Handout:
Science, Trust, and Accountability in Coastal Hazard Decision-Making

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Framing the Problem

Coastal Hazard science increasingly informs **high-stakes public decisions**:

- Hazard zoning
- Coastal retreat
- Infrastructure planning
- Property and insurance outcomes

These decisions carry **real economic, social, and psychological costs** for communities.

Key question:
How does science maintain credibility when it directly shapes people's lives?

"Honest Broker"

A person or entity that is trusted by all sides to act impartially, present information fairly, and facilitate decisions without pushing a personal agenda or preferred outcome.

Key elements embedded in the definition

- **Impartiality** – does not take sides or advocate for a specific position
- **Credibility and trust** – is seen as reliable by all parties
- **Transparency** – openly shares relevant information and assumptions
- **Clarification, not persuasion** – helps others understand options rather than steering them toward one
- **Process focus** – supports fair decision-making rather than controlling the result

In practice

An honest broker:

- Provides **the full spectrum of options and their consequences.**

- Makes **uncertainty explicit**
- Avoids **selective use of evidence**
- Ensures **no stakeholder is misled or excluded**

When Science Overreaches:

"Over-egging" the Science

Problems arise when scientific advice:

- Emphasises:
  - **Extreme scenarios**
- Relies on:
  - **Heavily modelled outputs with limited local validation**
- Presents findings:
  - Without a clear articulation of **likelihood or confidence**

The Accountability Question

Why present implausible or low-confidence scenarios to communities when they drive high-impact decisions?

A core mismatch often emerges:

Decision Impact	Evidence Confidence
High (irreversible, costly)	Low or contested

This raises concerns that science is being used to:

- Support **risk-averse institutional positions**
- Justify **predetermined outcomes**
- Encapsulates **confirmation bias**

Community Experience and Social Licence

From a community perspective, this can feel like:

- Decisions are:
  - Imposed rather than explained
- Technical complexity acts as:
  - A **barrier to understanding**
- Reports are:
  - Difficult to interrogate
  - Detached from lived reality

Result:

- Loss of **social licence**
- Perception of **procedural injustice**

Perception of Obfuscation

Where assumptions are unclear, communities may conclude:

- Complexity is being used as **gatekeeping**
- Reports are **inaccessible by design**
- Key drivers of outcomes are **not transparent**

This leads to a breakdown in **epistemic trust**—trust in how knowledge is produced.

The Role of Peer Review – and Its Failure Modes

Ideal:

Peer review should provide:

- Independent challenge
- Validation of assumptions
- Rigorous testing of conclusions

In Practice (Consulting Contexts):

- Reports may be:
  - Reviewed within:
    - The same firm
    - The same consortium

        - Closely aligned networks

Perception:

- "Peer review" becomes:
    - **Internal validation rather than independent scrutiny**
    - Colloquially, **"pal review"**

Institutional Risk: Councils and Unexamined Science

Local authorities often:

- Commission external experts
- Adopt findings into planning frameworks
- Defend those findings publicly

Critical problem:

- Councils may:
    - **Not fully understand the underlying assumptions**
    - Lack of capacity to **critically interrogate technical work**

Outcome:

- Councils inherit:
    - **Liability**

From Reliance to Litigation

A common escalation pathway:

1. Consultant report produced
2. Council adopts and defends findings
3. Community identifies inconsistencies
4. Concerns are dismissed
5. Trust breaks down
6. Issue escalates to:
    - Litigation
    - Independent scientific review

At this point:

The issue shifts from science to **governance accountability**

Perceptions of Collusion

Communities may develop the view that:

- There is alignment between:
  - Council staff
  - Technical experts

Resulting in:

- Promotion of:
  - **Worst-case or unsuitable scenarios for planning**

Important:

- Whether or not collusion exists is secondary

The **perception alone** is enough to undermine legitimacy.

Independent Review and Vindication

When independent panels:

- Revise
- Or reject earlier findings

Communities often experience:

Vindication

- "We were right to question this"

But also:

- **Deepened mistrust**
- Reinforced belief that:
  - The original process lacked integrity

The Trust Paradox

Even when corrective processes work:

Institutional View	Community View
"The system corrected itself"	"We had to fight to expose it"

Result:

- Trust is not restored
- Distrust becomes entrenched

Delegitimisation Through Labelling

When communities challenge science, they may be labelled as:

- Misinformed
- Or "climate deniers"

Problem:

- Conflates:
  - Critique of **specific modelling assumptions** with
  - Rejection of **climate science as a whole**

This avoids engaging with legitimate questions and replaces **accountability with dismissal.**

When Communities Engage Back

Contrary to assumptions:

- Communities often:
  - Develop technical literacy
  - Commission independent experts
  - Engage deeply with evidence

When flaws are identified:

This is not a failure of public understanding—it is a **failure of scientific accountability**

The Core Governance Failure

What emerges is not just a scientific issue, but a systemic one:

- Weak independent review
- Over-reliance on expert authority
- Lack of transparency
- Limited internal capability within councils

Democratic Accountability:

Who Is Actually Making Decisions?

