global

climate benchmarks and disclosure norms, the narrative weight was intentionally skewed toward developments between now and 2035.

Balancing physical and transition risks: Developing scenarios that combined both physical climate impacts and socio-economic or regulatory transitions provided a more integrated understanding of risk. This helped shift conversations from hazard-specific responses toward systemic resilience strategies.

Multiple practical applications: Scenario products were successfully used across a range of use cases, strategic planning, risk disclosure, infrastructure investment prioritisation, and emergency preparedness. The modularity of the outputs meant that organisations could repurpose them over time.

'Good practice' recommendations

- Invest in the preparation. Have a good administrator who can ensure the key people are in the room when needed. Ensure stakeholders come into the workshop prepared. Provide a reading list prior to any driver workshops.
- Ensure the workshop participants represent all thematic areas or sectors from across the organisation. This enables a richer collection of driver inputs and helps with cross department pollination.
- Keep scenario narratives short. They should be able to be read in five minutes. You can always write more.

Engagement and Inclusion

Stakeholder baseline knowledge

Most stakeholders had little baseline knowledge about scenarios, or climate change. Many initially struggled with the concept of scenarios, particularly integrated, narrative-based approaches. The term "scenario" was frequently associated with climate model outputs (such as RCPs or SSPs), which focus on physical hazards and emission pathways. As a result, stakeholders often expected numerical projections and linear trends, not exploratory narratives that incorporate physical and transition risks together.

The exploratory nature of scenario planning, including the deliberate use of uncertainty, multiple plausible futures, and outlier events, was unfamiliar to many. Some stakeholders stated that they wanted certainty or to be provided a choice of scenarios that they could then determine "the most likely". In contrast, scenario methods required them to lean into ambiguity and consider futures that could not be easily ranked by probability or likelihood. It is interesting to note that stakeholder perceptions shifted through the development process as they became comfortable with the key concepts and intentions.

Once stakeholders used the product, that is the plausible and well-framed scenario narratives, and gained trust in the process, they often reported significant insights into how future risks could unfold. Many stated that the scenarios supported their ability to identify vulnerabilities in their business model, test assumptions, and explore options under a range of credible futures. In several cases, it became a catalyst for broader internal conversations about long-term resilience, governance, and changes to organisation strategy.

Appendices

Stakeholder list/representation.

Unavailable due to client confidentiality.

Reference list

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