A further consequence of over-reliance on complex technical advice is a **perceived shift in where decision-making power sits**.

The Emerging Perception

Within communities, a common view develops:

That councils are not being led by elected members, but by **consultants and technical advisors**, whose work is effectively adopted without meaningful scrutiny.

How This Perception Forms

This perception is driven by several observable dynamics:

- Technical briefings to elected members are:
    - Highly complex
    - Model-heavy
    - Difficult to interrogate without specialist expertise
- Elected members may:
    - Rely heavily on staff summaries
    - Have limited capacity to challenge underlying assumptions
- Council staff, in turn, may:
    - Depend on external consultants for technical interpretation
    - Act as conduits rather than critical evaluators

The Capability Gap

This creates a cascading issue:

Level	Dependency
Elected Members	Rely on staff
Council Staff	Rely on consultants and lawyers
Consultants	Control technical framing

Result:

- The **origin of key assumptions and conclusions** becomes increasingly distant from democratic oversight

Key Accountability Question

- How can elected representatives fulfil their democratic mandate if the technical basis of their decisions is not fully understandable, interrogable, or explainable to the public?

From Representation to Delegation

In this environment:

- Decision-making risks shifting from:
  - **Democratically accountable representatives**
    to
  - **Technically authoritative but unelected actors**

This is not necessarily intentional, but it has significant implications:

- Elected members:
  - Endorse decisions they cannot fully explain
- Staff:
  - Defend positions they did not independently test
- Consultants:
  - Shape outcomes without direct accountability to the public

Compounding Effect on Trust

For communities, this reinforces a powerful narrative:

- Decisions are:
  - **Technocratically driven**
  - **Insulated from challenge**
- Accountability is:
  - Diffused
  - Difficult to locate

When issues later emerge (e.g. through litigation or independent review):

- The question becomes:

  Who was actually responsible for the decision?

Link to Financial and Legal Consequences

This governance gap amplifies earlier risks:

- Councils:
  - Bear **financial liability** (rates, legal costs, rework)
  - Face **legal challenges**
- Yet decision authority is perceived to have been:
  - **Delegated upstream to consultants**

Implications for Best Practice

To restore confidence in democratic decision-making:

For Councils:

- Ensure briefings are:
  - **Accessible and intelligible**, not just technically complete
- Require staff to:
  - Demonstrate **independent understanding**, not just relay consultant advice
- Create space for:
  - **Independent second opinions**

- Build internal capability to:
  - Critically assess expert advice
- Require:
  - Genuine independent peer review
- Engage communities:
  - Early and meaningfully

For the System:

- Align:
  - **Decision authority with understanding**
- Reduce:
  - Over-reliance on single-source expertise
- Strengthen:
  - Transparency of how advice is translated into decisions

For Scientists and Consultants:

- Clearly distinguish:
  - Plausible vs extreme scenarios
- Align:
  - Confidence levels with decision impact
- Ensure:
  - Transparency and accessibility

Final Insight

The credibility of climate science in applied settings does not fail because communities reject science.

It fails when science is seen to **overreach, hide uncertainty, and avoid responsibility—while institutions adopt and defend it without enough scrutiny—and the public is left to bear the cost.**

Scientists often have little self-awareness of the narrow paradigm they occupy – one largely limited to data and models that may or may not work accurately in specific cases. Increasingly, courts are trying to take a broader view of things outside that paradigm, including lived experience (from people within the environment) and indigenous science (matauranga in NZ), which can draw on much older experiences.

Furthermore, it is necessary to recognise that the scientific paradigm has to fit within a legal one as well.

Neither climate scientists, economists, businesses, nor entrepreneurs know which socioeconomic scenarios will actually occur by the year 2100. So, any notion that temperature or sea-level

projections to, say, 2100 are "science-based" in the sense of following immutable scientific laws is a delusion. In future energy production, there are alternative paths – deep geothermal energy, nuclear fusion and fission, solar, wind, biomass, gas, oil – that are all competing and innovating. And IPCC projections differ markedly from scenario to scenario.

When complexity overrides understanding, decision-making can stray from democratic oversight. At that stage, it is not merely the science that is challenged—it's the very legitimacy of the governance system.

Discussion Questions

1. When does precaution become overreach in climate modelling?
2. How should uncertainty be communicated in high-stakes decisions?
3. Who should bear responsibility when scientific advice proves flawed?
4. What constitutes genuine peer review in applied contexts?
5. How can councils avoid passing financial risk onto ratepayers?
6. Can trust be rebuilt once communities feel both misled and financially burdened?
